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SWEET'S CATALOG FILE

A File of Manufacturers' Catalogs designed for the use of Architects, Engineers, Contractors and others whose practice it is to select, specify or purchase building materials, equipment and allied services.

SWEET'S CATALOG SERVICE

DIVISION OF F. W. DODGE CORPORATION

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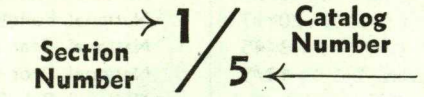

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ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building, PITTSBURGH, Pa.

SALES OFFICES

ALBANY, N. Y., 90 State Street
ATLANTA, GA., 1818 Rhodes-Haverty Building
BOSTON, MASS., 20 Providence Street, Park Square
BUFFALO, N. Y., 1880 Elmwood Avenue
CHARLOTTE, N. C., 619 Johnston Building
CHICAGO, ILL., 520 No. Michigan Avenue
CINCINNATI, OHIO, Times Star Building
CLEVELAND, OHIO, 2210 Harvard Avenue
DALLAS, TEX., 1601 Allen Building
DENVER, COLO., 634 U. S. National Bank Building
DETROIT, MICH., 3311 Dunn Road
FAIRFIELD, CONN., Boston Post Road
HARTFORD, CONN., Capitol Building, 410 Asylum Street
INDIANAPOLIS, IND., 1008 Merchants Bank Building
KANSAS CITY, MO., 2306 Power & Light Building
LOS ANGELES, CALIF., 1031 South Broadway
MILWAUKEE, WIS., 735 North Water Street
MINNEAPOLIS, MINN., 1345 Northwestern Bank Building
NEWARK, N. J., 1111 Academy Bldg.
NEW ORLEANS, LA., 1512 American Bank Building
NEW YORK, N. Y., 230 Park Avenue
PHILADELPHIA, PA., 2307 Fidelity-Philadelphia Trust Building
PITTSBURGH, PA., Gulf Building
ST. LOUIS, MO., 1000 Continental Building
SAN FRANCISCO, CALIF., 709 Rialto Building
SEATTLE, WASH., 1005 White Building
TOLEDO, OHIO, 915 Ohio Bank Building
WASHINGTON, D. C., 606-612 Southern Building

For Other Pages on Alcoa Aluminum, Its Alloys and Uses, see File Index

Products

ALCOA ALUMINUM and its ALLOYS are available in every form known to the metal-working art—Castings (sand, die, and permanent mold), Extruded and Rolled Sections, Sheet, Plate, Tubing, Foil, Wire, Rod, Bar, Forgings, Screw Machine Products, Rivets, Nails, Screws, Bolts, Pipe, and Pipe Fittings.

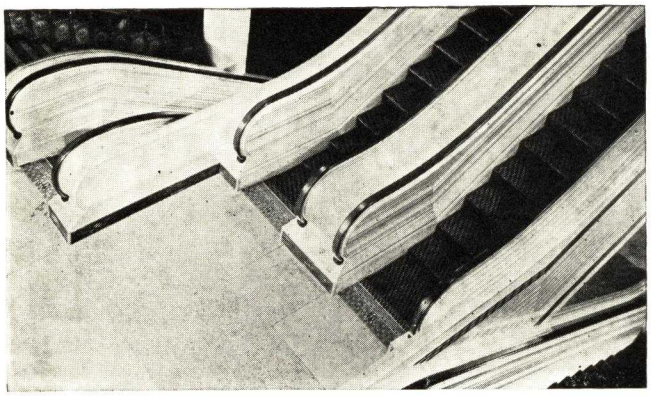
Available Information

Informative literature which gives complete data about any Alcoa Aluminum product and detailed information as to the fabrication of this light, strong metal is available at any of the addresses shown above. Besides, the services of our Sales Offices are at your disposal in case you have any specific problem with which you need assistance.

Qualities

The architect, industrial designer, or fabricator can obtain in Alcoa Aluminum, alloys either for decorative or structural purposes.

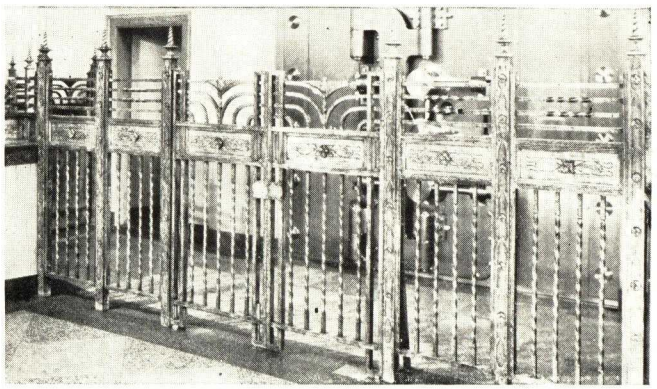
Light weight, the best known characteristic of aluminum, is only one of many distinguishing qualities. The others include fine appearance, great ductility, easy workability, high resistance to corrosion. Too, Alcoa Aluminum Alloys are available in a wide range of mechanical properties. In some cases strength equal to that of structural steel is possible.



Escalator guards finished in one of the several finishes available for aluminum

Upkeep

Because aluminum is highly resistant to corrosive atmospheres, little other than routine cleaning work is necessary to keep it bright and shining. Also, since the compounds of aluminum are colorless, there is no danger of streaking or staining enjoining surfaces. Aluminum cannot warp or crack. Thus it can safely be said of aluminum that its maintenance is practically nil.



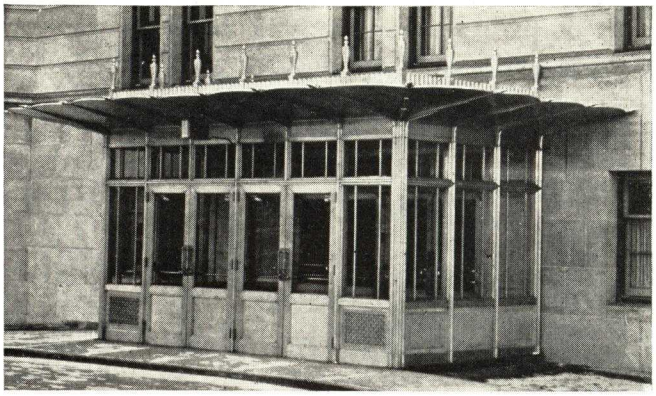
These hand-wrought aluminum gates are typical of the decorative effects possible with aluminum

Economy

The cost of aluminum *per pound* is usually somewhat higher than that of the other commonly used metals. It should be remembered, however, that aluminum, for the same cross section, gives about three times as many linear feet per pound. Cost of metal is not the only consideration—ease of fabrication and handling further contribute to the economy of aluminum. When *all* factors are taken into account, the *actual* first cost of aluminum is often less than metals which cost less per pound.

Extrusions

Of special interest to architects and designers is the fact that aluminum can be extruded in a variety of shapes and sizes unmatched by any other metal. So, for structural parts, shapes are available or can be designed to dispose the metal more efficiently with relation to stresses than is possible by use of standard



The low maintenance cost, ease of fabrication, and light weight of aluminum doors appeal to architects and builders

rolled shapes or formed sections. For decorative purposes extruded sections, too, serve the designers' purposes, for they have smooth surfaces and have sharp clearly defined lines.

The range of shapes possible is practically unlimited. Dies for special shapes are *not* expensive.

Finishes

Finishes for aluminum may be divided into five general groups, i.e., mechanical, chemical dip, electrolytic oxide, electroplated, and paint, lacquer and enamel finishes.

The mechanically produced finishes are: polished, high-lighted, scratch brushed, satin, hammered, fluted, sand-blasted, tumbled, and burnished.

Frosted dip, reflector dip, etched, and chemical oxide finish comprise the chemical dip finishes.

In the oxide finish classification is the Alumilite* finish which is produced by an anodic treatment of aluminum in a suitable electrolyte so as to secure a dense, adherent coating of aluminum oxide. The finish may be either plain oxidized aluminum or colored. Alzak reflector* coating completes this group. These reflectors are finished with an oxide coating to give the surface protection and the high reflection factors (82 to 85 per cent for specular finish) are obtained by a special electrolytic treatment of suitable sheet prior to applying the anodic finish.

Electroplates, such as chromium, nickel, zinc may be applied directly on aluminum. Too, copper, brass, silver, as well as numerous other metals, may be readily applied to a preliminary nickel plating. Colored or oxidized finishes may be obtained on these deposits by the usual procedures. Black nickel may be applied directly to aluminum to be used as a background for etched name plates.

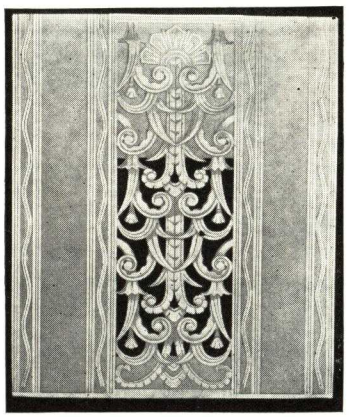
The paint, lacquer, and enamel finishes are of course obvious.

*Patented Process.

Alcoa Aluminum in a Modern Building

This list suggests some of the purposes for which Alcoa Aluminum is serving the architects' needs.

Awnings and Awning Box
Balustrades
Batten Seam Roof
Ceiling Moulding
Clocks
Conduo Moulding
Coping
Directory Board
Door and Frame
Electric Light Conduit
Elevated Doors
Elevators
Fascia
Foyer Decorations
Hardware
Interior Grille
Kick Plates
Lighting Fixtures
Mail Chute and Letter Box
Marquises
Mirror Frames
Mullions
Newel Posts and Base
Ornamental Wall Plaques
Radiators
Revolving Doors
Spandrels
Stair Nosing
Stair Railing
Stair Risers
Store Fronts
Terrazzo Strips
Threshold Plates
Trim
Ventilating Ducts
Ventilators
Wall Rails
Window Sash and Frame
Window Sills



A cast-aluminum spandrel finished by the patented Alumilite process

Warehouse Stocks

To facilitate delivery of Alcoa Aluminum and its alloys, adequate stocks of the metal are available at strategic points, throughout the country.

Sheet, extruded shapes, tubing, structural shapes, wire, rod, bar, screw machine stock, rivets, machine and wood screws, nails, pipe fittings, are carried by the following distributors and all of their branches:

Metal Goods Corp.
2400 No. 10th St.
St. Louis, Mo.

Pacific Metals Co., Ltd.
3100 Nineteenth St.
San Francisco, Calif.

Steel Sales Corp.
129 So. Jefferson St.
Chicago, Ill.

J. M. Tull Metal & Supply Co.
285 Marietta St.
Atlanta, Ga.

Whitehead Metal Products Co. of New York, Inc.
304 Hudson St.
New York, N. Y.

Williams and Co., Inc.
901 Pennsylvania Ave.
Pittsburgh, Pa.

Aluminum is an excellent roofing material because of its light weight and its resistance to corrosion

THE AMERICAN ROLLING MILL COMPANY

Makers of Stainless Sheets, Strip and Plates for Architectural Construction, Equipment, and Appliances

EXECUTIVE OFFICES
308 Curtis Street, MIDDLETOWN, OHIO

DISTRICT OFFICES

ATLANTA, GA., 1437 The Citizens & Southern National Bank Building
BOSTON, MASS., 201 Devonshire Street
BUFFALO, N. Y., 504 Seventeen Court Street Building
CHICAGO, ILL., 310 South Michigan Building
CLEVELAND, OHIO, 1516 B. F. Keith Building
DALLAS, TEXAS, 1111 Santa Fe Building
DETROIT, MICH., 5-261 General Motors Bldg.
INDIANAPOLIS, IND., Circle Tower
KANSAS CITY, MO., 7100 Roberts Street
MIDDLETOWN, OHIO, 703 Curtis Street
NEW ORLEANS, LA., 3505 So. Carrollton Ave.
NEW YORK, N. Y., 50 Church Street
PHILADELPHIA, PA., 1808 Lincoln-Liberty Building
PITTSBURGH, PA., 1632 Oliver Building
SAN FRANCISCO, CAL., 540 Tenth Street
ST. LOUIS, MO., 1725 Ambassador Building

Distributors in Principal Cities Can Supply Contractors' Requirements Promptly

For Armco Galvanized Sheets and Paintgrip, see File Index

ARMCO STAINLESS STEELS

There is a specific grade of Armco Stainless Steel for every architectural requirement. The various finishes are as flawless as minds, hands and machines can produce. No effort has been spared to provide alloys that will measure up to the highest and most exacting architectural standards. In the development of Armco Stainless, factors affecting corrosion resistance have been considered and their relative importance established. As a result, flat-rolled stainless ranks high in corrosion resistance, workability, uniformity and perfection of surface. Unlike most other building materials, appearance is invariably an important factor on applications where stainless steel is being considered. Therefore, uniformity and workability cannot be over-emphasized. Whether your need is for stainless steel sheets, strip or plates, Armco can fill the order in a dependable and satisfactory manner.

Popular Architectural Grades

Of the many varieties of stainless, there are two of special interest to architects because of their unusual adaptability to architectural applications. These are Armco 18-8 and Armco 17. Armco 18-8, because it meets every requirement, is generally used for such purposes. Armco 17 is less expensive but not so universally adaptable. However, it is ideally suited for interior work. Both grades may be adapted to unusual shapes or flatwork and parts may be joined by riveting, welding or soldering without difficulty.

Armco 18-8 Stainless

Armco 18-8 is an iron-chromium-nickel alloy used for a widely diversified range of corrosion-resisting and heat-resisting applications. It contains approximately 18 per cent chromium and 8 per cent nickel in combination with iron. Ordinarily it is a non-magnetic, austenitic metal that cannot be materially hardened by heat treatment. Extraordinarily tough and possessing surprising ductility, it can be severely drawn, spun or otherwise formed in the cold state. This gives it good fabricating qualities and makes it suitable for shaping into intricate designs. After polishing it retains an untarnished surface when

Armco 18-8

Chemical Analysis	
Chromium	17.50-19.00%
Nickel	8.00- 9.00%
Carbon	.08 max. and .12 max.
Manganese	0.30-0.60
Phosphorus	0.30 max.
Sulfur	0.30 max.
Silicon	0.30-0.60

Mechanical Properties	*Average Values*
Yield point, lbs. per sq. in.	45,000
Ultimate strength, lbs. per sq. in.	90,000
Elongation in 2 inches, per cent	55-60
Rockwell B Hardness	75-85
Olsen value, inches	.475-.550
Elastic modulus	29,000,000
Scaling temperature	1650°F.

Physical Properties		
Specific gravity		7.93
Weight, lbs. per cu. in.		0.290
Thermal conductivity, cal./cm.³/sec./°C.		0.048
Coefficient of linear expansion, per° C.	20° to 100°C.	0.0000171
	20° to 500°C.	0.0000197
Specific heat, cal./gm./°C.		0.117

Armco 17

Chemical Analysis	
Chromium	14.00-18.00%
Carbon	0.12 max.
Manganese	0.30-0.60
Phosphorus	0.030 max.
Sulfur	0.030 max.
Silicon	0.50 max.

Mechanical Properties	*Average Values*
Yield point, lbs. per sq. in.	45,000
Ultimate strength, lbs. per sq. in.	75,000
Elongation in 2 inches, per cent	27
Rockwell B hardness	77
Olsen value, inches	.300-.350
Elastic modulus	29,000,000
Scaling temperature	1550°F.

Physical Properties		
Specific gravity		7.71
Weight, lbs. per cu. in.		0.278
Thermal conductivity, cal./cm.³/sec./°C.		0.06
Coefficient of linear expansion, per ° C.	20° to 100° C.	0.0000105
	20° to 800° C.	0.0000127
Specific heat, cal./gm./°C.		0.11

exposed to the atmosphere, and many other corrosive environments. For exterior and interior decoration, and for restaurant, kitchen, dairy, laundry, bakery and hospital equipment, it is unsurpassed. In these and countless other applications, Armco 18-8 has earned a high reputation for enduring beauty and sturdy resistance to the wear and tear of long service.

Armco 17 Stainless

Armco 17 is a magnetic, essentially non-hardenable, straight chromium iron (rust-resisting) alloy with physical properties equal to a high grade of medium carbon steel. Where proper technique is employed this grade is ductile and can readily be formed to complex architectural designs. The inherent corrosion-resisting properties of Armco 17 are outstanding. These are more fully developed when the metal has the additional protection of a thoroughly polished surface. In general, Armco 17 is most ideally suited for building interiors where it is not likely to come in contact with combinations of soot, smoke and moisture.

In this service, it will not tarnish and may be expected to retain its bright, silvery lustre indefinitely. Exterior applications are not objectionable if the parts are cleaned periodically so as to prevent an accumulation of smudge. Armco 17 is also noted for its absolute immunity to nitric acid corrosion.

Armco Stainless Finishes

Armco Stainless alloys may be selected in a number of different surface finishes, each of which is applicable to a specific architectural use. Because the metal is uniform throughout and because these finishes resist tarnishing and corrosive influences, you have every assurance that their original beauty will be retained indefinitely. Finishes available include:

No. 1 —Hot rolled, annealed and pickled: A white pickled finish—no reflection.

No. 2D—Dull full finish: A smooth, dull, cold-rolled finish—no reflection.

No. 2B—Bright full finish: A smooth, bright cold-rolled finish with silver, uniform color—slight reflection.

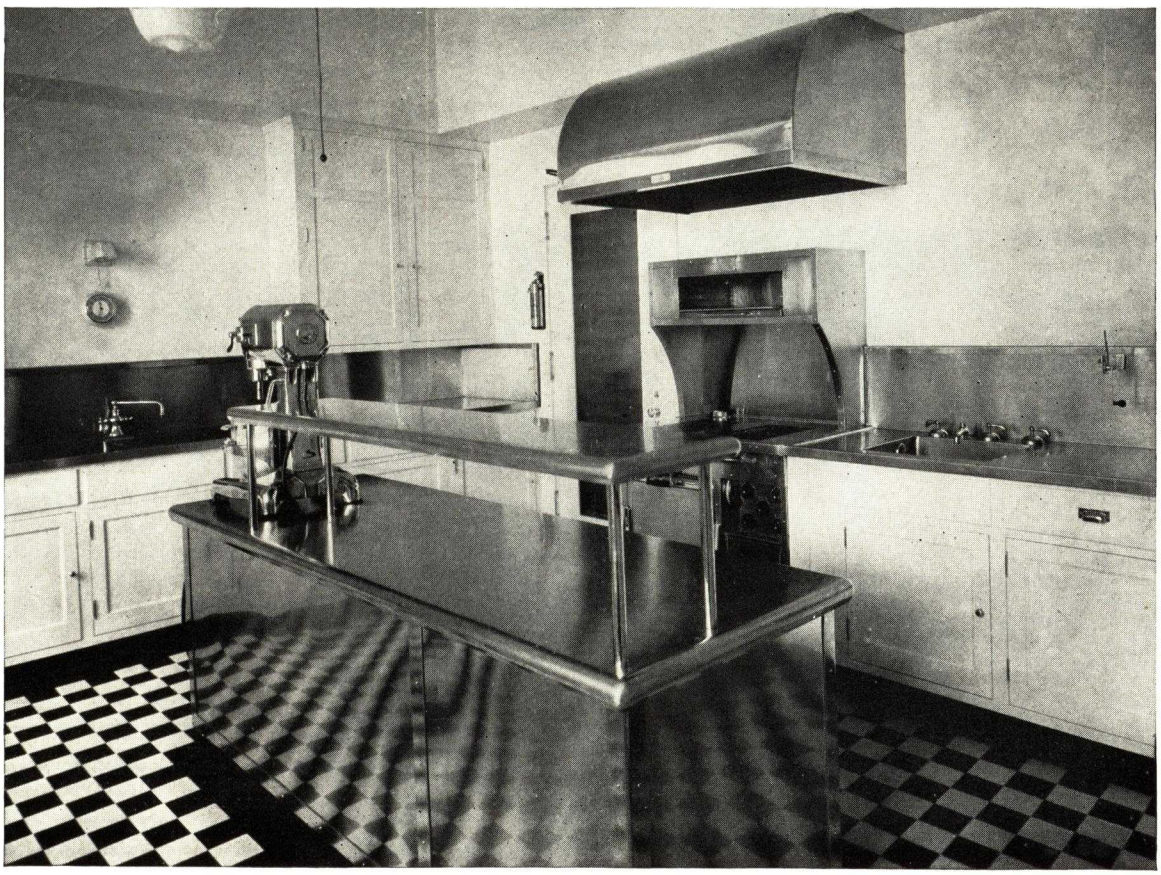
No. 4 —Standard polish: A bright satin finish, with very fine polish lines and very slight object reflectivity.

No. 6 —Standard polish, Tampico brushed: A soft-lustred, velvety finish with no object reflectivity.

No. 7 —High lustre polish: A glossy bright surface that has almost perfect mirror reflectivity.

Usually the architect can select the finish in accordance with the effect desired, but sometimes additional consideration must be given to the amount and extent of forming necessary. In the case of applications requiring severe forming operations it is often more economical to use stainless steel in the unpolished No. 2B finish, and then polish to the desired lustre by hand wheel after all forming and assembling has been completed.

No. 1 finish is usually specified where corrosion resistance, abrasion resistance, and strength are desired,



National Cash Register Company, Dayton, Ohio

This brightly-attractive and spotless kitchen is a part of the executive's cafeteria at the National Cash Register Company, Dayton, Ohio. All stainless steel is Armco 18-8. A. Blickman, Inc., Weehawken, N. J., were the fabricators.

and appearance is of secondary importance. Also, this finish is entirely satisfactory for heavy equipment and heat-resisting applications. These would include such requirements as coal chutes and coal handling equipment, baggage and mail chutes, tubing, storage tanks, and furnace parts.

No. 2D finish is not of usual interest to the architect because its principal advantage over the 2B finish is its dull, non-reflective surface. For example, this finish is ideally suited for element covers for electric stoves because it has a uniform colored, dense surface. It is also useful where the surface must be painted.

No. 4 finish presents a ground surface appearance with a medium lustre. It is adaptable for such purposes as restaurant and soda fountain equipment, laundry and dairy machinery, refrigerators, vaults, cabinets, and other places where a fair lustre and ease of cleaning are important. It is frequently used, too, for interior decoration. No. 6 is adaptable for exterior purposes. Its silvery lustre and low reflectivity allow it to blend in well with other more highly finished metals. This finish does not show finger prints and other handling marks as readily as the other finishes. No. 7 is ideal for exterior purposes such as outdoor signs, building trim and ornamentation. Also, this finish is desirable for severe corrosive conditions because the high lustre renders it most resistant to corrosive influences.

Protection During Building Construction

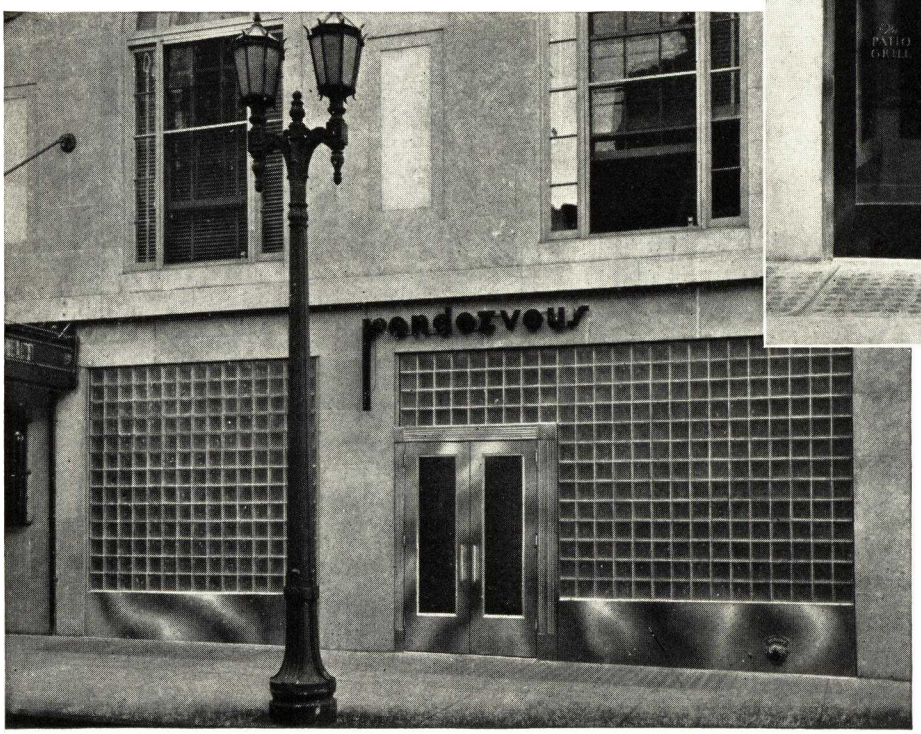
Because of the difficulty of duplicating the original finish once this has been scratched or marred, it is advisable to protect the stainless steel portions of buildings during the period of erection or installation. Several effective and inexpensive methods have been devised for doing this. One way is to paste heavy manila paper over the stainless parts. If desired, Armco Stainless will be given this protective coating at the mill. When the building or room has been completed and is ready for opening or occupancy the paper can be removed. Another method is to coat the stainless with a specially developed lacquer. When the lacquer's purpose has been fulfilled it can be removed or allowed to wear off. Neither method of protection affects the finish of the metal.

Below:

Hotel Roosevelt, Jacksonville, Fla.

Bulkheads, decorative pilasters and some door coverings on store fronts in the Hotel Roosevelt, Jacksonville, Fla., are made of 20-gage Armco 18-8 Stainless Steel, No. 2B finish.

Installed by the Florida Mirror Plate Glass Company, Jacksonville.



Above:

Stainless for Store Fronts

Another view of the attractive architectural effects obtained by the use of Armco Stainless Steel on the Hotel Roosevelt store fronts.

Mikado Bar, Columbus, Ohio
All bright metal work is Armco 18-8 Stainless with No. 4 polish on one side.
Fabricated and erected by CHARLES LAMOTT

Literature Available

Booklets and other literature covering the operations and treatments of Armco Stainless are available from time to time. The latest is a series of three handbooks, one each on the chromium nickel, straight chromium and heat-resisting grades. Others will be published later. We shall be glad to place your name on our mailing list without obligation.

Let Us Look at Your Problems

Whatever your specific requirements or individual problems in stainless application, we suggest that you bring them directly to us. We have the research laboratory facilities, the manufacturing experience, and the specially trained technical and production personnel to help you find the most satisfactory and profitable answer. Our assistance and cooperation implies no obligation. Just outline your problems or specifications to the nearest district office of THE AMERICAN ROLLING MILL COMPANY where they are assured prompt attention.

ARMCO INGOT IRON AS A BASE FOR PORCELAIN ENAMEL

For more than a generation THE AMERICAN ROLLING MILL COMPANY has supplied high-grade iron and steel sheets in both special and commodity grades to the building trades. One of the best known of these products is ARMCO Ingot Iron, a special highly-refined sheet metal ideally suited for porcelain enameling purposes. Like other familiar sheet metals that bear the distinguished trade name "Armco," it was pioneered and brought to its present high state of development by constant research, long study and experience and the exercise of great technical skill.

As a base for porcelain enamel ARMCO Ingot Iron meets every architectural requirement. With its superior ductility it can be easily formed to meet any practical design, while the unequaled adherence properties of its scientifically processed surface insure a smooth, enduring bond with the porcelain enamel. Then, too, all sheets of ARMCO Ingot Iron are uniform in composition, absolutely flat, and free from any internal or surface defects that might cause unsightly blemishes in the porcelain enamel finish. Because of these factors ARMCO Ingot Iron is known as "the world's standard enameling iron."

Its Uses In Architecture

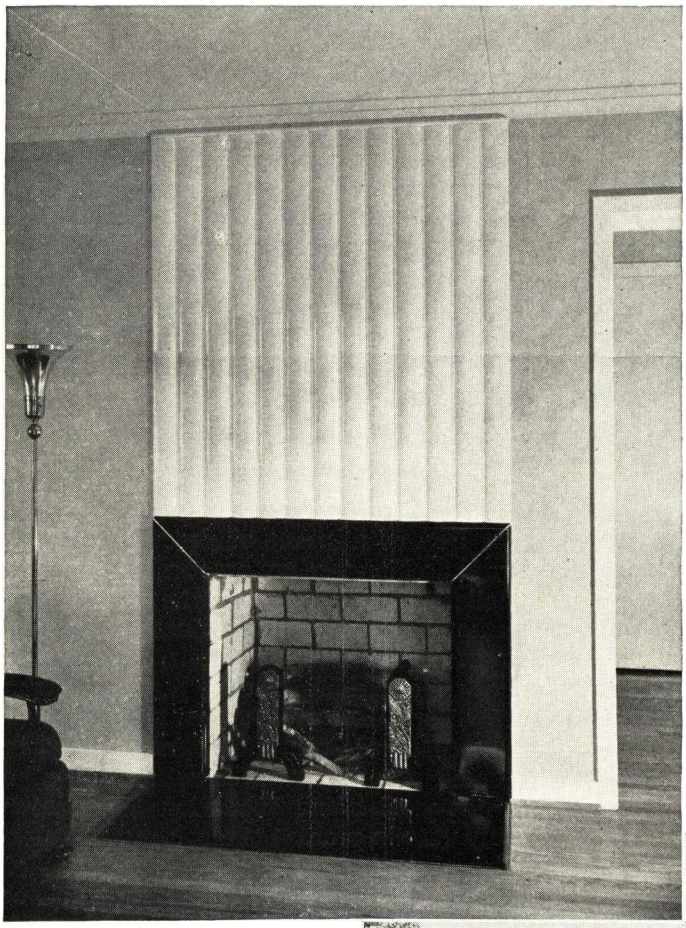
Few materials can compare with porcelain enameled ARMCO Ingot Iron as a means of decorative expression. Its uses in architecture are practically unlimited. Typical installations in every city in the country illustrate its aesthetic and utilitarian values. When used for store fronts, bulkheads, spandrels, sign fasciae, theater marquees and other exterior purposes it presents a rich, lustrous, distinctive appearance. Porcelain enameled ARMCO Ingot Iron is admirably suited for wainscots, balcony fasciae, wall paneling and other interior uses as well. Being impervious to moisture and absolutely vermin-proof it is especially useful for restaurants, markets, kitchens and other places where food is handled. Other suitable applications of porcelain enameled ARMCO Ingot Iron are roofing tile, and shingles, blackboards, signs, and formed metal plumbing ware.

Adaptability to Design

Generally speaking, there are two major kinds of porcelain enameled ARMCO Ingot Iron applicable to building construction. One is the sheet or panel type in which the porcelain enameled sheets are matched and anchored to the supporting wall construction. These can be had in sheets or panels up to 4 x 10 ft., or in specially designed shapes, forms and sections to meet any design. The sheets or panels can be rounded, flanged or otherwise attached as desired. The other type of construction consists of load-bearing concrete or stone units faced with porcelain enameled sheets securely and rigidly embedded in the supporting material. Both have their place in the architectural scheme of things, their selection depending usually on utility and comparative costs. For structures where the initial cost is not so important and where the wall construction must carry the load, porcelain enamel faced units are probably unsurpassed. From this it can be seen that the two are non-competitive.

Wide Color Selectivity

Porcelain enameled ARMCO Ingot Iron can be had in any color in the spectrum, varying from white and the most delicate tints to the deepest shades of black in gloss or matte finishes. Designs calling for a continuous field of contrasting colors are just as readily possible. Designs in contrasting colors may be produced



A Striking Black and White Fireplace
Designed by PORCELAIN METALS CORP., Louisville, Ky.
All base metal is ARMCO Ingot Iron enameling stock.

to follow any architectural drawing. Individual sheets may contain as many colors as necessary. The colors are absolutely permanent and non-fading, being fused into the metal at temperatures from 1500° to 1550° F. Porcelain enamel is a glass hard, durable surface that does not crack or craze even when subjected to sharp changes in temperature.

Ease and Speed of Installation

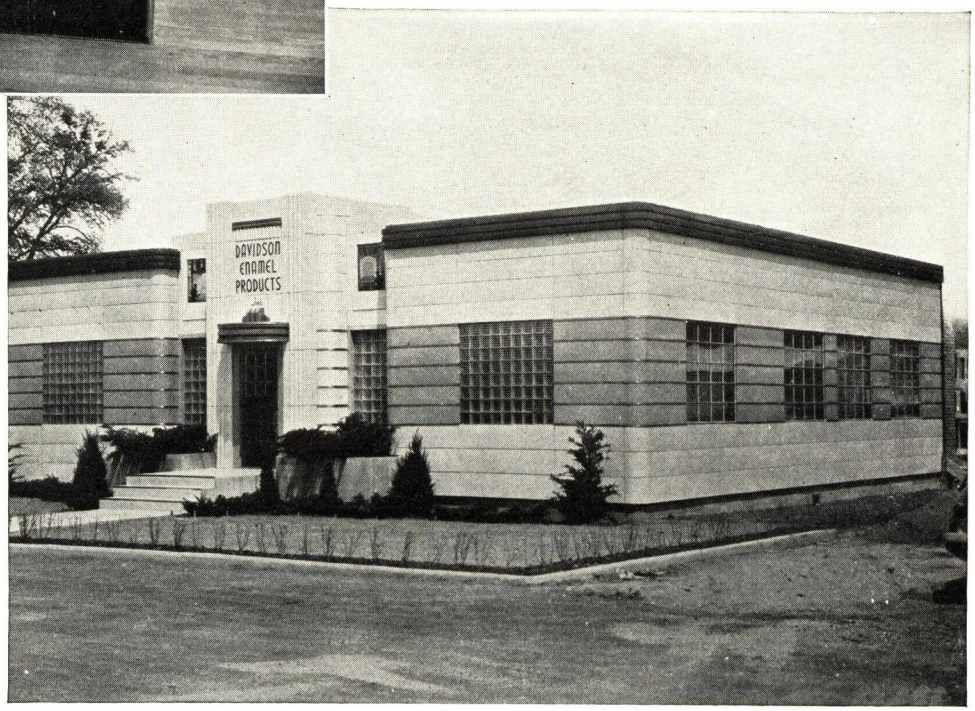
Porcelain enameled ARMCO Ingot Iron is comparatively light in weight, the various coats adding only about three ounces to the square foot of bare metal. This enables the sheets to be easily handled and quickly erected. It also means a minimum of preparatory structural work, wood blocking or light steel angles providing all the support necessary for general purposes. There are many simple ways in which porcelain enameled ARMCO Ingot Iron sheets can be attached to their supports. Screws and bolts can be completely concealed. Where metal mouldings or strips are applied at the joints they can be clipped into place or set with countersunk screws. In fact, any means to meet special conditions can be provided as required. Once installed these sheets require no maintenance. Dust and dirt are easily washed off. Light weight and the small amount of structural support needed for porcelain enamel also brings about a savings in construction costs.

Architectural Bulletin

Architectural Bulletin No. 13 entitled, "What Architects Are Doing With Porcelain Enamel" is available on request. It is a comprehensive treatise amply illustrated with photographs and detailed drawings, dealing with the application of porcelain enameled ARMCO Ingot Iron to store fronts, theaters, gasoline stations and other structures.

Special Service Department

THE AMERICAN ROLLING MILL COMPANY maintains a service department for architects and others desiring detailed information about porcelain enameled ARMCO Ingot Iron and its application to their special requirements. Send in your specifications. They will be given prompt and courteous attention.



A Manufacturing Plant at Lima, Ohio
Designed by DOUGLAS ANDREW, Lima Architect
Exterior is porcelain enamel on 16-gage ARMCO Ingot Iron enameling stock. Shows wide variety of finishes, colors and designs available in porcelain enamel for architectural uses.

SECTION 13

CONTINUED ⟶

BOHN ALUMINUM & BRASS CORPORATION

Manufacturers of Extruded Architectural Shapes and Architectural Sand Castings

DETROIT, MICH.

EXTRUDED ALUMINUM AND BRONZE

Extruded Bohnalite Aluminum and Bohnolloy Architectural Bronze offer the architect a truly modern medium in which to express individuality in design. The ever increasing list of major building projects in which Bohnalite and Bohnalloy extruded shapes have an important part is direct testimony of accuracy and fineness of manufacture of these Bohn products. Specifications which read "Extruded metal to be as manufactured by BOHN ALUMINUM & BRASS CORPORATION, Detroit, assure both architect and owner that the ornamental contractor will have a source of material that has combined metallurgical and engineering research with an experienced and skilled production staff in producing extruded metal shapes of superior quality.

Bohnalite Extruded Aluminum

Bohnalite extruded aluminum shapes are manufactured for the architectural metal trade under rigid metallurgical and mechanical control throughout the entire process of manufacture.

Virgin metals are alloyed to produce the various aluminum alloys recognized for architectural purposes. Each step in the preparation and melting of these alloys is subject to strict laboratory supervision to insure a finished product of the highest possible grade.

Bohnalite alloys are highly resistant to atmospheric corrosion, are colorless and will not stain or streak adjoining surfaces.

The danger of cracking or splitting due to internal strains is absent, as Bohnalite alloys will return to their original structure after expansion or contraction.

Bohnalite alloys are approximately one-third the weight of other commonly used architectural metals, with the consequent economy of material cost, shipping, handling and erecting.

Bohnolloy Extruded Bronze

Bohnolloy extruded bronze shapes are produced faithfully and true to design. Profiles are sharp and clear-cut, and dimensions are accurate and uniform.

The dense crystalline structure of Bohnolloy extruded bronze shapes insures strength of material and smooth, easily finished surfaces.

Straightening operations are given special care, insuring a minimum of fabricating cost to the user.

Bohnolloy No. 55, a standard architectural bronze has a tensile strength in excess of 45,000 lbs. per sq. in. Bohnolloy No. 56-A, an exclusive development of the Bohnolloy series, is a high tensile, corrosion resisting, easy welding bronze with an ultimate average tensile strength of 60,000 lbs. per sq. in., or more.

Extensive equipment and large production capacity insures fabricating and erection schedules being maintained and makes prompt service possible in emergencies.

CAST BOHNALITE ALUMINUM

Bohnalite Aluminum

Bohnalite architectural castings are manufactured with quality, beauty and utility uppermost, under rigid specifications. A dense crystalline structure of virgin metals offers the maximum resistance to atmospheric corrosion and inter-crystalline corrosion.

Various standard finishes are available and many striking and beautiful effects may be obtained.

Bohnalite alloys may be executed in very intricate design and detail, being extremely ductile and adaptable to fine execution.

Architectural Castings

Bohnalite alloys have a specific gravity of 2.7 and in comparison with other commonly used architectural metals, their weight is approximately one-third.

The advantage gained by this saving in weight results in a favorable comparative material cost and in addition a substantial economy in transportation handling and erection costs.

Typical examples of Bohnalite architectural castings are found in spandrels, copings, sills, crestings, grilles, entrances, newel posts and balustrades, cornices and tablets.

A FEW BOHNALITE OR BOHNOLLOY INSTALLATIONS IN RECENT BUILDINGS

Detroit, Mich., Post Office
Post Office Department, Administration Building
Trenton, N. J., Post Office
U. S. Department of Labor, Washington, D. C.
Federal Reserve Bank Building, Philadelphia, Pa.
U. S. Naval Hospital, Philadelphia, Pa.
Pennsylvania R. R., Newark, N. J.
Chicago, Milwaukee & St. Paul R. R.
Portland, Ore., Post Office
Youngstown, Ohio, Post Office
Radio City, Rockefeller Center
Downtown Post Office, New York, N. Y.
University Housing Project, Atlanta, Ga.
Archives Building, Washington, D. C.
State Capitol, Bismarck, N. D.
May Company Store, Cleveland, Ohio
Ford Recreation Building, Dearborn, Mich.
Federal Reserve Bank, New York, N. Y.
Triborough Bridge, New York, N. Y.
Waldorf Astoria Hotel
New York Telegram Building
Key West, Fla., Post Office
U. S. Public Health Service Building
Kill Van Kull Bridge
Cincinnati Union Terminal
Cincinnati Times Star Building
Attica Prison
Greensboro, N. C., Post Office
Altoona, Pa., Post Office
U. S. Botanical Garden, Washington, D. C.
Lincoln Savings Bank, N. Y.
Montgomery, Ala., Post Office
Worcester Art Museum
Pittsburgh, Pa., Post Office
Bankers Trust Co., New York
Soloman Juneau High School
Providence County Courthouse
Jefferson County Courthouse, Texas
Benjamin Franklin Memorial

Jefferson County Courthouse, Beaumont, Tex.

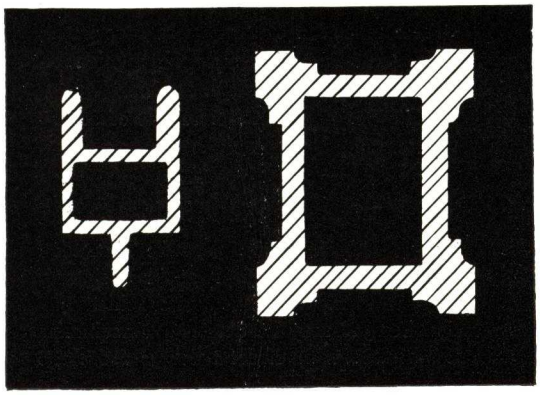
INTEGRALLY EXTRUDED HOLLOW SHAPES

An Exclusive and Revolutionary Bohn Extrusion Development

Again our engineering and research development leads the field. Extruded hollow shapes, all of one piece are now available to the trade.

It is no longer necessary to accept the substitutes of lock seams, dovetail pieces or welded seams.

The tremendous advantages are obvious, typical cross sections of production specimens are shown in the margin.



CHASE BRASS & COPPER CO.

—INCORPORATED—
SUBSIDIARY OF KENNECOTT COPPER CORPORATION
WATERBURY, CONN.

CHASE WAREHOUSES

NEW YORK, N. Y.
BOSTON, MASS.
PROVIDENCE, R. I.
NEWARK, N. J.
PHILADELPHIA, PA.
BALTIMORE, MD.
PITTSBURGH, PA.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DETROIT, MICH.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
ST. LOUIS, MO.
NEW ORLEANS, LA.
HOUSTON, TEX.
LOS ANGELES, CALIF.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.

For Other Chase Pages, see File Index

ECONOMY OF DESIGNING WITH CHASE EXTRUDED SHAPES
In Architectural Bronze

Why These Shapes Are Economical

It is more economical to use extruded bronze in place of cast or drawn shapes. By means of the extrusion process shapes may be formed to a minimum thickness which reduces the tonnage considerably. This results in a substantial savings in costs when a quantity of material is used. The extrusion process also makes it possible to get sharper and cleaner profiles than can be obtained with cast or drawn bronze. This helps toward faithful execution of even the most intricate designs.

On all new extruded shapes it is necessary to add a special charge to cover the cost of new dies. You can eliminate this extra cost by including only standard extruded shapes in your specifications. There are hundreds of Chase Standard sections available in Architectural Bronze. You will find that these standard sections are particularly adaptable to original bronze designs.

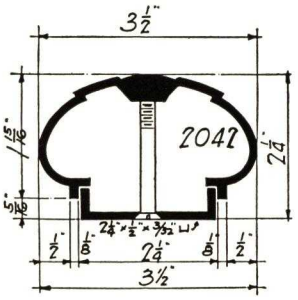
CHASE

Remodeling Work

Chase standard extruded shapes in Architectural Bronze are particularly adapted to remodeling work. Right now in the midst of the extensive modernization movement, the architect can save time and money by specifying these standard sections. There is a wide range of shapes, designed especially for store front construction. Also cornices, door jambs, hand rails and all types of mouldings for interior decorative trim.

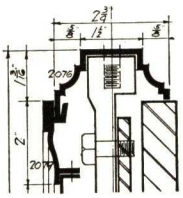
A complete knowledge of Chase extruded shapes will help the architect to take advantage of standard sections on all types of Architectural metal work.

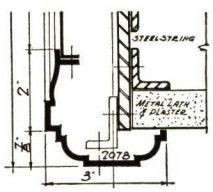
A FEW TYPES OF SHAPES AND USES



Hand Rails

Here is a detail drawing of Chase Hand Rail No. 2042. This is representative of the attractive hand rails available as standard sections. The design of these hand rails is broad enough to permit the architect to select the hand rail needed for a particular style railing.





Railing Bases and Stair String Mouldings

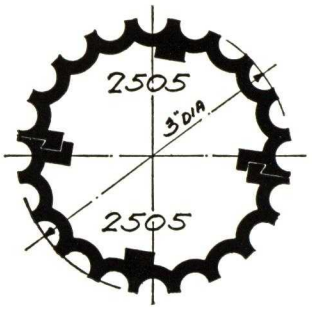
The detail drawing at left center illustrates a section of top of face string showing application of Chase Standard Shapes No. 2076 and 2079.

The detail drawing at lower left illustrates a section of bottom of face string and soffit moulding showing application of Standard Shape No. 2078.

There is also a complete line of standard extruded shapes for railing spindles.

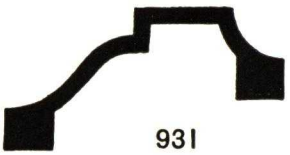
Pilasters

This detail illustrates the method used to produce full round pilasters using two sections of a reversible shape. An assembly of this kind is especially effective when smaller sections are used to form colonettes in conjunction with other members.



Miscellaneous Shapes

There are several hundred miscellaneous standard shapes which can be applied to original bronze designs. This effects a saving in both time and cost. Many of these shapes have two or more applications. For example: Chase Shape No. 935 was used as a window stool nosing and it was also used to produce an attractive bronze trim. Chase Shape No. 931 has been effectively used as a panel moulding.

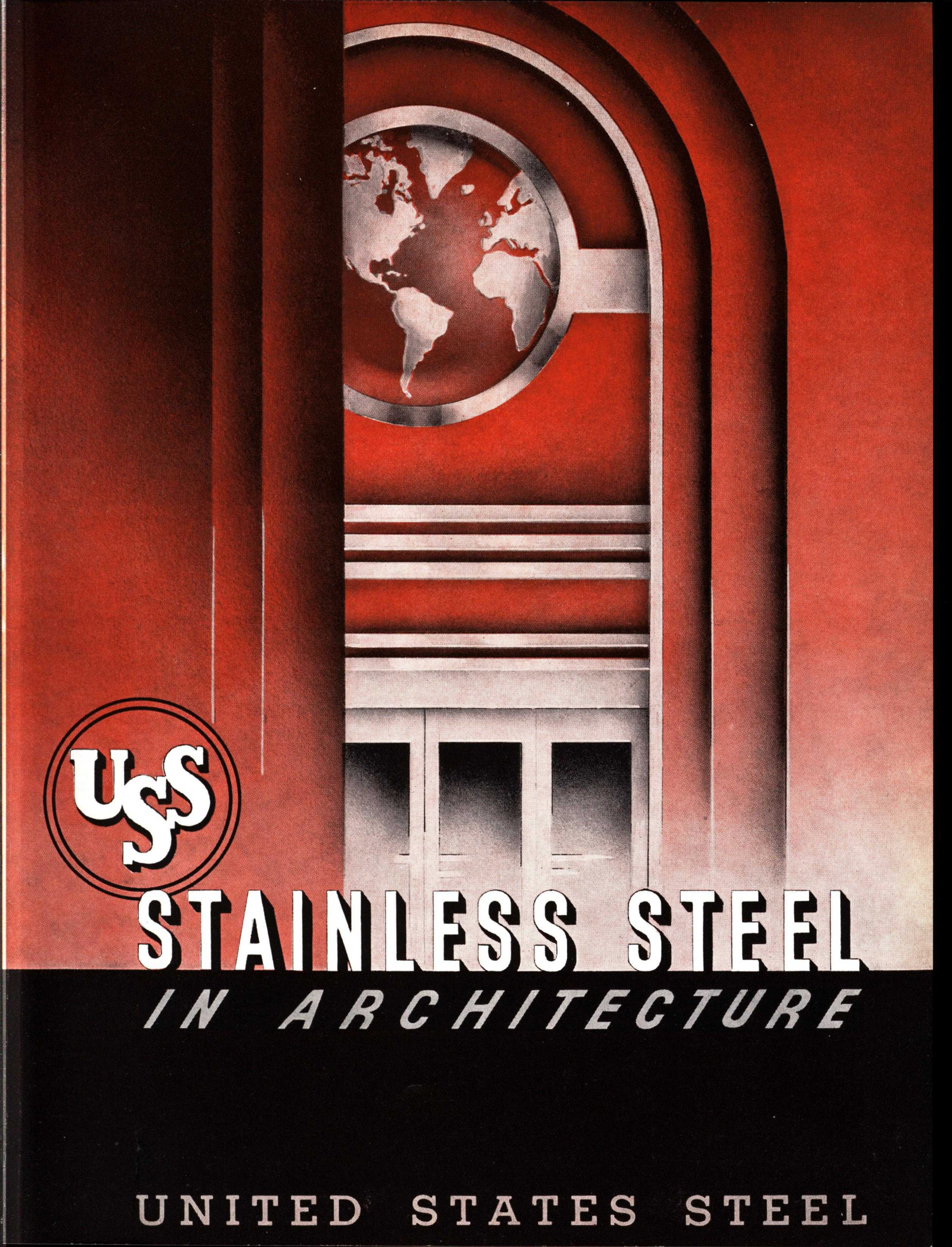


COMPLETE CATALOG OF EXTRUDED SHAPES

The new Chase Catalog of Architectural Bronze Extruded Shapes has been prepared to help the architect in designing bronze work. Illustrations, working drawings and specifications provide tools from which designs may be detailed. Assemblies of standard shapes can be made with direct tracings from the full-size cross sections.

If you are not entirely familiar with the possibilities of extruded bronze shapes, we will be glad to answer any questions and send samples of actual materials.

If you would like a copy of this helpful catalog, please write to CHASE BRASS & COPPER CO., 1938 Malvey St., Waterbury, Conn.



USS STAINLESS STEEL

IN ARCHITECTURE

UNITED STATES STEEL

13/5

WHAT IS USS STAINLESS STEEL ?

The term "stainless steel" identifies a group of alloy steels composed of iron, chromium and usually nickel, together with small amounts of other elements. These steels are characterized by high tensile strength combined with excellent resistance both to corrosion and to heat. U·S·S 18-8, in fact, may be said to approach "the perfect metal" for architectural applications in that it is permanent; it effectively resists all the destructive forces of nature—stress, corrosion, heat, wear and time itself.

The initials "U·S·S" identify stainless steels of accurate composition and carefully controlled heat-treatment, made and sold by the world's largest producers of high grade steels, the subsidiary companies of the United States Steel Corporation.

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Why is Stainless Steel Important to Architects?

THE architect is a creator. That which he creates is intrinsically an idea—a plan for a brighter kitchen, a skillful arrangement to attract traffic into stores, a beautiful, practical, yet strictly functional building. To give his idea physical reality, he is dependent on certain materials which are available to him. The limited physical properties of these available materials, however, impose limitations on his freedom to design, to create as he chooses.

For centuries the architect was dependent largely upon stone. Because stone offered him no strength in tension his columns had to be thick, his arches had to be massive.

Today, the architect is dependent to a great extent on metals which corrode. Because there will be a steady loss of metal his beams, columns, plates and sheets must be specified much thicker than his design actually requires. Because these metals tarnish, he must ordinarily avoid the use of large, exposed metal surfaces.

That is why U·S·S Stainless Steel is important to the architect. Not because it is merely another metal—but because it offers him an important range of properties:

(1) *Corrosion Resistance.* U·S·S 18-8, like glass, is completely impervious to atmospheric corrosion; and like glass, it needs merely a quick wash with soap and water to restore its original brilliancy and sparkle. Costly, laborious polishing is never needed—and since there can be virtually no loss of metal, there is no known limit to the useful life of U·S·S 18-8. Stainless Steel lasts indefinitely.

(2) *Greater Strength.* U·S·S Stainless Steel has a 3 to 1 advantage over most ordinary steels for construction.

(3) *Beauty.* U·S·S Stainless Steels are easily finished in a variety of splendid lustres ranging from glowing satin to high polish; they may be etched, tooled, sculptured and enameled.

U·S·S STAINLESS STEEL CAN REDUCE EXPENSE, SAVE MONEY

While the cost per pound of U·S·S Stainless Steel falls in the same range as that of other so-called "white metals", that is by no means a true measure of its real cost. Owing to its exceptional toughness and high tensile strength, it is often possible to use lighter sections of U·S·S Stainless Steel, which means that there are fewer pounds of metal to buy. Even more important, however, is the fact that the first cost of U·S·S Stainless Steel is virtually the last—there should never be any further expense for repairs, for replacements, nor for polishing. See page 15.

Considering all the factors of expense over the life of an average building, architects have found that for many applications U·S·S Stainless Steel is actually the least expensive metal to use!

SHAPES OF U·S·S STAINLESS STEEL

U·S·S Stainless Steel is usually available for immediate delivery from jobbers' stocks in the common metal forms; sheets, strips, tubular and structural sections. It is available in such a wide range of dimensions that practically any desired structure can be easily fabricated.

RECOMMENDED ANALYSIS FOR ARCHITECTURAL PURPOSES

U·S·S 18-8 (containing approximately 18% Cr and 8% Ni) is recommended for all architectural purposes. This analysis is completely immune to weather, to a wide variety of corrosive agents, and has highly satisfactory physical properties for all structural applications. U·S·S 17 (approximately 17% Cr) is satisfactory for interior applications, where exposure is not severe and cost-reduction an important consideration. It is available in the same finishes, shapes and sizes as U·S·S 18-8.

REASONABLE COST OF FABRICATION

Experienced architectural fabricators are now thoroughly familiar with the properties of U·S·S Stainless Steels, and are in a position to fabricate these metals at reasonable cost by virtually every artifice of the metal worker—welding, soldering, sawing, grinding, polishing, drilling, bending, deep drawing, rolling, etc. Extruded shapes alone are not available.

ARCHITECTURAL CONSULTING SERVICE

As a service to architects who contemplate using U·S·S Stainless Steel, we maintain extensive testing laboratories. Skilled metallurgists and the most complete equipment are available at all times. Thus we are able to assist architects with many problems which they may encounter.

To supplement this, architects will find a competent stainless steel specialist in each of our principal district offices. He can often suggest new ideas and applications for U·S·S Stainless Steel.

PHYSICAL PROPERTIES OF U·S·S STAINLESS STEEL FOR ARCHITECTURAL USES

Metal annealed, unless otherwise noted

Data compiled by Research Laboratory, United States Steel Corporation

ITEM No.	Physical Properties	U·S·S 18-8	U·S·S 17
	Specific Gravity		
1	lb./cu. in.	0.286	0.273
2	*low carbon steel = 1.00*	*1.01*	*0.96*
	Specific Electrical Resistance at 68°F.		
3	microhms/cm.³	70 (cold worked = 70—82)	59
4	microhms/in.³	27.6 (cold worked = 27.6—32.3)	23.2
5	*low carbon steel = 1.00*	*6.4*	*5.4*
6	Melting Range, °F	2550—2590	2710-2750
7	Structure	Austenitic	Ferritic
	Magnetic Permeability		
8	as annealed	$u = 1.003$	Ferromagnetic
9	after 10% reduction of area	$u = 1.10$	Ferromagnetic
	Specific Heat		
10	cal./°C./gm. (0 to 100°C.)	0.12	0.11
11	B.t.u./°F./lb. (32 to 212°F.)	0.12	0.11
12	*low carbon steel = 1.00 (0 to 100°C.)*	*1.1*	*1.0*
	Thermal Conductivity		
13	cal./cm.²/sec./°C./cm., at 100°C	0.0390	0.0583
14	B.t.u./sq. ft./hr./°F./in., at 212°F.	113	169
15	*low carbon steel = 1.00 at 100°C*	*0.33*	*0.49*
16	cal./cm.²/sec./°C./cm., at 500°C	0.0515	0.0624
17	B.t.u./sq. ft./hr./°F./in., at 932°F.	150	181
	Coefficient of Thermal Expansion		
18	per °F.×10⁻⁶ (32 to 212°F.)	9.6	6.0
19	*low carbon steel = 1.00 (32 to 212°F.)*	*1.45*	*0.91*
20	per °F.×10⁻⁶ (32 to 932°F.)	10.2	6.7

	Mechanical Properties at Room Temperature	Annealed	Cold Worked	Annealed	Cold Worked
21	Tensile Strength, 10^3 lb./sq. in.	80–95	105-300	75	100–190
22	Yield Point, 10^3 lb./sq. in.	35–45	60–250	40	.....
23	Modulus of Elasticity, 10^6 lb./sq. in.	29	.....	29	.....
24	Elongation in 2 in., %	55–60	50–2 (10")	27	25–2 (10")
25	Reduction of Area, %	55–65	65–30	55	40–20
26	Charpy Impact Strength, ft.-lb.	.....	.....	...	.....
27	Izod Impact Strength, ft.-lb.	75–110	.....	8–25	.....
28	Endurance Limit (Fatigue), 10^3 lb./sq. in.	35	94	50	.....
29	Brinell Hardness Number	135–185	170–460	175	185–270
30	Rockwell Hardness Number	B75–90	C5–47	B85	B90–105
31	Erichsen Value, mm.	11–14	.....	7–9	...
	Stress Causing 1% Elongation (Creep) in 10,000 Hours				
32	At 1000°F., lb./sq. in.	17000		8500	
33	At 1200°F., lb./sq. in.	7000		2100	
34	At 1350°F., lb./sq. in.	3000		1200	
35	At 1500°F., lb./sq. in.	850		....	
36	Scaling Temperature, °F. (approximate)	1650		1550	
37	Initial Forging Temperature, °F.	2200		2000	
38	Finishing Temperature, °F.	Not under 1600–1700		Not over 1400	
39	Annealing Treatment	Heat to 1900–2000°F. and quench		(A)	
40	Precautions	(B)		(D)	

(A) Anneal at 1400°F. after a small cold reduction, and quench.

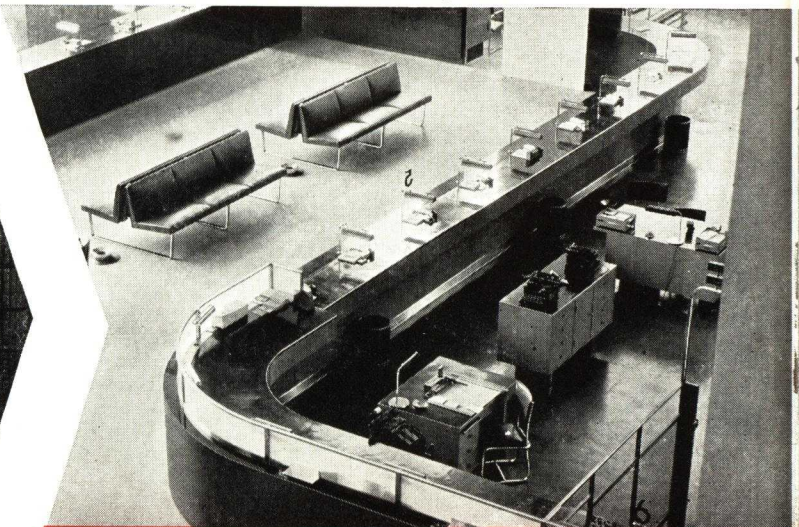
(B) Preheat slowly to 1600°F., then heat rapidly to the forging or annealing temperature. Exposure to temperatures between 1000 and 1500°F. produces marked susceptibility to intergranular corrosion. If the metal is unattacked, this can be cured by repeating the annealing treatment.

(C) Preheat slowly to 1450°F., then heat rapidly to 2100°F. for forging. Full corrosion resistance is developed only in the heat treated condition. (Temper below 1000°F.)

(D) In forging, preheat slowly to 1450°F. Excessive grain growth takes place above 2000°F. Expert welding is required to avoid excessive grain growth. Prolonged exposure at 850 to 950°F. produces cold brittleness. To prevent this, heat to 1400°F. before cooling, and quench.

Annealed unless otherwise noted. Data compiled by Research Laboratory, United States Steel Corporation

Beauty and utility are combined in this awning frame made of polished seamless stainless tubing. The lacing is so designed that the brilliant rafters are visible from below.



Counter trim, signs, numerals and rails of U·S·S Stainless Steel contribute to the inside atmosphere of the Philadelphia Saving Fund Society's spacious main banking room.

STANDARD SURFACE FINISHES OF

USS STAINLESS STEEL

Tube and sheet surface finishes on same horizontal line have approximately the same appearance.

For architectural applications, finishes 4, 6 and C are generally considered the best. Their rich satin luster is attractive, easy to clean, not easily marred.

Finishes 7 and D have a high polish which is suitable where pronounced accent and brilliant luster are desirable. This high polish, however, is obviously more easily marred by scratching than satin finishes.

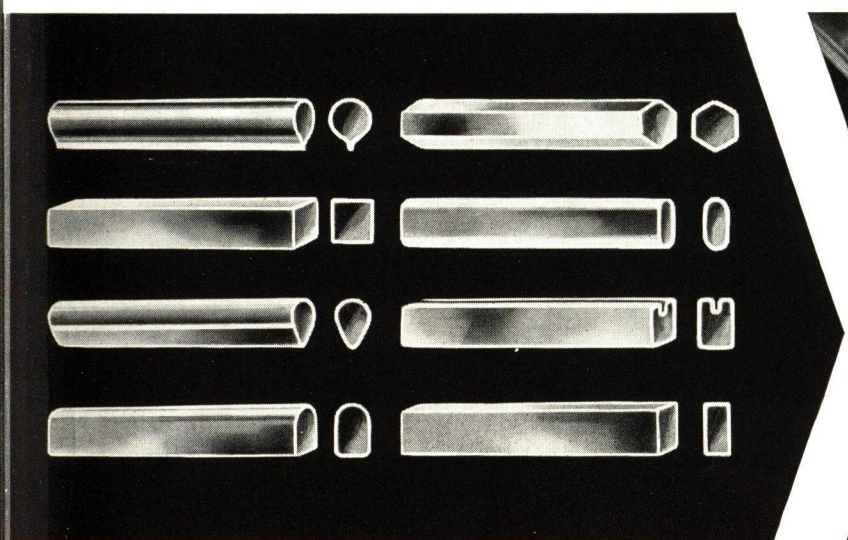
The other finishes are intermediate mill surfaces recommended where fabricating would damage one of the above finishes. In these cases, the final finish is applied in the fabricator's shop after fabrication.

It is not possible to illustrate these finishes adequately on the printed page. We shall, however, gladly send you samples on request.

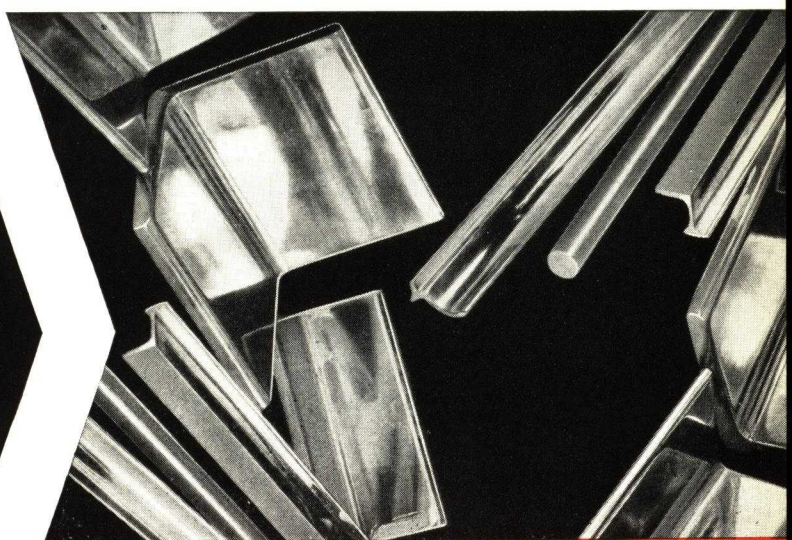
Finish Designation	PIPE AND TUBES	Finish Designation	STRIP, SHEETS AND LIGHT PLATES
0	Hot Rolled—Annealed—Not Pickled		
1	Hot Rolled—Annealed—Pickled	1	Hot Rolled—Annealed—Pickled
2	Cold Drawn—Annealed—Pickled	2-D	Full Cold Rolled—Annealed—Pickled—Dull Finish
2-A	Cold Drawn—Not Annealed—Pickled (Hard)	2-B	Full Cold Rolled—Annealed—Pickled—Bright Finish
A	Standard Ground Finish (80 Grit)		
B	Semi-Polished Finish (120 Grit)	4	Standard Polish Finish
C	Standard Polished Finish (180 Grit)	6	Standard Polished Finish—Tampico Brushed
D	Mirror Polish—Very Finely Ground (320 Grit) and Buffed	7	Special Polished Finish—Buffed

SOME STANDARD SHAPES

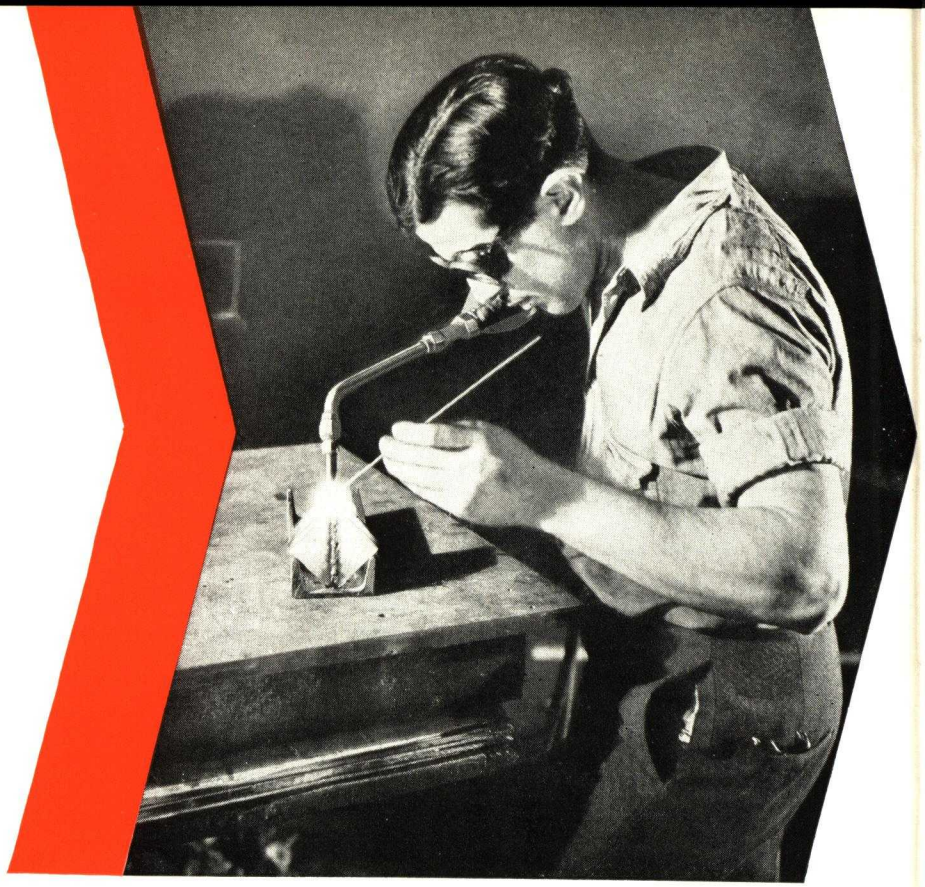
Below are shown a few of the many shapes in which U·S·S Stainless Steel may be obtained. For further details, consult with your fabricator or communicate with our nearest district sales office.



Here are a few of the many shapes of seamless tubing which are made of U·S·S Stainless Steel and may be adapted to architectural purposes.



For trim and fittings to suit the modern taste in enduring brilliance, shapes like these of U·S·S Stainless Steel satisfy the most discriminating builder.



FABRICATING

Annealing: To anneal U·S·S 18-8 Stainless Steel properly, the entire work should be heated to approximately 1950° F. and then cooled as rapidly as possible, preferably by quenching. This annealing eliminates any hardening or strain which previous cold work may have caused, restores the stainless alloy to a complete austenitic structure of proper grain size—the structure of a maximum ductility, softness and corrosion-resistance.

Soldering: In spite of its highly impermeable surface, U·S·S 18-8 may easily be soldered if the surface is thoroughly cleaned and etched with a suitable acid (e.g. hydrochloric acid plus zinc chloride or 10% phosphoric acid). The zone to be soldered must be thoroughly etched—but it must be remembered that the etching fluid is highly corrosive. For this reason, care should be taken not to etch beyond the zone to be soldered and the flux must be thoroughly cleaned with dilute alkali immediately after soldering. Soldering, however, does not make a strong joint, and should ordinarily be used only to seal a joint secured by riveting or spot welding. 75% tin—25% lead solder is recommended because it discolors less rapidly. Stainless steel may be silver soldered, etc., with special hard solders and fluxes available for this purpose from commercial suppliers.

Cutting Operations: U·S·S 18-8 may be sawed, machined, drilled and threaded; but it is necessary to keep in mind that this metal is exceptionally strong and tough, and that it hardens quickly under cold work. For these reasons, the art of cutting U·S·S 18-8 may be summed up by these recommendations: (1) reduce cutting speeds, (2) take heavy cuts, (3) use sharp high speed tools, and (4) a generous rake and clearance. In sawing, for example, the saw should be heavily weighted and so applied that the first stroke definitely cuts the metal. A wavy set saw is recommended. If the saw is allowed to ride over the work without deep cutting, the stainless steel will quickly work-harden and become more difficult to cut. It may be cut dry, or with lard oil-sulphur lubricant. Tools should be sharp and kept sharp. A moderate amount of heating will make the cutting even easier.

Passivation: During fabrication operations, particles of base metals may become imbedded in the surface of stainless steel. These contaminating metals may, of course, corrode or discolor and give the false impression that the stainless steel itself is being corroded. Exposure for ten to fifteen minutes to 10-20% nitric acid (125-140° F.) will dissolve these particles and eliminate this potential source of trouble; it also passivates the surface of the stainless steel, giving it its highest degree of corrosion-resistance. Where dipping is impractical, the surface may be swabbed for five to ten minutes. The nitric acid treatment should always be followed by a thorough hot-water rinse.

Pickling: For pickling U·S·S 18-8 a hot solution is necessary. We recommend two solutions: 10% sulphuric acid with 10% common salt; or 20 parts of commercial nitric acid, 1 to 4 parts hydrofluoric acid plus water to make 100 parts by volume. Pickling should continue until scale is loosened and the remaining scale thoroughly scrubbed off. After pickling, the stainless steel should be well rinsed in hot water, passivated by a few minutes dip in 10-20% nitric acid (125-140° F.), and then given a thorough final hot water rinse.

Punching and Shearing: For best results the engaging parts employed for shearing and punching should engage more neatly and with less clearance than those used for ordinary steel. It is particularly important that punches be kept very sharp and be set so as to cut completely through the metal, since U·S·S 18-8 will not snap out or break through as ordinary steels do. The exceptional ductility of U·S·S 18-8 may cause the metal to drag if these precautions are not observed.

Riveting: U·S·S 18-8 is well adapted to riveting, either hot or cold. Rivets up to ¼" may be driven cold; hot rivets should be heated out of contact with a flame to 2100° F. and be set before they cool below 1800° F.

Forging: U·S·S 18-8 is readily forged at 2250° F., although it forges more slowly and will require more hammer blows, owing to its unusually high strength at high temperatures. Heating requires a longer time than is allowed for ordinary steels. Soaking at 1500° F. is recommended, to be followed by rapid heating to 2250° F. It is advisable to reheat, if the work cools, to 1750° F. before the forging is completed.

Polishing: Polishing technique will vary greatly with the contour of the surface and the type of finish desired. Silicon carbide and aluminum oxide type abrasives are the most suitable; coarser grits may be used dry, finer grits and buffing on a soft grease wheel with high-softening-point stearic base grease. Abrasives must be iron-free; otherwise the surface may be contaminated with iron compounds which will rust or discolor. Since high grinding speeds may roughen the surface of stainless steel, speeds during grinding should not exceed 8000 feet

USS STAINLESS STEEL (U·S·S 18-8)

per minute; during buffing, not over 12,000 feet per minute. For buffing use "white rouge" or "green rouge"—never red, because of its iron content. To avoid scorching, open, well-ventilated wheels should be used since stainless steels are poor conductors of heat.

Spinning: Owing to its high ductility U·S·S 18-8 is well adapted to spinning but will, of course, require more power. Large radius spinning tools and slower speeds are advisable. Lubrication is desirable. We recommend equal parts by volume of lithophone and linseed oil. If the stock becomes excessively work-hardened before the desired deformation is obtained, it should be thoroughly cleaned, annealed at 1950° F. and quickly cooled in the air or by a water quench. The entire stock should be raised to the indicated temperature. This treatment will restore the stainless alloy to its original soft, ductile condition.

Welding: U·S·S 18-8 is well adapted to welding by electric resistance, electric arc, acetylene or atomic hydrogen methods; it cannot be hammer welded satisfactorily.

Surfaces should be thoroughly cleaned; in gas welding the flame should be as small as possible and practically neutral (reducing flames contain carbon, oxidizing flames may cause porosity), and it should be directed toward the unfinished work to avoid excessive heating. Do not puddle the weld. In electric welding the work should be negative; a current of about 40 amperes at 35 volts (open circuit) is generally satisfactory for a 3/32" rod, the current increasing with the rod diameter.

After welding, the bead should be ground flush with the surface and all oxide or discoloration adjacent to the weld removed. Puddling must be avoided.

CORROSION RESISTANCE

U•S•S STAINLESS STEEL RESISTS MANY TYPES OF CORROSION

Data on resistance of U·S·S Stainless Steel to many corrosive agents commonly encountered in architectural applications.

The following data are results of laboratory tests conducted by Fried. Krupp A.G. Since actual service conditions are not always exactly duplicated in the laboratory, these data should be considered indicative rather than positive. Most important to architects is the fact that U·S·S 18-8 is permanently immune to atmospheric corrosion, never pits nor tarnishes, looks "brand new" forever.

A—Fully resistant (less than .00035" penetration per mo.)
B—Satisfactorily resistant (less than .0035" penetration per mo.)
C—Fairly resistant (less than .010" penetration per mo.)
D—Slightly resistant (less than .035" penetration per mo.)
E—Not resistant (less than .35" penetration per mo.)

Substance	Condition	Temp. F.	U·S·S 18-8	U·S·S 17
Acetic Acid	5% Agitated	70°	A	A
	5% Aerated	70°	A	A
	20% Aerated	70°	A	A
Acetic Vapors	100%	Hot	E	—
Acetone		Boiling	A	—
Alcohol Ethyl		70°	A	A
		Boiling	A	A
Alcohol Methyl		70°	A	A
Ammonia				
	All Concentrations	70°	A	A
	Gas	Hot	D	D
Aniline	3%	70°	A	A
Beer			A	—
Benzene		70°	A	A
Benzol		Hot	A	A
Blood (Meat Juices)		Cold	*A	A
Buttermilk		70°	A	A
Butyric Acid	5%	70°	A	A
	5%	150°	A	A
Calcium Hydroxide (Lime)	10%	Boiling	A	—
	20%	Boiling	A	A
	50%	Boiling	C	—
Carbolic Acid C.P.		Boiling	A	—
	Raw	Boiling	A	—
	C.P.	70°	A	A
Carbonated Water			A	A
Carbon Tetrachloride		70°	A	A
	Aqueous Solution 5-10%	70°	*C	C
Cellulose			A	A
Chlorinated Water				
	Saturated	70°	*C	D
Chloroform		70°	A	A
Chromium Plating Bath		70°	A	—
Cider		70°	A	A
Citric Acid	5% Still	70°	A	A
	5% Still	150°	A	A
	15%	70°	A	—
	15%	Boiling	B	A
	Concentrated	Boiling	C	—
Coca Cola Syrup (Pure)		70°	A	A
Coffee		Boiling	A	A
Creosote (Coal Tar)		Hot	A	—
Developing Solutions		70°	A	A
Dyewood Liquor		70°	‡A	—
Epsom Salt		Hot & Cold	A	A
Ether		70°	A	A
Fruit Juices		70°	A	A
Fuel Oil		Hot	A	—
Gasoline		70°	A	A
Glue—Dry		70°	A	A
Glycerine		70°	A	A
Hydrogen Sulphide—Dry			A	A
	Wet		‡B	B
Ink			‡B	—
Iodine			E	E
Kerosene		70°	A	A
Ketchup Still		150°	A	A
Lard		70°	A	A
Mayonnaise		70°	A	—
Milk Fresh or Sour		Hot or Cold	A	A
Mixed Acids				
	53% H_2SO_4—45% HNO_3	Cold	B	B
Molasses			A	A
Mustard		70°	A	A
Nitric Acid	5% Solution	70°	A	A
	50% Solution	70°	A	A
	50% Solution	Boiling	A	A
	65% Solution	Boiling	D	D
Oils, Vegetable, Mineral		Hot & Cold	‡A	A
Paraffine		Hot & Cold	A	A
Rosin		Molten	A	A
Sewage			‡A	—
Soap		70°	A	A
Sugar Juice			A	A
Tannic Acid		70°	A	A
Varnish		70°	A	—
Vegetable Juices			A	—
Vinegar		Hot	A	—

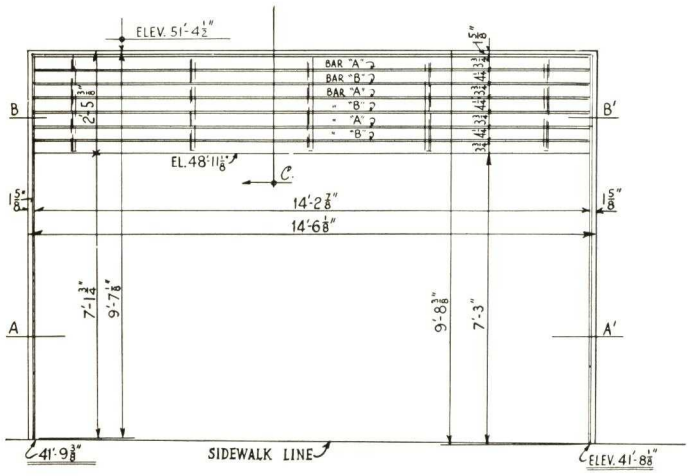
*Subject to pitting at air line or when allowed to dry.

**Keep solutions alkaline.

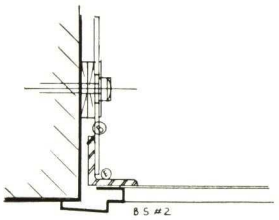
‡May attack when sulphuric acid is present.

(More complete data in booklet "U·S·S Stainless and Heat Resisting Steels in the Process Industries")

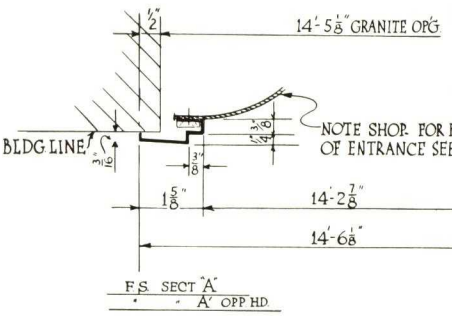
In the Chrysler Building, New York, this distinctive entrance of U·S·S Stainless Steel, fabricated by the General Bronze Corporation, Long Island City, invites visitors into a modern automobile showroom. U·S·S Stainless Steel is used in the revolving door, the entrance at the left and other trim, because of its enduring, easy-to-clean brilliance.



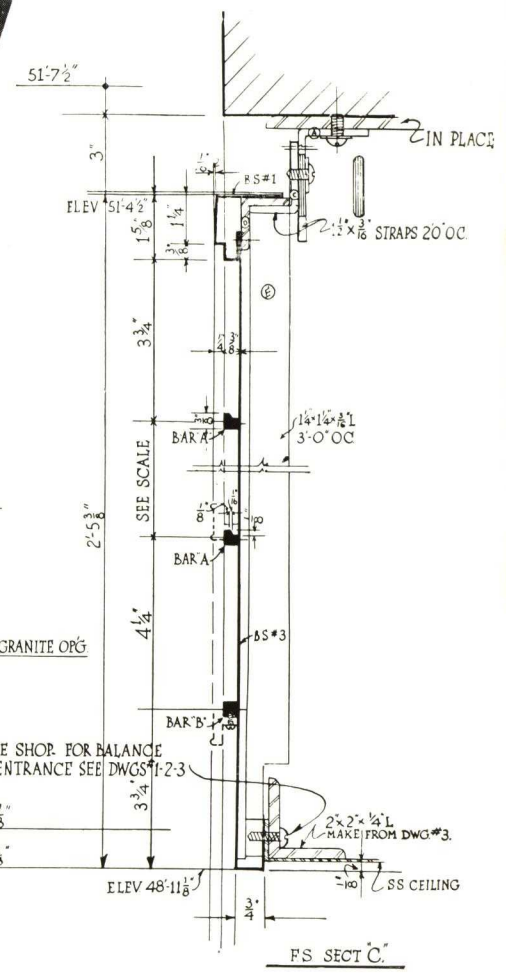
ELEVATION



F. S. SECT "B"
" " B' OPP HD.



F.S. SECT "A"
" " A' OPP HD



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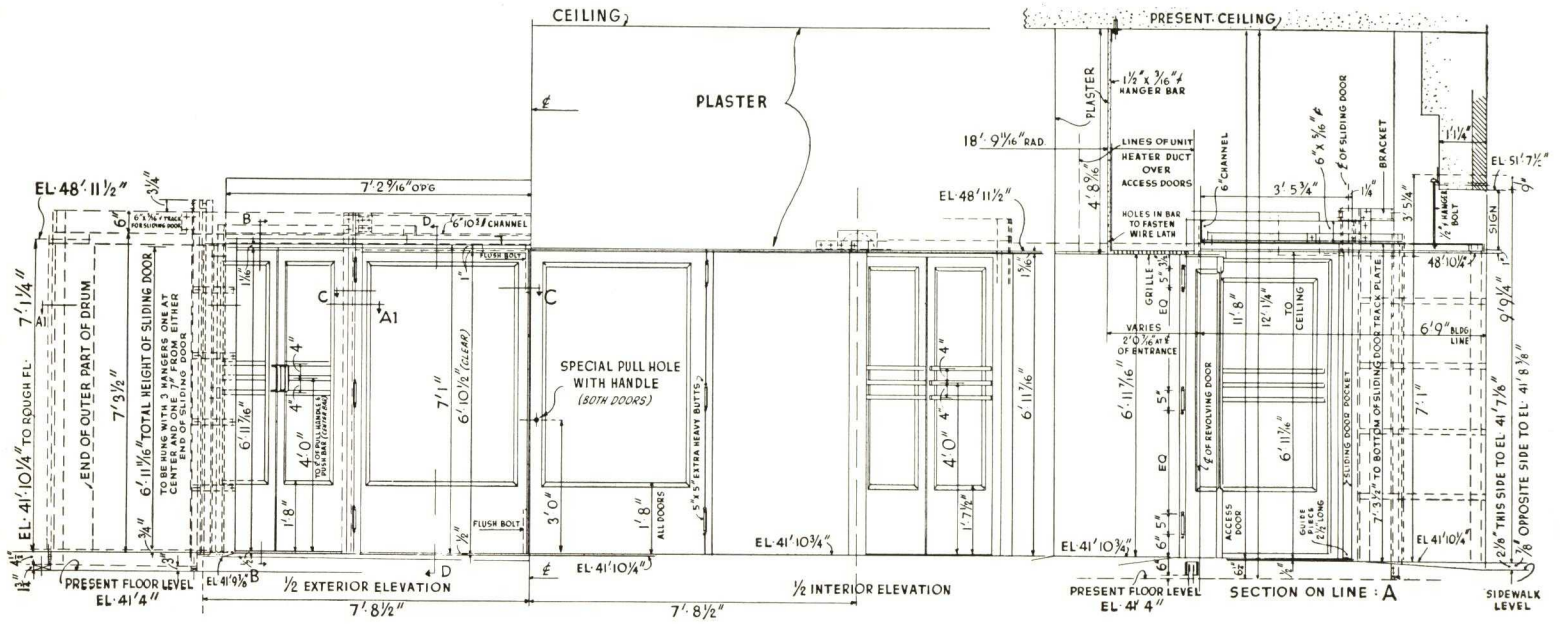
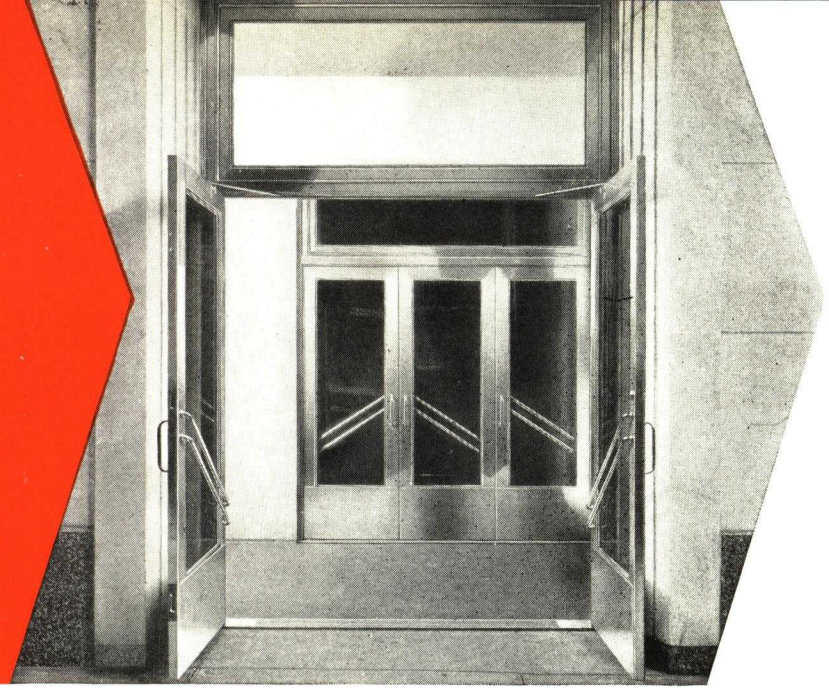
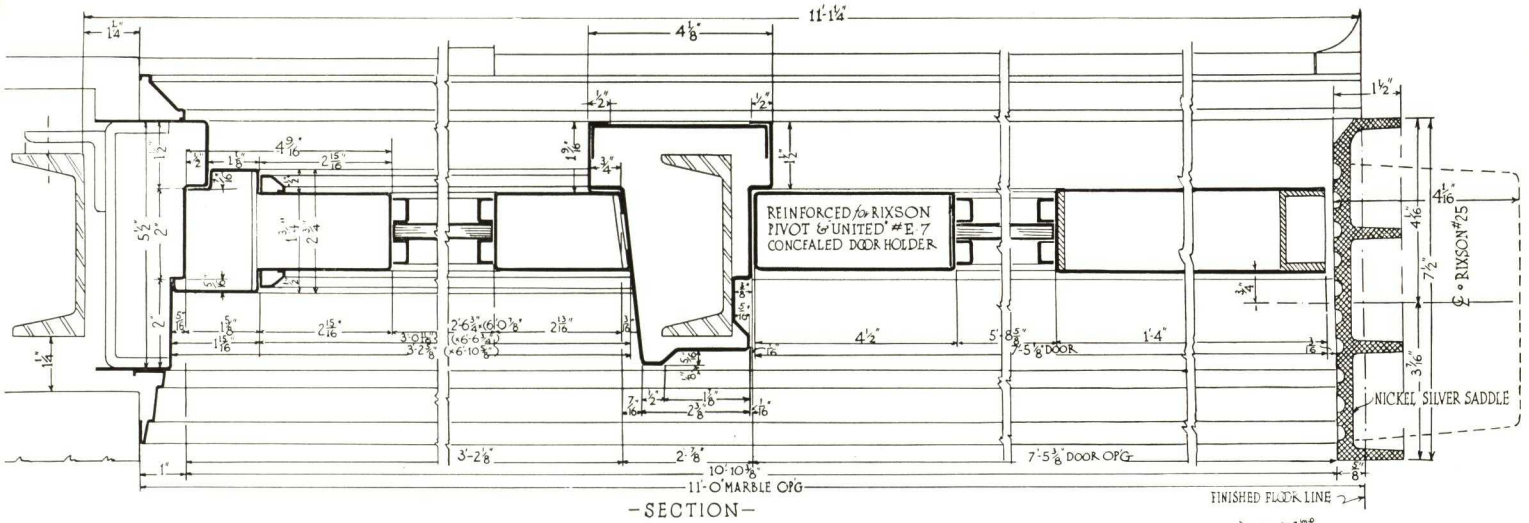


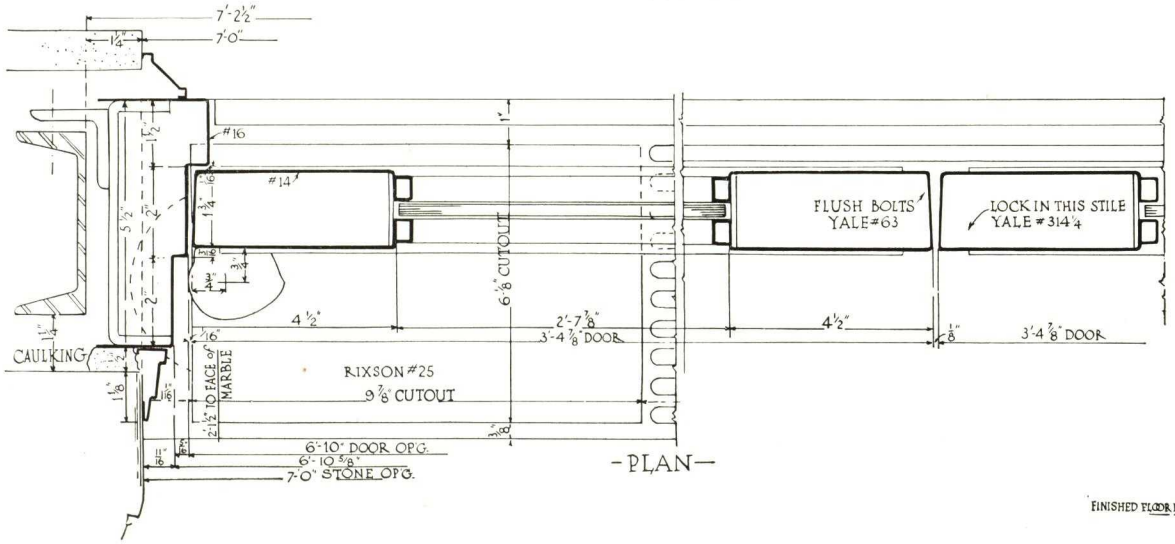


The owners of this office building at 135 Madison Avenue, New York, find that U·S·S Stainless Steel is the only economical material for their entrance. A great labor saving in cleaning supplements the added attractiveness to tenants which gleaming stainless steel affords.

Below are the shop drawings of the entrance of U·S·S Stainless Steel at 135 Madison Avenue. The fabricators were the Superb Bronze & Iron Works, Brooklyn. Note how simple and sturdy this easily fabricated entrance appears . . . and appearances tell a true story, for brilliant U·S·S Stainless Steel will not tarnish, will outlast most buildings. That's real economy!



—SECTION—



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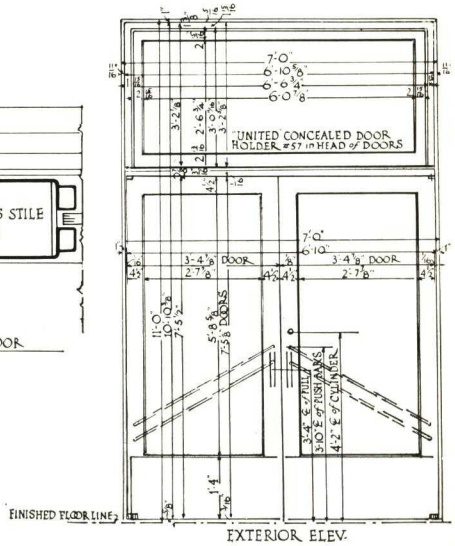
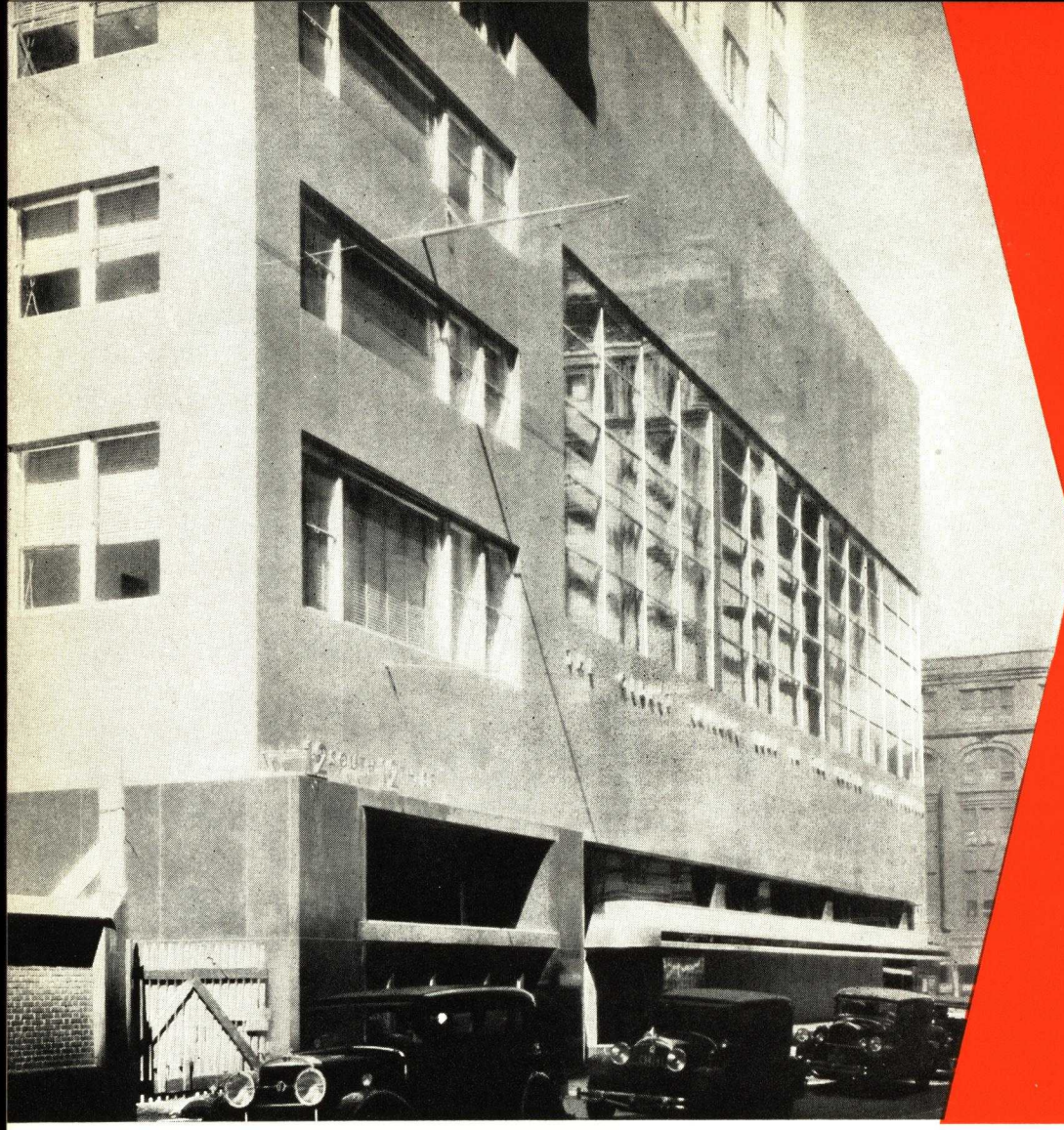
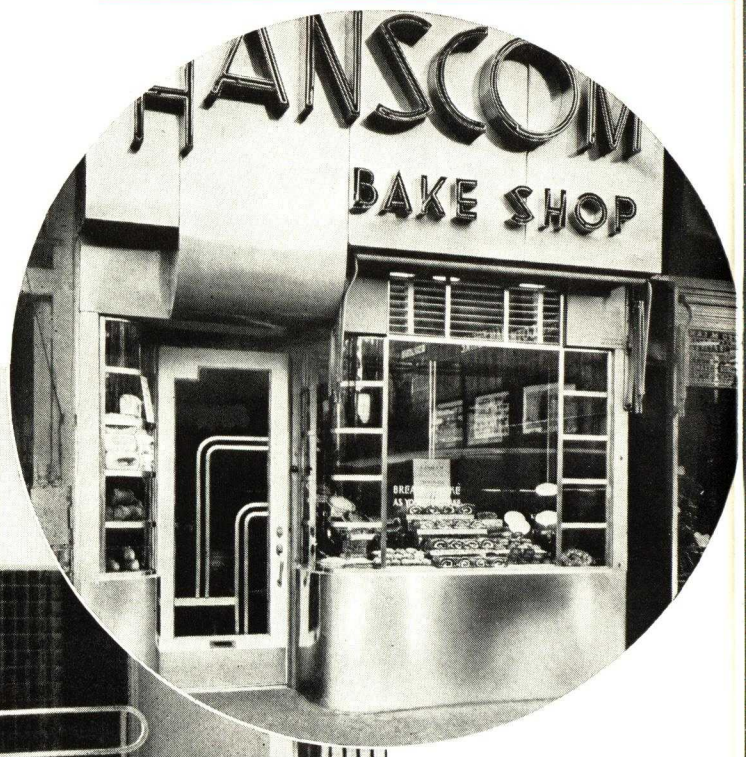


EXTERIOR USES OF U·S·S STAINLESS STEEL

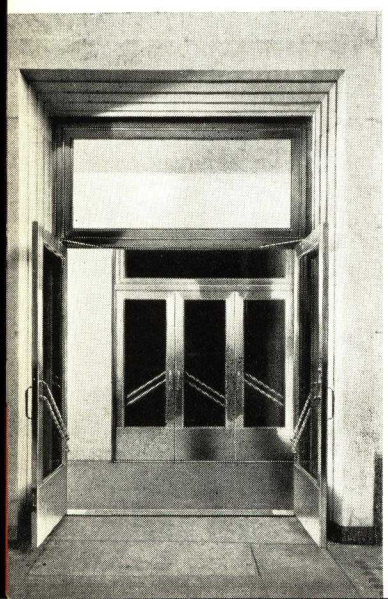


A modern skyscraper looks no better than its trim. Here stainless steel on the marquee and letters, as well as on window frames, adds a sparkling note to the building designed by William Lescaze.

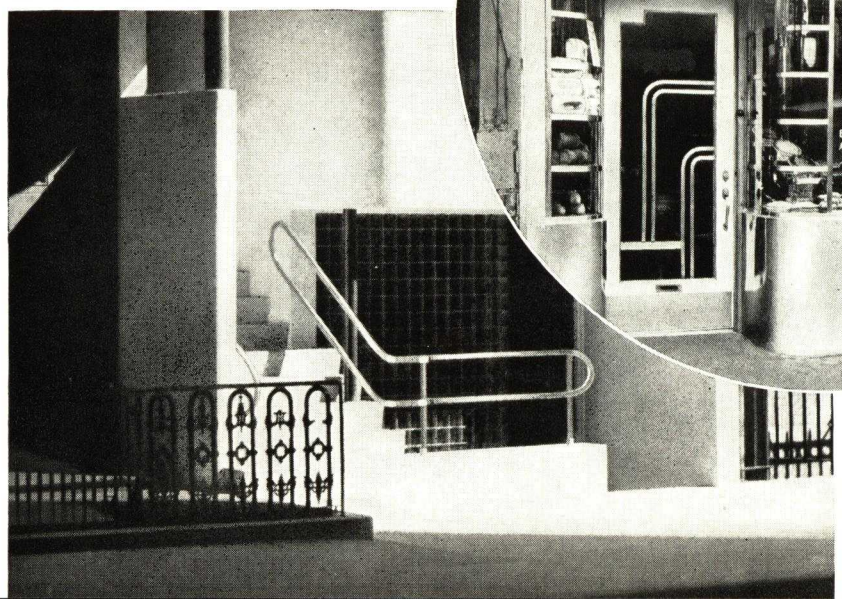


This smart chain bakery attracts customers by highlighting its small location with a front of U·S·S Stainless Steel.

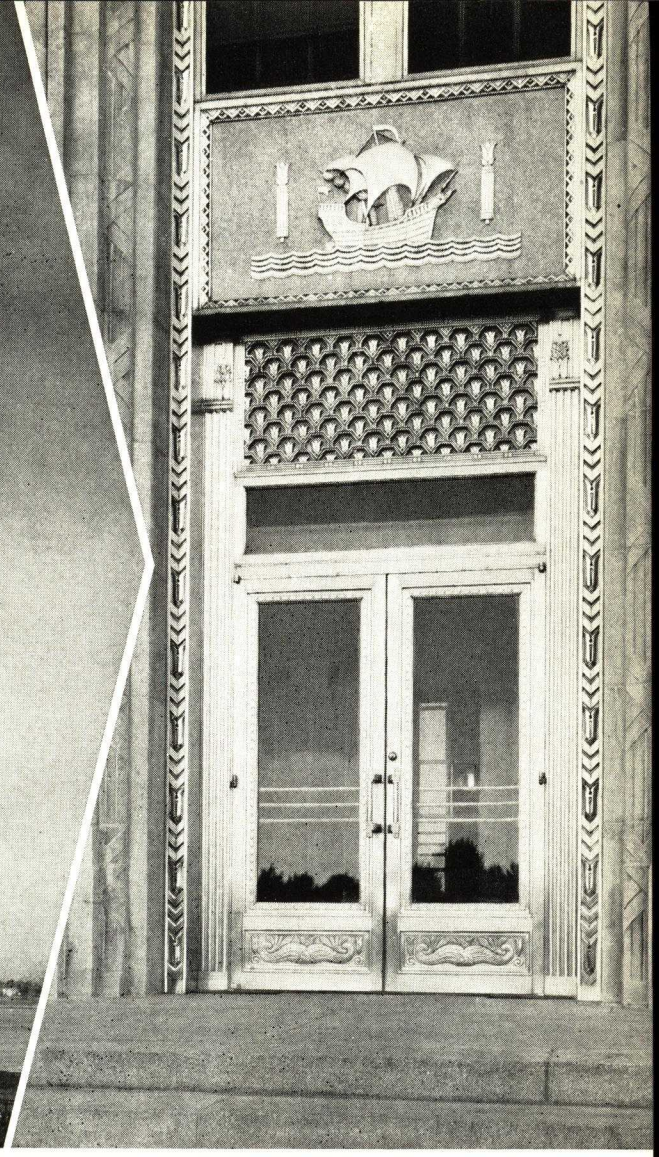
So simple a doorway as this is made beautiful by the use of stainless steel doors and trim. U·S·S Stainless Steel, of course!



U·S·S Stainless Steel (here used for handrail) is functionally correct for this house designed by William Lescaze because it is tarnish-proof, strong, and specifically adapted to simplified design.



An outstanding example of government architecture is the newly completed Marine Hospital on Staten Island, where U·S·S Stainless was used for roofing sheets as well as for the trim and molding on the lamp at the top of the building.



The doorway of the Marine Hospital reveals how stainless steel may be used symbolically to express a nautical theme. The stainless steel doors are easy to clean and are permanently inviting.

THERE is a freedom and beauty in architecture that is more apparent today than ever before, and in this new freedom materials play an important part. Architects designing for U·S·S Stainless Steels have found that forming, working and fabricating problems are simplified with these permanent alloys. Also, corrosion, once considered one of the necessary evils in construction, is a relic of the past. With U·S·S Stainless Steel, wasteful corrosion is eliminated.

When considering the medium with which the most attractive, modern and durable effects for building exteriors may be obtained, four features are of benefit to architects:

(1) U·S·S Stainless Steel is available in any finish from dull satin to high polish.

(2) This metal is so strong that its use in thin sections will materially lighten heavy canopies, marquees and hanging.

(3) It is ideally suited for bright-metal towers, flag-poles, facades, marquees; in fact in any installations which are inaccessible for cleaning.

(4) Stainless Steel is the only commercial metal which is permanently brilliant.

These new properties free the architect from the limitations imposed by older, less adaptable materials. U·S·S Stainless Steels give a new freedom to design and open new opportunities for architects to obtain new effects.

Commenting upon the application of stainless steel in the Chrysler Building, New York City, Frank B. Rogers, Vice President of the Chrysler Building Corporation, writes (in part):

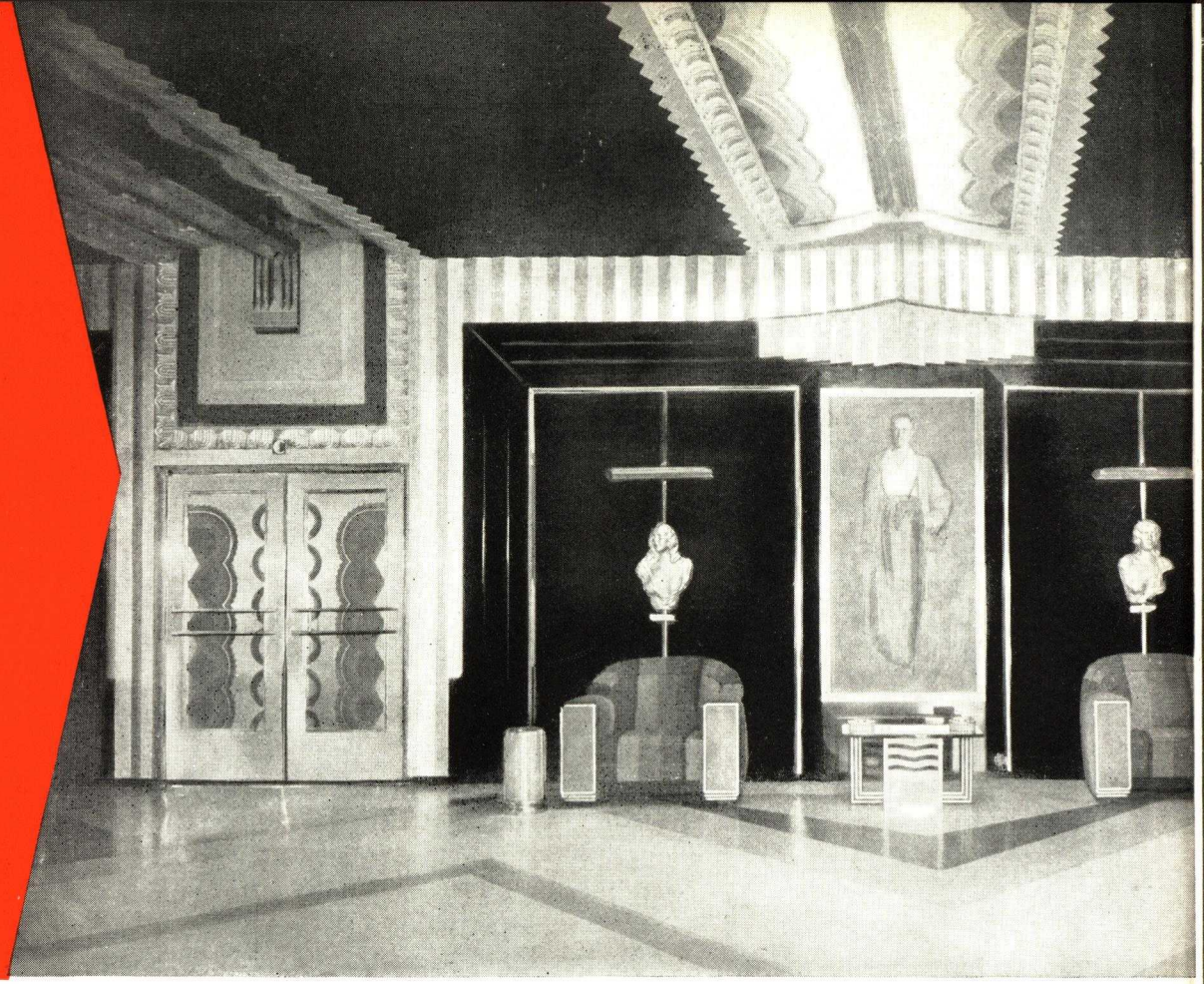
"More than seven years have elapsed since the completion of the Chrysler Building in which we made extensive use of 18-8 Chrome-Nickel Steel. It has been satisfactory from every standpoint.

"There was no pitting, corrosion or other deterioration apparent; the surface when wiped appeared the same as when installed.

"To summarize, I should say that we are well pleased in every respect with the selection of 18-8 Chrome Nickel used in the Chrysler Building, and have recommended its use to others on numerous occasions."

13/5

INTERIOR USES OF USS STAINLESS STEEL



The foyer of this modern theater with its painting in a stainless steel frame, stainless steel doors and ornamental trim has proved attractive to visitors from all over the country. New Ziegfeld Theater, New York City.

THEORETICALLY an architect's work is done when the building which he has planned is complete. However, it is his creation, and his name and reputation are dependent upon its performance. If maintenance and operating costs are minimized, if pen-and-ink drawings turn into structural realities, if the client is pleased, not alone at first, but permanently, the architect has done his job well. As the result of one successful structure, many prospective building owners will seek his counsel.

For this reason, it is imperative that only the best, most satisfactory materials be used. Knowing and appreciating the value of superior materials, leading architects specify U·S·S Stainless Steel.

No other known metal can supply such completely modern and beautiful interior designs as stainless steel. With its rich, lustrous finishes, polished or dull, this metal lends warmth and dignity to any interior.

Furthermore, U·S·S Stainless Steel is just as practical as it is beautiful, and in many installations has proved itself to be a most valuable asset to the client's business. For instance—in restaurants. Here cleanliness is of prime importance. The appearance of the building is often the deciding factor between the business' success or failure. The fresh, gleaming appearance of U·S·S Stainless Steel is in itself convincing testimony as to the quality of the owner's merchandise. Architects render a valuable service to clients by designing for U·S·S Stainless Steel, not alone in dining rooms, but in the kitchens where food contamination and spoilage must be completely eliminated.

Ease of fabrication, negligible maintenance costs and permanence combine to make this new metal ideally suited to the creative instincts of every architect.

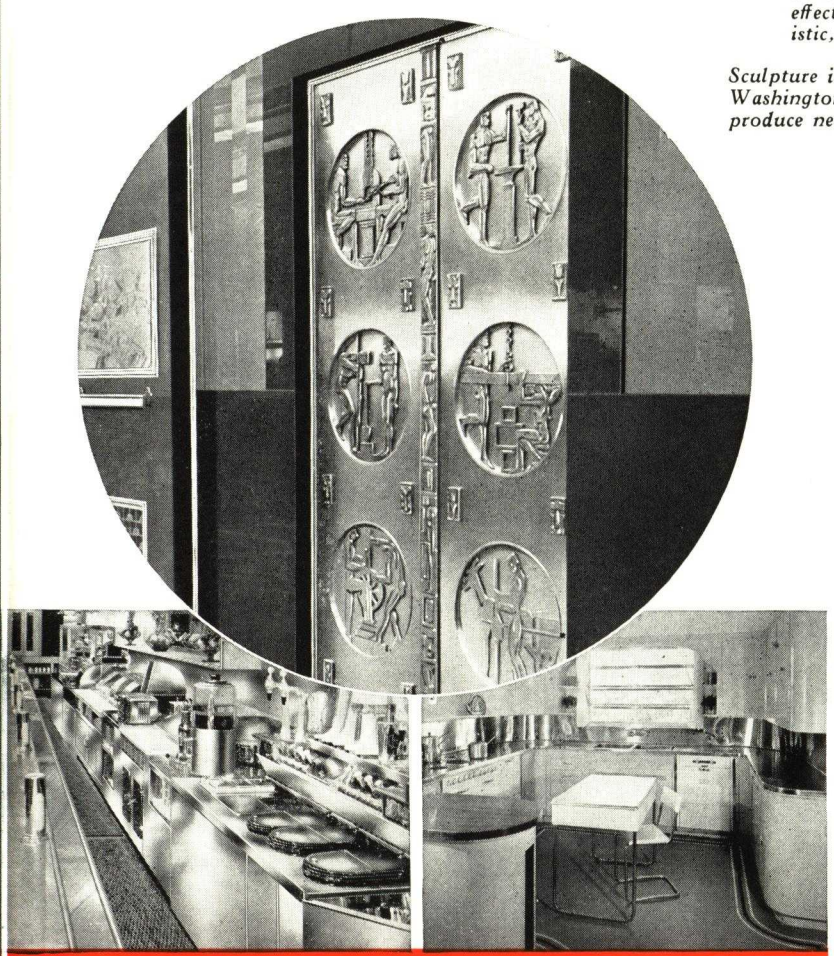
Use U·S·S Stainless Steels for interior decoration on stairways, door knobs and handles, lighting fixtures and switch plates, grilles, panels in kitchens for sinks, table tops, drain boards, etc., in bathrooms for basins, towel holders, soap trays. Where beauty is desirable and durability is important, your answer is stainless steel. Use U·S·S Stainless Steels for interior decorations with full confidence that they will enhance the appearance and lengthen the life of any building which they adorn.

Even a modest home can revel in a kitchen equipped with sideboards, drain-boards and sinks of U·S·S Stainless Steel, because stainless steel is the only metal which is immune to food products, wear-proof and everlastingly bright!

In the observation car of a streamlined train, U·S·S Stainless Steel has been effectively employed not only to brighten the interior, but to provide modernistic, comfortable furniture and gadgets for travelers.

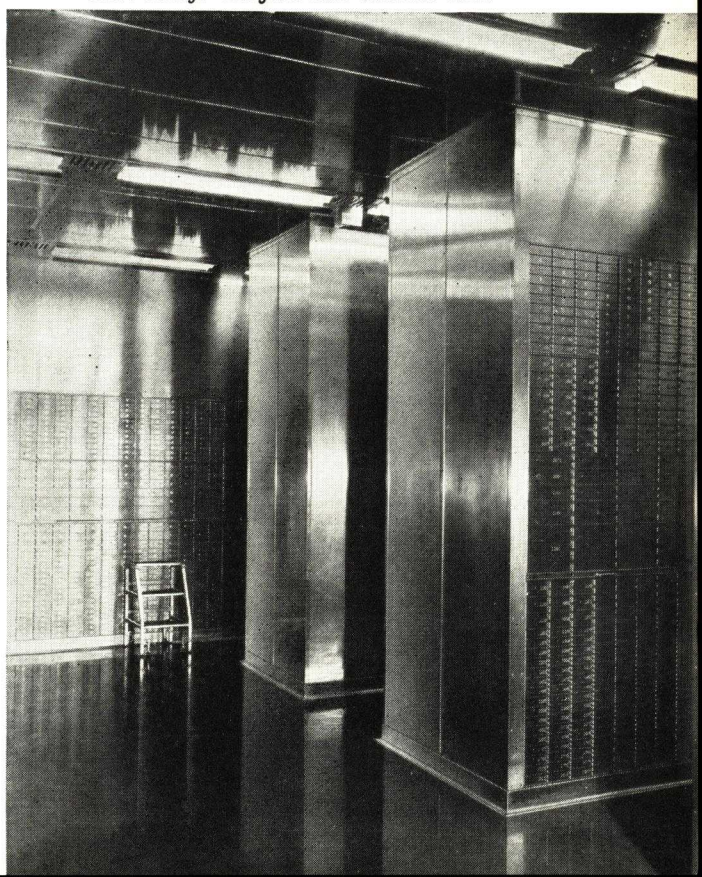
Sculpture in stainless steel—in the Permanent Exhibition of Stainless Steel in Washington. U·S·S Stainless Steel may be etched, tooled or enameled to produce new, beautiful effects.

In the vaults of this modern bank, U·S·S Stainless Steel not only is attractive, but makes the bank officials sleep more easily. Burglars hate stainless steel!



A drug store where many hungry patrons are served makes effective use of stainless steel for counters, food cabinets, stoves, toasters, faucets and elsewhere.

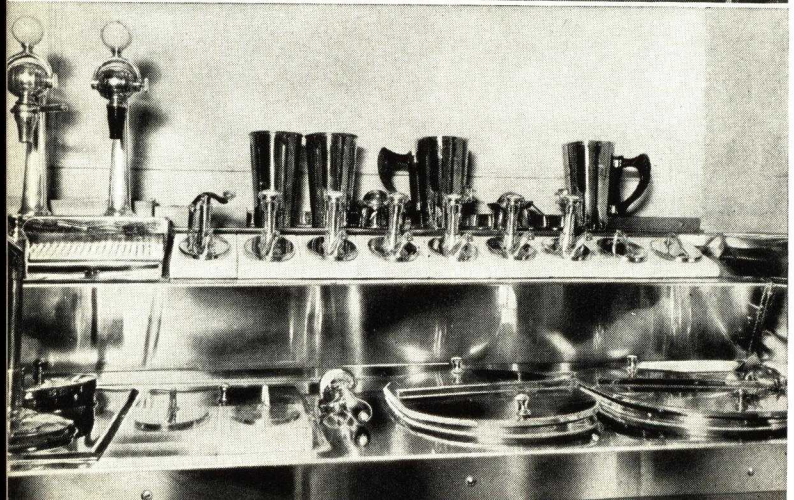
In this Santa Monica, California, penthouse U·S·S Stainless Steel was the only metal considered for the sink, drain-boards, table-tops because of its permanent beauty.



RESTAURANT AND BAR EQUIPMENT OF USS STAINLESS STEEL

Aboard one of the Zephyr trains made of modern steel alloys the kitchen carries out the same effect of beauty, strength and light weight, because U·S·S Stainless Steel has been specified.

Sparkling chairs and fountain equipment of U·S·S Stainless Steel harmonize superbly with the spacious accent of the staggered mirrors which conceal indirect neon lighting.



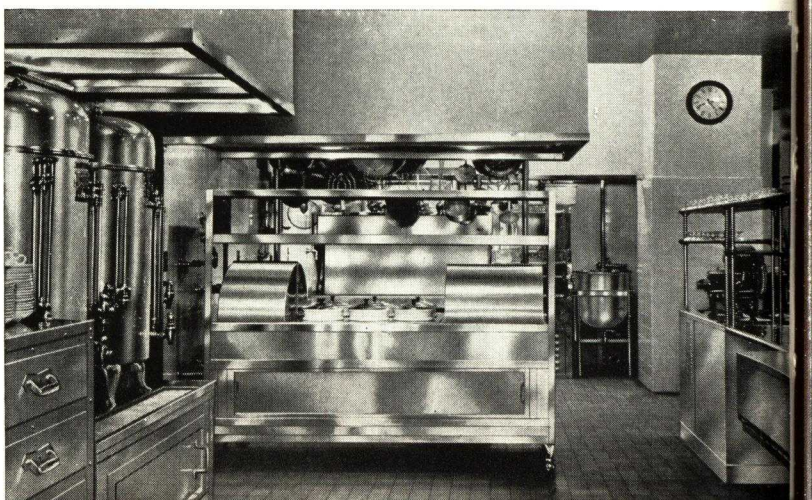
IN each of the photographs on this page, you will notice one predominating factor—inviting cleanliness. In all things pertaining to food handling, cleanliness is the first consideration.

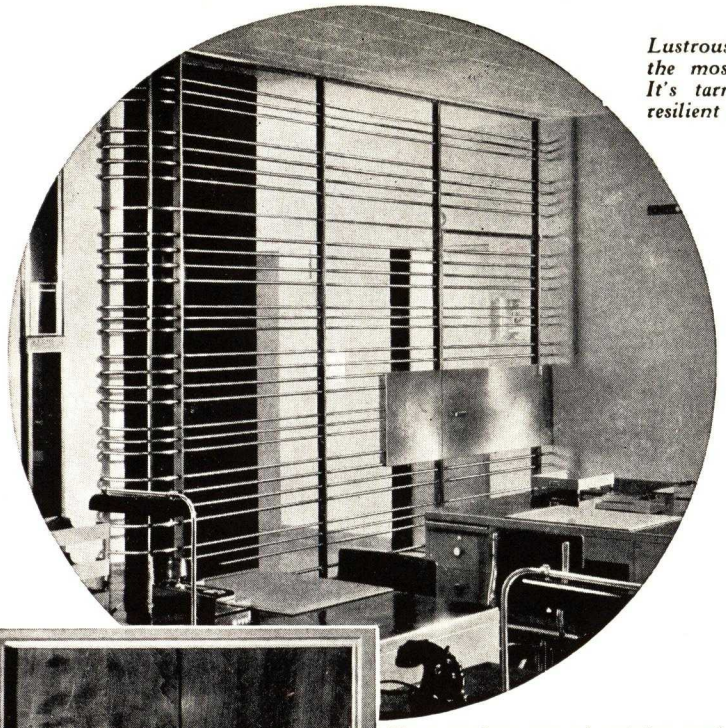
Consider the client's angle. If U·S·S Stainless Steel is used effectively, an attractive appearance is assured. Not alone at the time of installation, but permanently. The ease with which U.S.S Stainless Steel is cleaned is a very distinct advantage to the owner. In a bar or restaurant, the beauty of U.S.S Stainless Steel actually whets appetites.

In a kitchen or galley, wherever food is handled, equipment made of U·S·S Stainless Steel decreases danger of contamination, cuts cleaning costs, and adds modern charm that rings the cash register.

On the S.S. "Santa Rosa," Grace Line, stewards find the soda-fountain of U·S·S Stainless Steel easy to clean and keep permanently bright. (Lower left.)

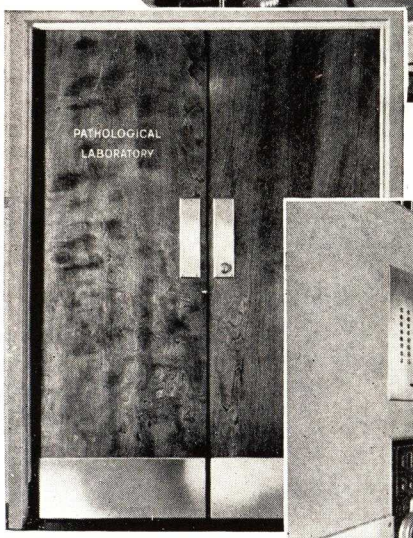
Can you imagine anything but excellent food immaculately served from this New York bank kitchen — completely equipped with U·S·S Stainless Steel?



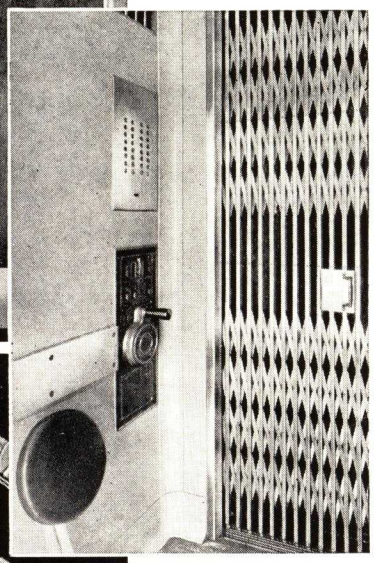


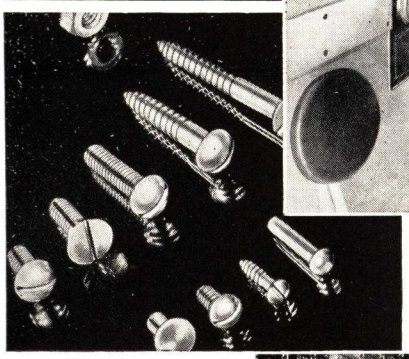
Lustrous seamless tubing of U·S·S Stainless Steel is the most suitable material for modern furniture. It's tarnish-proof, virtually scratchproof and so resilient that it can be used for springing.

MISCELLANEOUS USES OF USS STAINLESS STEEL



Two modern uses of stainless steel are shown on the push and kick plates of this laboratory door and the gate on the elevator.





MR. J. P. FINDLEY, Operating Manager of the Jenkins Arcade, one of Pittsburgh's busiest buildings, says: "Don't forget, the owners judge me by my cost of operation. I grant you that stainless steel costs more at first—but at the end of just twelve months I can show you a net saving."

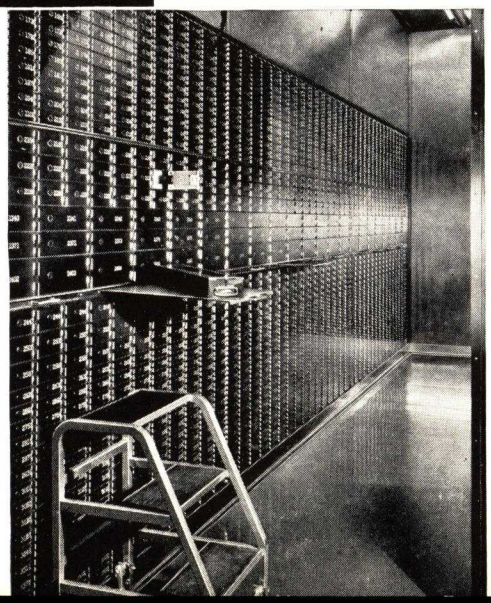
Mr. Findley has used U·S·S Stainless Steel not alone for trim, but for pushplates and kickplates. Now he plans to use the metal for letter chutes, plugplates, locks, window mouldings, hinges—even hinge screws. For Mr. Findley knows that U·S·S Stainless Steel saves him money in these four ways:

(1) Cleaning costs
(2) Supplies cost, that is, material for maintenance, such as polish, labor, etc.
(3) Refinishing costs, and
(4) Replacement cost

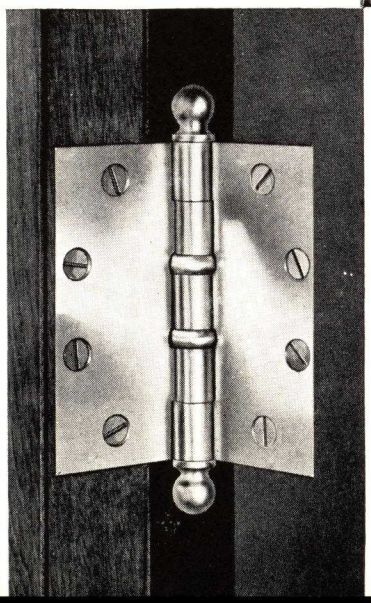
"Why don't you tell the world about these savings?" he says. "Tell them that stainless steel is not only beautiful but practical—that for economy alone every building should be completely equipped with stainless steel."

Trimming and handrails of U·S·S Stainless Steel play an important part in the beauty of this staircase and escalator in a modern office building.

Screws like these are but one of the many hardware items made of U·S·S Stainless Steel. Hinges, bolts, nuts, cotterpins and many other items wear longer and work better when made of stainless steel.



Easy to clean and permanently attractive is the stainless steel trim on these safe deposit boxes. The bank attendant uses a stand of U·S·S Stainless Steel, too, bright and wearproof.



U·S·S Stainless Steel hinges are so strong they will never wear out and cannot let the door down. This eliminates all question of hinge replacement.

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WHENEVER YOU USE STAINLESS STEEL . . . IT IS TO YOUR ADVANTAGE TO SPECIFY USS

"U·S·S" identifies stainless steel of the finest quality, made by the world's largest producer of high-grade steels. Here are three important, tangible reasons why it is to your advantage to make certain that whenever you buy or use stainless steel . . . you get "U·S·S".

The *metal* is most important. The remarkable properties of stainless steel depend on accurate composition and skillful heat treatment. Thanks to precision control, specialized equipment and skilled men who work on nothing but stainless steel, you have the greatest assurance that your stainless will never tarnish if you specify "U·S·S".

Availability is important, too. U·S·S Stainless Steel is available in every needed analysis; in the widest variety of shapes and forms and modifications; in warehouse stocks in principal cities for immediate delivery.

And so is our *consulting service* important, for we offer you whatever technical cooperation and assistance you may need. You will find a stainless steel specialist in our principal district offices. He in turn is supported by a Stainless Steel Department at the headquarters of each subsidiary selling U·S·S Stainless Steel, where the very finest in research and laboratory equipment are ready to study your problem if the answer is not already known. From their wide experience, these men can often suggest valuable new ideas from other fields—ideas which may help you execute a better job at a lower cost. You are invited to discuss your problems freely with them, with no obligation.

We suggest that it is to your advantage to specify "U·S·S". After all, it is only natural that the world's largest producer of high grade steels should be the most advantageous source for stainless steel.

AMERICAN STEEL & WIRE COMPANY
Chicago—New York

CARNEGIE-ILLINOIS STEEL CORPORATION
Pittsburgh—Chicago

NATIONAL TUBE COMPANY
Pittsburgh

COLUMBIA STEEL COMPANY
San Francisco

UNITED STATES STEEL PRODUCTS COMPANY, NEW YORK, *Export Distributors*

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UNITED STATES STEEL

CHATTANOOGA STAMPING & ENAMELING COMPANY

Architectural Porcelain Enamel and other Steel and Porcelain Enamel Products

Manufacturers Road, CHATTANOOGA, TENN.

What is Architectural Porcelain Enamel?

Porcelain Enamel for architectural use is glass fused to a steel base in which the coefficient of expansion of the two products is so designed as to be practically the same under all conditions. Using usually an 18-gauge steel base fabricated to shapes desired for architectural treatment before enameling, the resulting product available in any color, combines all the flexibility of steel plus the imperviousness of glass to color fading, crazing and resistance to elements.

Uses

Rapidly gaining favor in the last few years, architects are finding innumerable applications where permanent color, elimination of maintenance and application to modern treatment is desired.

Store and Office Exteriors
Filling Stations
Bus Stations
Kitchens and Bathrooms
Interiors—Food Stores, etc.
Hospitals
Food Product Factories
Bars and Restaurants
Signs and Sign Letters
Display Cases
Bottle Coolers
Spandrels—Cast Iron and Sheet Metal
Copings
Small Portable Buildings

Flexibility

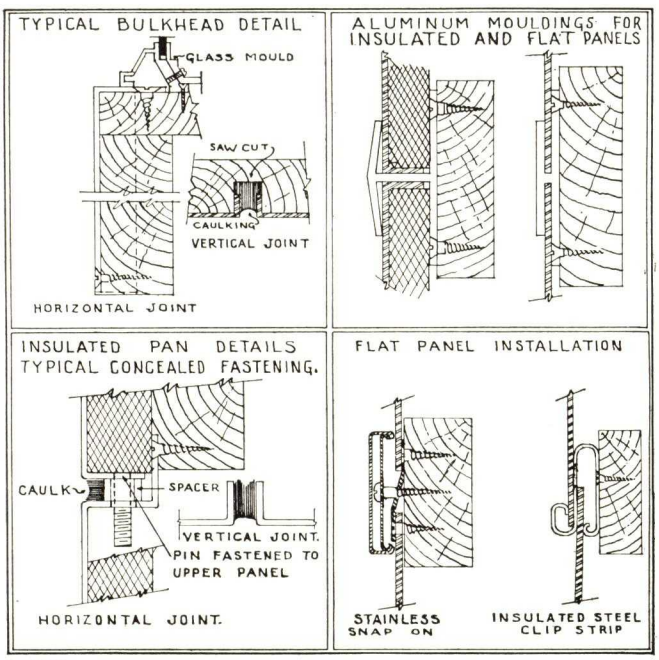
Architectural Porcelain is usually fabricated to individual requirements. Available in flat sheets approximately 1/16-in. thick, and formed into pans (usually with insulating board backing) recommended maximum size panels 2 x 6 ft. for flatness and ease of handling. Maximum size available 4 x 10 ft. Any color, including all pastel shades, and can be furnished in designs in color as desired up to six colors on one piece. Weight approximately 2½ lbs. per sq. ft. Signs and decorative effects fused into panels permanently.

Methods of Application

Can be applied to any masonry construction by means of screwing to creosote wood grounds at joints or with expansive anchors at approximately 12 in. on centers. Flat sheets joints usually concealed by stainless steel, chrome, aluminum or other metal mouldings. Pan construction usually attached similarly with concealed fastenings and exposed joints caulked.

We manufacture all types as desired, also for use with patented attaching accessories, such as Insulated Steel, Clip Strip, Revocon, extruded members, etc. Portable buildings and others employing steel construction installed in similar manner.

Some Typical Details



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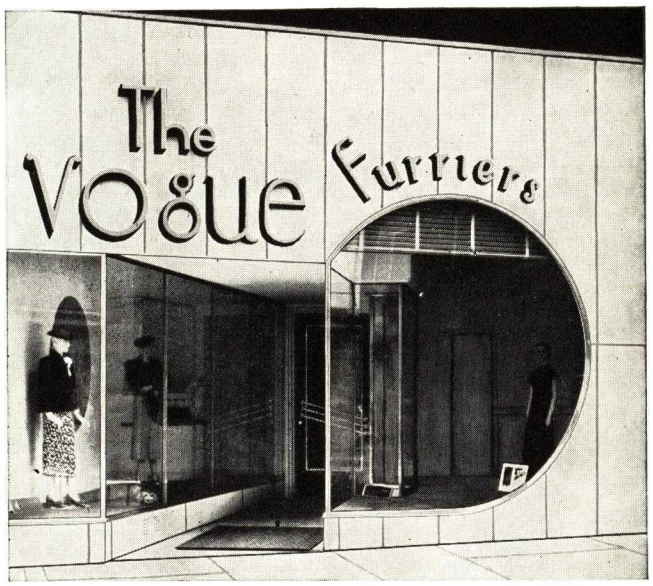


Typical Store Front—The Vogue, Furriers Shop, Asheville, N. C.
Color scheme: Ivory and Brown. Porcelain formed letters project from face.
H. I. Gaines, Architect, Asheville, N. C.
Pritchard Paint & Glass Co., Contractor, Asheville, N. C.

Cost

Due to the simplicity of erection and large areas available, usually considerably less expensive than any other products with similar color and weather-resisting qualities. Due to flexibility of fabrication, modern rounded corners, fluted effects, etc., at surprisingly low cost. Light weight eliminates necessity of costly preparation, especially on remodeled jobs.

Importance of Correct Interpretation

The Chattanooga Stamping & Enameling Company, with twenty years' experience in porcelain enameling and one of the pioneers in the architectural field, has had the experience and equipment necessary for the correct interpretation of the architect's designs. Not handicapped by selling any patented "system," we feel free to interpret any design in a manner best suited to its individual requirements, appearance desired and ease of installation. A modern plant well located insures prompt delivery.

Service

Data sheets and color samples gladly sent—5-day estimate service from your rough sketch. Our Architectural and Designing Department glad to make suggestions at any time.

Other Products

Quantity manufacturers of parts for stoves, refrigerators, display cases, commercial signs, metal specialties. Engineering and Designing Service on metal products of any description.

DAVIDSON ENAMEL PRODUCTS, INC.

Manufacturers of Porcelain Enamel Building Parts, Signs, Letters, Etc.

Box 328, LIMA, OHIO

Uses of Porcelain Enameled Iron

The primary architectural use of porcelain enameled iron is for covering the exterior of buildings. It is most generally used as a colorful decorative exterior building material for all types of store fronts, service stations, theatres, etc.

For other architectural purposes it is used as varied colored spandrels and ornaments; for interior walls and ceilings of restaurants, dairy stores, butcher shops; places where cleanliness is of vital importance.

Construction and Fabrication Specifications

All material is of 16-gauge special enameling iron.

Fabrication and enameling conforms to highest standard practise.

Fastened to building by hidden mechanical means. Parts do not rely upon cement or any other material for security.

Only acid-resisting enamels used.

Recommend maximum size to be 2 ft. 6 in. by 4 ft. 6 in.

Work and shop drawings and color samples supplied by manufacturer for the architect's approval.

Description of Material

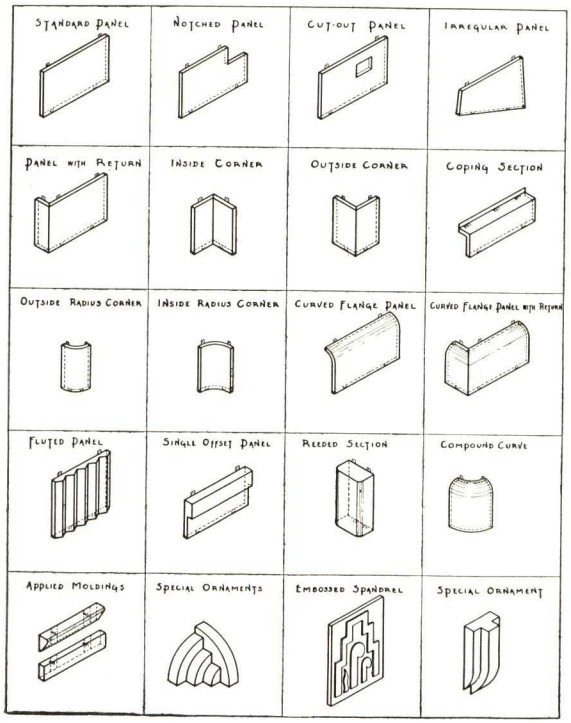
Porcelain enameled iron is a glass coating fused to a sheet of special iron at a temperature of 1550° F. It is inorganic and will thus resist the effects of the elements indefinitely. The iron base reinforces the glass coating making a material which resists shocks and possesses considerable structural strength. The base is of sheet iron which can be formed and embossed into a variety of shapes and, as there is no limitation to the different colors obtainable, the combined factors of color and form offers the architect a particularly flexible material for modern design.

Architectural Service

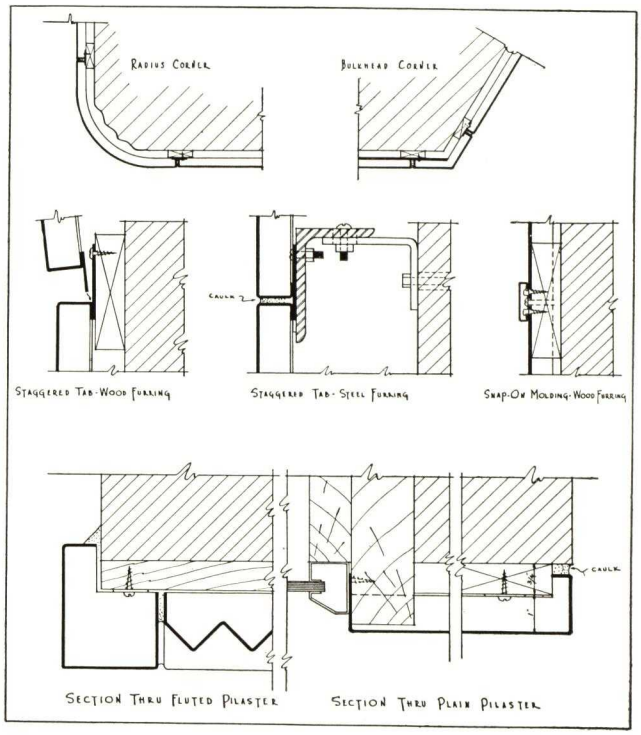
DAVIDSON ENAMEL PRODUCTS, INC., has an Engineering Department offering architectural service. This department works with the architect while the design is in the formative stages. It will be to the architect's advantage to use this service in order to employ porcelain enamel to its fullest extent. Approximate prices and construction details are sent upon request.

Installations

BUILDING AND LOCATION	ARCHITECT
Cole Shoe Store, Cleveland, Ohio	W. Emil Forman
Baker Shoe Store, Memphis, Tenn.	W. Emil Forman
Garfield Theatre, Cleveland, Ohio	T. A. Badowski
Faurot Building, Lima, Ohio	D. Andrews
Meyer Drug Store, Fort Wayne, Ind.	A. M. Strauss
Shell Petroleum Station, Decatur, Ill., and Indianapolis, Ind.	Shell Petroleum
Monta Vista Theatre, Cincinnati, Ohio	Grunkemyer-Sullivan
Emery Theatre, Reading, Ohio	Grunkemyer-Sullivan
Carltons Clothes, Akron, Ohio	H. E. Parrot
Chicago Market, Charleston, W. Va.	W. F. Martens
Della Theatre, Flint, Mich.	George J. Bachmann
White Star Oil Station, Marshall, Mich. South Bend, Ind., and Jackson, Mich.	Socony-Vacuum Oil Co.
Theatre, Vassar, Mich.	Bennett & Straight
Oil Station, Saginaw, Mich.	Frantz & Spence



Standard Shapes



Construction Details

THE FERRO ENAMEL CORPORATION

Manufacturers of Porcelain Enamels, Furnaces, Equipment and Supplies
4150 East 56th Street, CLEVELAND, OHIO

PORCELAIN ENAMELED IRON FOR ARCHITECTURE

PORCELAIN ENAMELED IRON has in recent years made a place for itself in the architectural field, as a material of real potentialties for many types of work. Porcelain enamel is identified in the public mind with that which is up-to-date, its properties of cleanliness, durability, attractiveness, ease of erection and low maintenance cost recommending it to the architect as a first class material for modern building.

THE FERRO ENAMEL CORPORATION, long a supplier of porcelain enamel to many industries, has taken a leading part in developing porcelain enamel for architecture and promoting its use in this field. Ferro built the first residence with porcelain enameled exterior and has since collaborated in the construction of other buildings to demonstrate the suitability of porcelain enamel as an architectural material. The latest project, sponsored by Ferro, and one which will show the decorative possibilities of porcelain enamel in an unusually fine way, is a porcelain enameled mural, 70 ft. long and 20 ft. high, which will be placed on the face of the Shelter Building at the New York World's Fair in 1939.

Throughout the country there are companies which specialize in the fabricating and Ferro-enameling of sheets and shapes for architectural use. The FERRO ENAMEL CORPORATION supplies these companies with the highest quality porcelain enamel and co-operates with them to the end that a fine building material is available for your use. Write to us for the names of porcelain enameling companies, for answers to specific problems and for consultation service in connection with architectural porcelain enamel.

Properties

Porcelain enameled metal consists of sheet iron shapes to which two or more coats of porcelain enamel—an inorganic material like glass—has been fused at extremely high temperatures. The first or "ground" coat of enamel is blue-black in color, containing metallic oxide, which effects a better bond with the metal base. *All colors* are available in the finish coat. There may be any number of colors on a single sheet. Simple or intricate design can be accurately reproduced. The characteristic *finish* of porcelain enamel is a glossy sheen. For jobs where this finish would be objectionable, "matte" finish may be specified. Various stippled or polytone finishes are available when these are desirable. Porcelain enameled iron sheets and shapes are durable, weatherproof, easily cleaned and require practically no maintenance. They are not damaged by fire or violent changes in temperature.

Cutting to fit on the job is permissible with the following limitations: On interior work the exposed edges must be properly protected and covered with batten strips or moulding of porcelain enamel, stainless steel, aluminum or chrome; on exterior work the raw edges must be embedded in asphalt mastic and covered with waterproof moulding.

In most cases, the material is completely shop fabricated before porcelain enameling, and cutting on the job avoided. This requires carefully figured drawing and a true and accurate base.

Uses

Exterior—Porcelain enamel has already been widely used as a facing for masonry, wood and steel frame construction for store fronts, theater buildings, service stations, spandrels. It is an excellent medium for color and design on many types of buildings and may be used by itself or in combination with other material.

Interior—Porcelain enamel is used as a wall and ceiling finish wherever cleanliness, uniform light reflection and low maintenance are particularly important factors; bathrooms, restaurants, food stores, hospitals, dairies, breweries, food factories.

Sizes and Shapes

Flanged panels are made in standard sizes by most porcelain enameling companies. Special sizes, curved sections and complex shapes can always be made on special order. Flanged panels should be kept reasonably small to avoid distortion and to provide for proper support of the material when erected. The largest desirable size is about 30 in. by 6 ft. Larger sizes may be made if necessary. Stock sheets (primarily for interior work) are available in widths of 24, 30 and 36 in., and in lengths up to 8 ft.

Porcelain enameled panels are sometimes supplied backed up with cast concrete or laminated to plywood and other sheet material which add rigidity to the unit. In other cases, materials are cemented to the backs of the sheets for the primary purpose of sound deadening. Sixteen-gauge sheet iron is preferable for porcelain enamel work. Lighter gauges may be used when the material is rigidly backed up.

Erection

Erection of porcelain enamel is done by the general contractor or by a contractor specializing in this work. The contractor may, in some cases, be the porcelain enameling company. The porcelain enamel contracts include material and erection. Most porcelain enameling companies are able to furnish erection drawings.

Both flat sheets and flanged panels are usually attached to furring strips of wood or metal. Methods of attachment are shown at the bottom of this page.

Architects' Specifications for Porcelain Enameled Iron

(1) Shop Drawings—This contractor must furnish and submit to the architect for approval, shop drawings of all pieces of material before any fabrication is done.

(2) Samples—Samples of all colors must be submitted to the architect for approval.

(3) Metal—All porcelain enameling to be done on enameling iron sheets of standard manufacture and of an approved brand. Sheets before fabrication must be dead flat. Sheets to be of 16-gauge (or other suitable gauge).

(4) Fabrication—All fabrication, such as punching, shearing, welding, must be done in a finished manner and fully completed before porcelain enameling. All welded parts or flanged sections must be filed smooth.

(5) Cleaning and Pickling—All metal, before pickling, must be thoroughly cleaned of oil and grease with a strong boiling alkaline solution. All metal parts must be pickled in sulphuric or muriatic acid until all scale, rust or other oxides are removed. All pickled parts must be thoroughly rinsed in hot water and submerged in a neutralizing solution to eliminate all traces of acid.

(6) Porcelain Enamel—All porcelain enamel "frits" used shall be of standard quality, as manufactured by THE FERRO ENAMEL CORPORATION, Cleveland, Ohio. All work shall be not less than two coats, consisting of one ground coat and one or more cover coats.

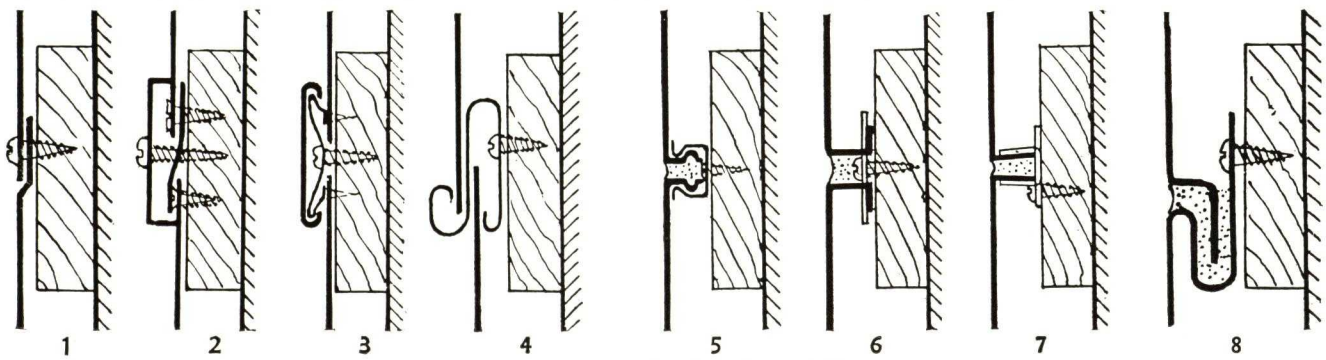
All porcelain enameled iron shall be free from all defects such as fishscales, blisters, copperheads and crazing.

(7) Erection—*(a) Labor*—All labor shall be, as far as possible, experienced in the erection of porcelain enameled iron.

(b) All parts shall be firmly secured to the sub-structure by the use of rustproof and corrosionproof metal fastenings.

(c) There shall be no exposed screws or fastenings, except as agreed upon by the architect as not detrimental to appearance of completed job.

(d) Completed work shall be cleaned down, joints pointed with mastic and all left in a first class, workmanlike manner.



METHODS OF ATTACHMENT

1 and 2—Exposed fastening
3—Snap-on moulding
4—"Clip strip"
5—Spring clip
6—Clip fastening (clip turns into slots in flanges)
7—Lug fastening (Lugs are welded to panels before enameling. Lug without screw attachment slips under adjacent panel, being located so as not to coincide with lug having screw attachment)
8—Interlocking flanges

MEMORANDA

C. G. HUSSEY & COMPANY

A DIVISION OF COPPER RANGE CO.

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PITTSBURGH, PA.

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CHICAGO, 212 So. Jefferson St.
CINCINNATI, 424 Commercial Sq.
CLEVELAND, 5318 St. Clair Ave.
DETROIT, 710 Stephenson Bldg.
NASHVILLE, 213 McCall St.
NEW ORLEANS, 3633 Chestnut St.
NEW YORK, 140 Sixth Ave.
PHILADELPHIA, 1632 Fairmount Ave.
ST. LOUIS, 1620 Delmar Blvd.
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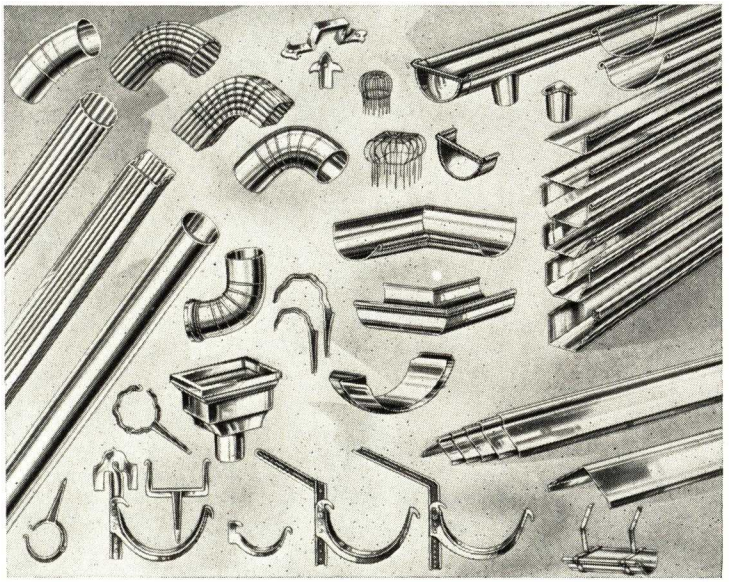
COPPER, BRASS AND BRONZE FOR EVERY ARCHITECTURAL PURPOSE

Company Facilities and Service

HUSSEY Copper and Brass Service is backed by the accumulated experience of 89 years of progressive specialization in copper manufacture from mining and refining to rolling and fabrication—a service that is 100 per cent complete.

Seven strategically located Hussey Warehouses with full stocks of quality copper sheets and roofing material is your guarantee of a dependable, ready source of supply. Thirteen Hussey Sales Offices, located from coast to coast assure prompt dispatch of your order as well as expert counsel on copper roofing material problems when required.



Range of Products

C. G. HUSSEY & COMPANY have long been known for the wide variety of copper, brass and bronze products manufactured. Among Hussey products are sheet copper; tinned, lead, nickel or chromium coated copper; special copper for remanufacture; copper, brass and bronze rod, tubing and special shapes; wire of copper, brass, or commercial bronze; preformed products, such as conductor pipe, eaves troughs, gutters, ridging and all necessary elbows, shoes, hangers, heads and strainers to make a complete installation. Some of the applications of these products in architecture are shown and briefly described below.

TYPICAL ARCHITECTURAL USES OF HUSSEY PRODUCTS

Copper Roofing and Flashing

Because of its long life, beautiful color and easy working qualities sheet copper has always been popular with the architect for roofs of churches, monumental buildings and residences. Flashings of copper insure the permanency of any roof. Data on copper for these purposes will be furnished on request.

Marquees of Hussey Copper or Bronze

Modern design has developed the marquee into an important part of theatres, hotels, auditoriums and many buildings. Copper and bronze lend themselves to such design and combine most satisfactorily with glass to provide a decorative feature to any structure.

Formed Copper Products

Roof drainage products of copper are an important part of the C. G. Hussey complete line. A separate catalog of shapes, sizes and designs will be furnished on request. Copper shingles are made in 16, 14 and 12-ounce thicknesses and lay 133 shingles to the square.

Bronze and Sheet Copper Spandrels

Spandrels of copper and bronze are produced in practically any design the architect conceives, and Hussey material is ideally adapted for this purpose. Sheet copper spandrels have many advantages, such as light weight, durability and shallow depth and are being used in many modern buildings for these reasons.

Sheet Copper Cut-outs

A newly developed use for sheet copper consists of large cut-outs or silhouettes which can be made in any design and which produce unusual and interesting effects when set against a dark background or lighted from behind at night.

Floor-Dividers

Hussey Warehouses also carry a complete line of brass floor-dividing strips for terrazzo, cement, marble, composition floors, etc.

A FEW OUTSTANDING PUBLIC BUILDINGS AND PROJECTS IN WHICH HUSSEY COPPER WAS USED

Senate Office Building, Washington, D. C.
The White House, Washington, D. C.
Congressional Library, Washington, D. C.
Walter Reed Hospital, Washington, D. C.
Saratoga Springs State Spa, Saratoga Springs, N. Y.
Auburn Prison, Auburn, N. Y.
Rochester State Hospital, Rochester, N. Y.
U. S. Post Office, Goshen, N. Y.
Buffalo State Hospital, Buffalo, N. Y.
Goodyear State Hospital, Buffalo, N. Y.
Warren Brown Memorial Hall of Washington University, St. Louis, Mo.
Flower Conservatory of Forest Park, St. Louis, Mo.
Republic Building, Cleveland, Ohio
U. S. Post Office, Cleveland, Ohio
Ohio Bell Telephone, Garfield Extension, Cleveland, Ohio
New Eastern High School, Baltimore, Md.
Maryland Penitentiary, Baltimore, Md.
U. S. Parcel Post Office, Washington, D. C.
Edison School, Union City, N. J.
A. Harry Moore School, Jersey City, N. J.
Holland Tunnel, New York, N. Y.
Psychopathic Hospital, New York, N. Y.
U. S. Military Academy, West Point, N. Y.
Parcel Post Office, Brooklyn, N. Y.
Port of New York Authority Bldg., New York, N. Y.
Bellevue Hospital, New York, N. Y.
John Adams High School, Brooklyn, N. Y.
De Witt Clinton High School, Bronx, N. Y.
Grover Cleveland High School, Brooklyn, N. Y.
Sing Sing Prison, Ossining, N. Y.
Teachers College, Auditorium Bldg., Trenton, N. J.
U. S. Post Office, Newark, N. J.
Fordham College Buildings, Bronx, N. Y.
U. S. Post Office, Boston, Mass.
Naval Hospital, Boston, Mass.
Eastern State Penitentiary, Gratersford, Pa.
East Liberty Presbyterian Church, Pittsburgh, Pa.
Mellon Institute of Industrial Research, Pittsburgh, Pa.
Adler Planetarium, Chicago, Ill.

You will find the Hussey Catalog a valuable source of information for Copper, Brass and Bronze products—write for your copy

THE INTERNATIONAL NICKEL COMPANY, INC.

Monel, Rolled Nickel and Allied Products

Executive Offices, 67 Wall Street, NEW YORK, N. Y.

SOURCES OF SUPPLY

(Warehouse Stocks)

ATLANTA, GA., J. M. Tull Metal & Supply Co., Inc., 285 Marietta Street
BUFFALO, N. Y., Whitehead Metal Products Co. of N. Y., Inc., 254 Court Street
CAMBRIDGE, MASS., Whitehead Metal Products Co. of N. Y., Inc., 235 Bridge Street
CHICAGO, ILL., Steel Sales Corporation, 129 So. Jefferson Street
CINCINNATI, OHIO, Williams & Co., Inc., Henry and Dunlap Streets
CLEVELAND, OHIO, Williams & Co., Inc., 1748-1756 E. 22nd Street
DENVER, COLO., Hendrie & Bolthoff Mfg. & Supply Co., 1621 17th Street
DETROIT, MICH., Steel Sales Corp., 4150 St. James Street
HOUSTON, TEX., Metal Goods Corp., 1121 Rothwell Street
LOS ANGELES, CALIF., Pacific Metals Co., Ltd., 1400 So. Alameda Street
MILWAUKEE, WIS., Steel Sales Corp., 646 West Virginia Street
MINNEAPOLIS, MINN., Steel Sales Corp., 529 So. 7th Street
NEWARK, N. J., Whitehead Metal Products Co. of N. Y., Inc., 215 Frelinghuysen Ave.
NEW ORLEANS, LA., Metal Goods Corp., 1401 Canal Bank Building
NEW YORK, N. Y., Whitehead Metal Products Co. of N. Y., Inc., 304 Hudson Street; Bronx Office: 1334 Webster Avenue
PHILADELPHIA, PA., Whitehead Metal Products Co. of N. Y. Inc., 725 Arch Street
PITTSBURGH, PA., Williams & Co., Inc., 901 Pennsylvania Avenue
ST. LOUIS, MO., Steel Sales Corp., 4067 Park Avenue
SAN FRANCISCO, CALIF., Pacific Metals Co., Ltd., 3100 19th Street
SEATTLE, WASH., Eagle Metals Co., 3628 E. Marginal Way
MONTREAL, QUE., CANADA, Robert W. Bartram, Ltd., 277 Duke Street
TORONTO, 2, ONTARIO, CANADA, Peckover's Limited, 77 Front Street, E.
VANCOUVER, B. C., CANADA, Wilkinson Co., Ltd., 190 Second Avenue, W.

Monel

Monel is a registered trade-mark applied to an alloy containing approximately two-thirds nickel and one-third copper. Monel is mined, smelted, refined, rolled and marketed solely by International Nickel.

Available Forms

Standard Sheets	Castings
Full Cold Rolled Sheets	Wire
Full Cold Rolled Strip	Wire Cloth
Hot Rolled Rods	Wire Rope
Cold Drawn Rods	Tubing
Hot Rolled Flats	Shot
Hot Rolled Plates	Billets
Forgings	Ingots

Special Shapes (Angles, Channels, etc.)
Accessories (Bolts, Nuts, Screws, Nails, Tacks, etc.)
Welding Wire and Flux

An important factor of any metal in architectural use is its adaptability to various methods of fabrication and the variety of shapes and forms in which the metal may be employed. Monel can be fabricated in every manner known to the art with the sole exception that it cannot be extruded. It may be forged, cast, inlaid, turned, machined, drawn, rolled, engraved, etched, and cloisonne enameled. In short, the entire art of the metal craftsman can be employed in developing decorative or utilitarian products of Monel as long as extruded patterns are not demanded by the designer.

For details on the many shapes and forms in which Monel is available, we suggest that you communicate with the nearest source of Monel (listed above).

Properties of Monel

Monel is classified as a distinctive white metal, more closely akin to white precious metals in color and reflectivity than to any other well-known group of metals. Monel may be effectively finished in a variety of ways, ranging from the sand-grained surface of unfinished castings to a mirror polish with intermediate finishes in great variety.

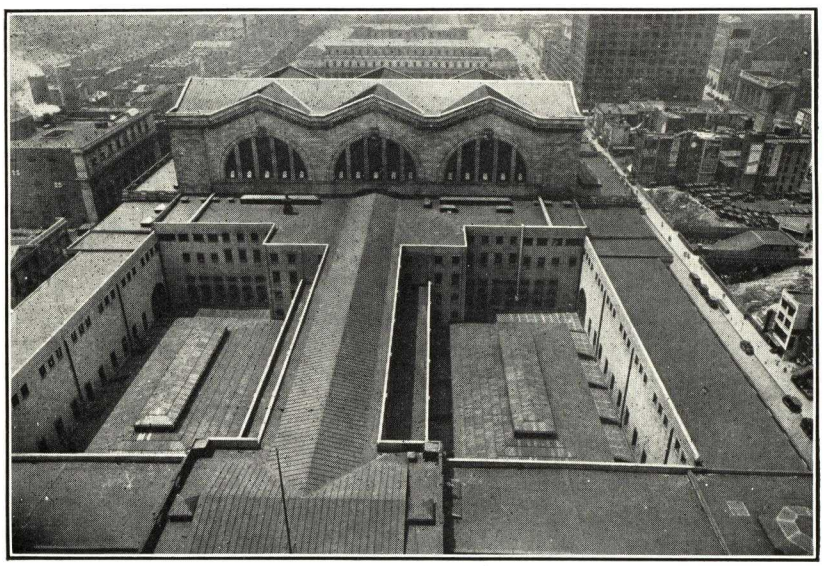
The following summary of Monel gives a general idea of the unique combination of properties in Monel which point to its superiority for both domestic and institutional Food Service and Hospital Equipment.

1. Absolutely rust-proof.
2. Resists corrosion by food juices and fruit acids.
3. Strong as steel, tougher than steel.
4. Easy to clean; therefore sanitary.
5. Beautiful appearance; has color of platinum.
6. Durable-proven by over 20 years of service.
7. Easily fabricated.

Monel in the Home and Public Buildings

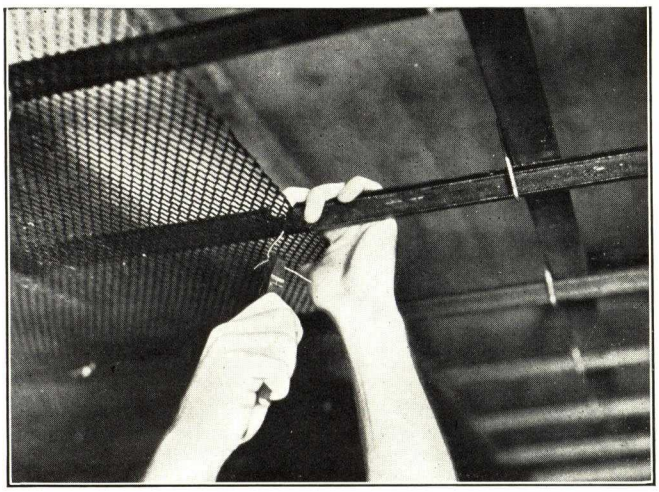
The silvery beauty of Monel and its unique combination of physical properties are responsible for its use in a wide variety of architectural applications.

In modern hotels and restaurants Monel is extensively used for such food service equipment as cook tables, serving counters, dishwashing machines, etc. A 15-page illustrated booklet entitled, "The Selection of Food Service Equipment"



General view of Pennsylvania Railroad Station Roof in New York City. The metal portions of the roof represent 300,000 sq. ft. of Monel batten type roof installed when the station was built in 1910.

Monel has been selected because of this successful application of 27 years of resistance to urban atmospheric corrosion for roofs on other large buildings in the New York City area.



The simple manual method of securing Monel tie-wire by means of pliers. Monel wire has been adopted by the New York Board of Education for the construction of hanging ceilings in new public school buildings.

Monel is readily fabricated into attractive sanitary cafeteria counters and equipment which are durable and easily kept clean. Shown is the Fordham University cafeteria, New York, N. Y. All Monel equipment was installed.

will be of interest to architects who are planning hotels or restaurants.

In hospitals Monel is used for food service equipment, service pantries, nurses' stations, hospital furniture, clinical equipment, and hospital utensils. Hospital laundries are usually equipped with Monel washing machines. A 12-page fully illustrated booklet entitled, "The Selection of Hospital Equipment," describes the many uses of Monel in the above departments.

In the home Monel is principally used for kitchen and pantry sinks, cabinet sinks and working tops, automatic water heater tanks and range boilers.

In public buildings, Monel is used for ornamental metal work, such as elevator doors, grilles, trim, railings, gates, etc.

Architectural Publications

Practical Design in Monel (A.I.A. File No. 15-G)—A complete manual for architects and metal craftsmen. Describes the properties of Monel, its personality and the methods for working it. Richly illustrated with photographs and detailed drawings showing designs for ornamental and useful applications of Monel Metal.

Modern Domestic Service Equipment (A.I.A. File No. 35 C-1)—An architect's manual on the use of Monel equipment for household and institutional kitchens, pantries and laundries. Includes specification data for various types of equipment.

Monel for Permanent Roofs (A.I.A. File No. 12-A-38)—Monel Roofing Basic Data—Complete information for architects on the adaptability, characteristics, sizes and weights, application, installation and cost, of Monel for roofing.

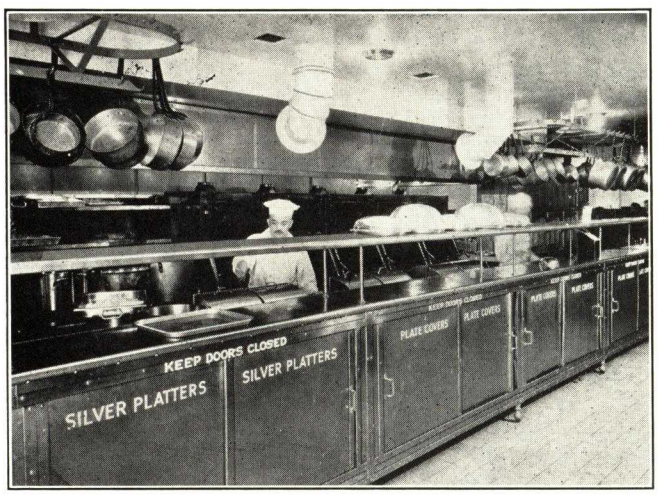
Monel Tie Wire (A.I.A. File No. 20-B-11)—Architects' information on the applications, gauges and tempers, methods of installation and characteristics of Monel tie wire.

Three Miles of Monel Expansion Joints (A.I.A. File No. N-7-C)—An engineer of the company who fabricated the expansion joints for the Cleveland Union Terminal Building explains why they were made of Monel and how they were installed. Detailed drawings are included.

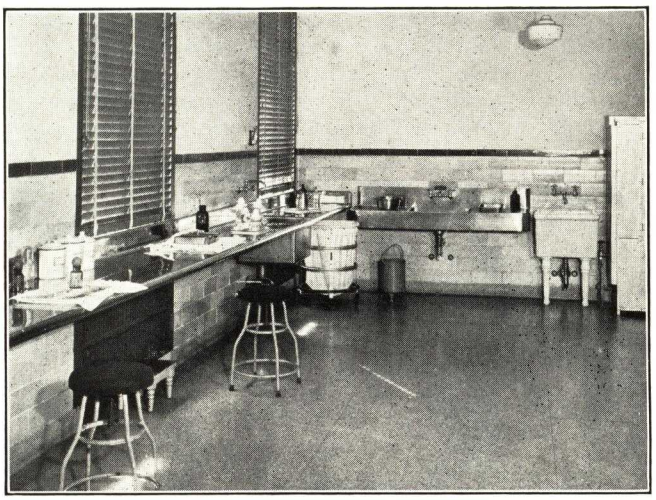
List B of Monel Literature—A complete list of booklets covering information on Monel, Rolled Nickel and Allied Products, will be sent to you upon request. This covers both technical and non-technical literature as well as working instructions.

Specifications

The architect will be interested to know that Monel is generally referred to in Government Specifications as "copper nickel alloy," "non-corrodible metal," and "non-corrosive alloy." Detailed specifications covering Monel are available from the Government Printing Office or International Nickel. They are referred to as Federal Specification QQC-541 and Navy Department Specification 46-M-7e.



Monel is widely used for silvery sanitary food service equipment in hotels and restaurants. Illustrated is the main kitchen of The Waldorf-Astoria Hotel in New York, N. Y. Monel fabricated food service equipment is used extensively throughout the kitchens in this hotel.



Monel Streamline Sink, and special custom-built heavy-gauge Monel Working Counters in the Wills Eye Hospital, Philadelphia, Pa. Monel, because of strength, uniformity, and resistance to corrosion by practically all drugs and chemicals, finds wide acceptance in the hospital field.

LANSDALE PORCELAIN ENAMEL CORPORATION

Store Fronts of Beauty and Distinction

LANSDALE, PENNSYLVANIA

BRANCH OFFICES

NEW YORK, N. Y., 46 Gt. Jones Street
PHILADELPHIA, PA., 1232 W. Girard Avenue
WASHINGTON, D. C., Room 410 Bond Building, 14th Street and New York Avenue, N. W.

PRODUCT

Porcelain Enamel Fused into Sheet Steel.

USES

Building Fronts
Theater Marquees
Restaurant Exteriors and Interiors
Gas Station Exteriors and Interiors
Sign Facias
Kitchen Walls
Bathroom Walls
Butcher Shop Fixture and Interiors

GENERAL

Porcelain Enamel on Steel is especially desirable as an exterior and interior finish where beauty of design and permanency of materials are requisites. It fully meets these requirements and can also be erected simply and efficiently by any competent builder or contractor.

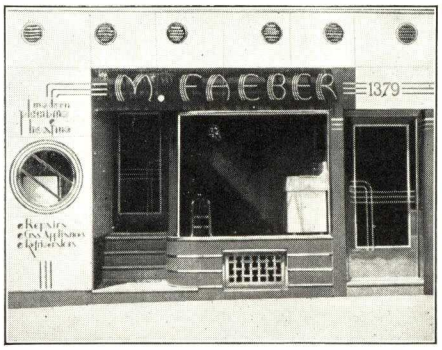
The materials which go to make up the finished Porcelain Enamel are entirely inorganic. Basic rock substances such as feldspar, cryolith, fluorspar and other inorganic minerals are scientifically blended and processed to form the coating which is fused into the metal base. Porcelain Enamel on Steel is not to be confused with surface coating materials which do not have the hardness of Porcelain Enamel, nor do they fuse with the base metal.

ADAPTABILITY

Porcelain Enamel on Steel is applicable to almost any type of exterior or interior operation. It is light in weight allowing easy handling of large sections. The metal base onto which the Porcelain Enamel is fused can be of various gauges, depending upon the type of construction. The finished product usually weighs less than 3 lbs. to the sq. ft.

There are few limitations on the forms into which sheet steel can be fabricated and since Porcelain Enamel can be fused into this metal base regardless of its form, the possibilities are endless. Thus the architect has at his command a material which lends itself to the free scope of his imagination.

Porcelain Enamel on Steel can be applied to either old or new structures in the form of flat sheets or fabricated forms. These may be permanently attached with screws or bolts hidden by metal mouldings or by the numerous methods of pan construction. Its permanence is not dependent upon questionable lasting qualities of any adhesive preparation. Building settlement, vibrations, or exposure to the elements cannot loosen or detach Porcelain Enamel when once applied.



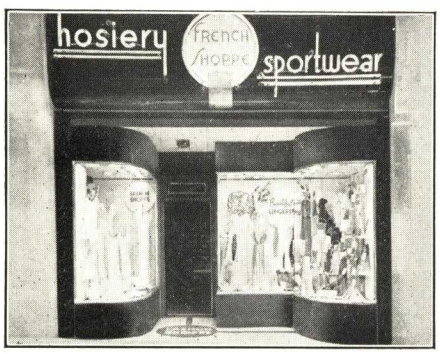
Plumbing Shop, 1379 St. Johns Place, Brooklyn, N. Y.
Designed by Owner

APPEARANCE

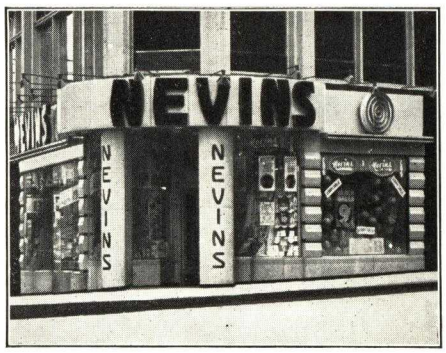
Porcelain Enamel on Steel provides a new and refreshing medium of expression because of its permanence and adaptability and also because of its beauty of design and color. Lansdale Porcelain Enamel can be furnished in any color ranging from white and the lightest pastel tints to the darker colors and shades. A special color matching service is maintained to assure the match of color samples. It is made in two finishes, the flint hard lustrous Porcelain Enamel or the semi-matte or satin finish. Either finish is entirely immune to weather conditions and will retain its original color and brilliance throughout the years. Stenciled designs in any number of colors may be employed, making it possible to carry out any desired effect.

ECONOMY

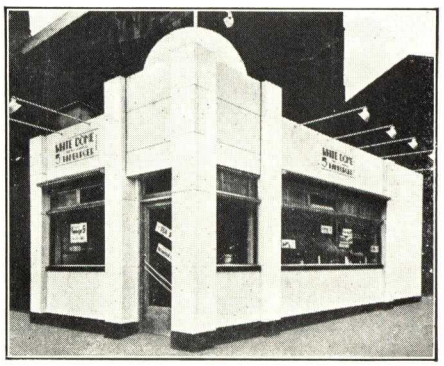
The only maintenance cost of a Porcelain Enamel facing is an occasional cleaning with soap and water to remove any surface accumulation. Because the hard, smooth, glasslike surface does not readily collect foreign materials, this cleaning is seldom necessary. Porcelain Enamel itself is as permanent as the rock formations from which it is made. Full and permanent protection is afforded the metal base by the first Porcelain Process. This consists of dipping the fabricated piece to form the ground coat, then the burning in the furnace bonds this ground coat to all metal surfaces allowing no opportunity for rust or corrosion. The long life and easy cleaning of Porcelain Enamel on Steel puts it in a class by itself as an economic material for all types of exterior and interior surface coverings.



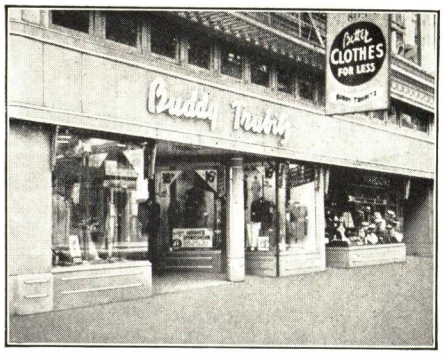
Ladies Apparel Shop, Clinton St., New York, N. Y.
Designed by Kotler Store Fixture Co., New York, N. Y.



Drug Store, Market St. and Copley Rd., Upper Darby, Pa.
Designed by Beryl Price, Philadelphia, Pa.

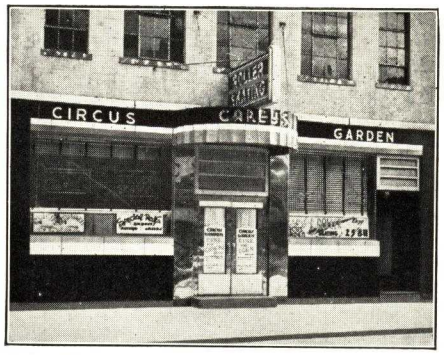


Hamburger Shop, Broad and South Sts., Philadelphia, Pa.
Designed by Louis Magaziner, Philadelphia, Pa.



Men's Clothing Store, 809 Broadway, New York, N. Y.
Designed by JOHN F. MEEHAN, New York, N. Y.

Soft Drink Stand, Hudson Terminal, New York, N. Y.
Designed by PAUL WARNER, Ace Porcelain Steel Corp., New York, N. Y.



Skating Rink, 3155 Frankford Ave., Philadelphia, Pa.
Designed by Owner

SERVICE

LANSDALE PORCELAIN ENAMEL CORPORATION through experience is equipped with a special engineering knowledge of its product which is offered without reservation to any architect or contractor. This service starts with original planning of the construction and follows through to a supervision of the actual erection. Our Engineering Staff will take measurements directly at the building operation or from blueprints submitted and will detail shop drawings and submit them to the architect or contractor for his approval. Actual work does not begin until either the architect or contractor has approved gauge of material, colors, and detail of design. The Porcelain Enamel can be delivered to the operation ten days after the receipt of approved shop sketches.

SPECIFICATIONS OF LANSDALE PORCELAIN ENAMEL CORPORATION

Fabrication

(1) All enamel stock shall be free of pit marks, scratches, mars or flaws of any kind.

(2) All flanges, bends, radii or holes must be completely finished with no rough edges or irregularities and must conform to blueprints or shop sketches submitted.

(3) All welding must be completely filed and finished and all flanges, radii, etc., must conform to original measurements.

Enameling

(1) All material must be cleaned to remove all metal particles, rust, oils and greases and shall be subjected to acid bath (pickling) to prepare surface for fusing with enamel finish.

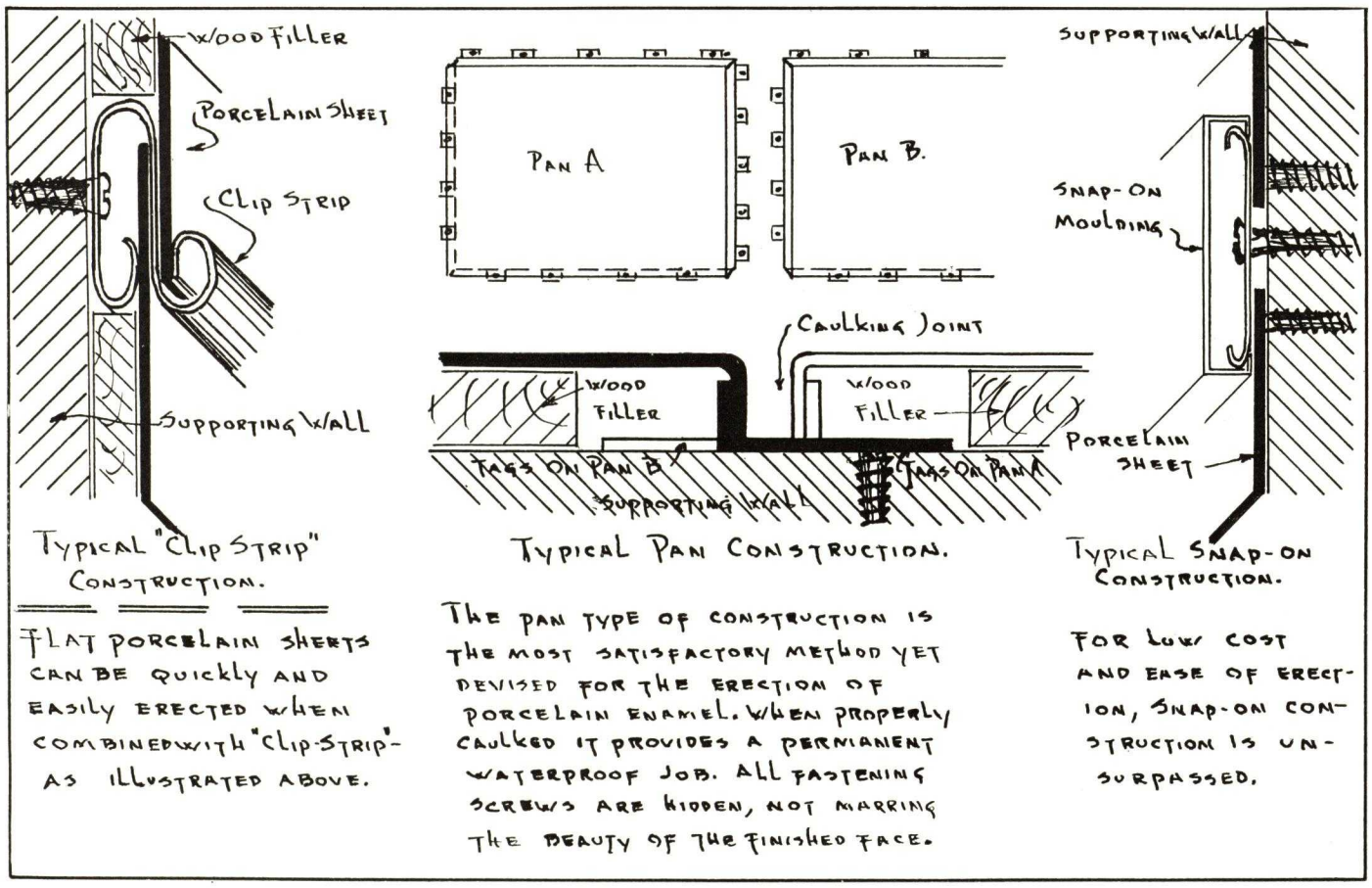
(2) First application of Porcelain Enamel finish must be applied to all surfaces of material, first coat to be fired at 1550° F.

(3) Succeeding application of cover coats to be not less than two and fired at not less than 1500° F.

Inspection

(1) All finished material to be free of blisters, pit marks, scale or any surface blemishes.

(2) All material to be checked for size, angle degrees, radius degrees and accurate flanging.



MAUL MACOTTA CORPORATION

Manufacturer of Porcelain and Metal Covered Concrete Building Units

TELEPHONE
Temple 2-5626

1640 East Hancock Avenue, DETROIT, MICH.

REPRESENTATIVES

MINNEAPOLIS, MINN., Hauenstein & Burmeister, Inc., 614 Third Ave. So.
BOSTON, MASS., Consolidated Brick Sales, Inc., 121 Chandler Street
BUFFALO, N. Y., John H. Black Company, 505 Delaware Avenue
CHICAGO, ILL., Nelson Friis, 343 So. Dearborn Street
DAVENPORT, IOWA, Cement Products Company, 715 E. River Street
INDIANAPOLIS, IND., M. S. Churchman Co., 5350 North Illinois Street
KANSAS CITY, MO., O. H. Hodson, 6019 Cherry Street
NEW YORK, N. Y., Fredenburg & Lounsbury, 101 Park Avenue
PHILADELPHIA, PA., Lea, Peters & Company, 1902 Architects Building
PITTSBURGH, PA., Joseph B. Shaw, 115 Mendota Ave. N. S.
ST. LOUIS, MO., Rock Hill Precast Concrete Corp., 1200 N. Rock Hill Road

Manufactured in Canada by THE MACOTTA COMPANY OF CANADA, 371 Bay Street, Toronto, Ontario

MACOTTA . . . the COLORFUL MODERN BUILDING UNIT

Macotta, a general term applied to products of this company, is made, sold and distributed by MAUL MACOTTA CORPORATION exclusively, through its own sales organization and affiliated distributors.

Macotta is the only load-bearing masonry unit which incorporates with this qualification, a facing of porcelain enamel; differing radically in this respect from all other building materials.

Macotta has enjoyed a phenomenal growth, and since its entrance into the field some seven years ago, its ready acceptance by architects, contractors and builders everywhere has been most unusual. Each succeeding year finds more and more of those "in the know" turning to Macotta as the final and complete answer to their search for a colorful building material, embracing at the same time all the other essential characteristics of a permanent building unit.

The reasons for such popularity are obvious: First, it is a structural unit—not a facing or a veneer, applied to the masonry by mastic, but built into, and becoming an integral part of the structure itself, like stone or other similar material. Second, the range of colors is unlimited, including stainless steel and bronze, and colors are acid-resisting and non-fading. Third, erection is simple and quick, being set on a mortar bed and jointed in a manner similar to limestone or other masonry units. No special tools are required. Competent stonesetters anywhere can set Macotta without difficulty, and without previous experience.

Under normal conditions shipments of units can reasonably be expected within two to three weeks after receipt of approved color samples and erection drawings at the Macotta plant in Detroit, Architects and builders will find that Macotta process, delivery and co-operation will expedite completion of any job where Macotta is specified.

ARCHITECTURAL PORCELAIN MACOTTA . . . STAINLESS STEEL MACOTTA METALIZED MACOTTA . . . INCH-UNIT

Porcelain Enamel Macotta is faced with architectural porcelain fused on a base of highest quality specially prepared enameling steel varying from 16 to 20-gauge, depending on area and position in building of unit required.

All enamel facings are securely anchored to a light weight concrete backing by a patented process. Narrow stainless steel binding edges, lending distinctive beauty and protection to the unit are added to exposed edges and firmly anchored in the concrete backing.

Macotta is acid-resisting and age-proof, impervious to moisture; will not crack, craze or lose its lustre. It is unaffected by drastic temperature change, and has a high resistance to physical impact. The use of Macotta reduces maintenance costs to a minimum—it is easily cleaned, requiring only soap and water to restore at any time its original beauty and cleanliness.

Color in Demand

On every hand we see color more in demand; architects have long been seeking a medium whereby this demand could satisfactorily be met and in Macotta it has at last been achieved in durable, permanent form. Almost every tone and variation in the color scale can be produced with fidelity through the use of Porcelain Enamel Macotta, offering a stimulating field for architectural ingenuity and originality. In addition to single colors, in either matte or gloss finish, two or more colors can be incorporated on a unit by means of stencils.

Backing of Light Weight Concrete

Backing, to which the facing of all Macotta units is secured, is of specially prepared light weight concrete, and these two principal factors when thus joined, become in effect, one solid unit of fire-resisting masonry.

Macotta units are fabricrated in thickness varying from a minimum of 1 in. to whatever may be required. They can be used, if desired, as a solid wall unit, the inner side making a perfect base for plaster, and when placed in the wall structure, receive the live and dead building loads in common with other load bearing materials and in general serve the normal functions of ordinary masonry.

Macotta weighs approximately 100 lbs. per cu. ft., as against 145 to 150 for stone, thus oftentimes permitting substantial savings elsewhere in structural costs. Macotta units should not be specified having a maximum surface area of more than 20 sq. ft. For anchorage purposes metal ties are cast in the concrete, and to facilitate handling on the job, larger units are equipped with lifting hooks. Macotta can be drilled for sign or other attachments at the plant or on the job, by following manufacturer's instructions. All material is fabricated from the architect's drawings and, in addition to plain ashlar units, can be formed to special shapes for copings, spandrels, frieze courses, etc.

Stainless Steel Macotta

Stainless Steel Macotta is of chrome-nickel (18-8) sheet steel, formed to required design and firmly anchored to concrete backing in a manner similar to that employed in Porcelain Enamel Macotta. Other metals are used in like manner—bronze, copper, etc. While Stainless Steel Macotta can be utilized for ashlar courses, it is recommended principally for base courses, and trim, such as sills, copings, lintels, mullions, pilasters, spandrels, etc. In conjunction with the colorful Porcelain Enamel Macotta, striking color effects may be obtained.

Inch-Unit Macotta

The Inch-Unit was developed to fill the constantly growing need for a wall covering for existing structures of brick, stone, terra cotta and concrete, where conditions would not permit removal of old wall. Inch-Unit is but 1 in. in thickness, from its face of porcelain enamel to its inside surface. Architects contemplating "face-lifting alterations" now have available for the first time a true masonry unit designed and built specially for that purpose. Erection is simple, its light weight making for ease and convenience in handling. Other than expansion shields, star drills for hand work, or electric hammer twist drills, no special equipment is necessary. Full detail information regarding this remarkable unit will be given upon request.

PORCELAIN METALS, INC.

2822 Borden Avenue
LONG ISLAND CITY, N. Y.

TELEPHONE
STillwell 4-2280

SUPORCEL PORCELAIN METALS IN BUILDING CONSTRUCTION

SUPORCEL
TRADE-NAME

SUPORCEL Porcelain Metals have many uses in building construction, both interior and exterior; and especially in remodeling and modernization work. They lend themselves, by their flexibility, to the plans of any architect desiring to work in color and unique forms and designs. SUPORCEL Porcelain Metals will withstand the settling of buildings and other abuses, without cracking or crazing and are easily cleaned with soap and water.

Exterior Uses

SUPORCEL Porcelain Metals can be adapted to various purposes for exteriors. They may be used for signs of any type and large surface panels. Porcelain enamel letters for building fronts and trucks avoid expensive hand lettering; when a background needs freshening, the letters can be removed and re-attached. These metals may be used for store fronts and bulkheads, for advertising spectaculars and theatre marquees with any type of lighting.

Interior Uses

There are numerous uses for SUPORCEL Porcelain Metals in homes, restaurants and markets where food is handled because they are impervious to moisture and absolutely verminproof. They can be moulded into reflectors, chemical and food tanks, sterilizing equipment, butcher shop parts, restaurant ware coverings, cinder catchers, laundry chutes, wainscots, etc.

SUPORCEL Store Fronts and Building Facades

We illustrate herewith representative store and building fronts which have been vastly improved, at a reasonable cost, and which pay for themselves in increased rentals and business. In each case, SUPORCEL Porcelain Metals have been utilized by the architect to achieve distinctive and striking effects. These metal sheets can be obtained in sizes up to 4x10 ft. and can be rounded, flanged and cut as desired; also made in specially designed forms and sections to meet any plans. Due to their light weight they are easily handled and quickly erected. Screws and bolts can be completely concealed. Where metal mouldings or strips are applied at the joints, these can be clipped into place or set with countersunk screws.

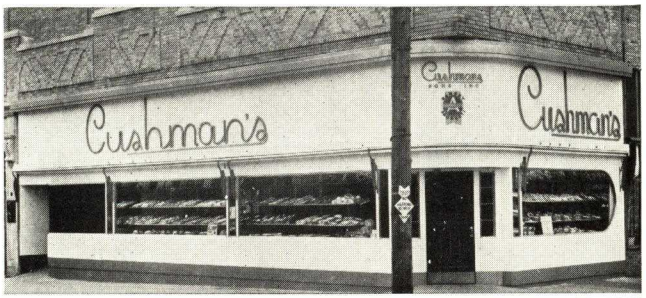
Making of Porcelain Metals

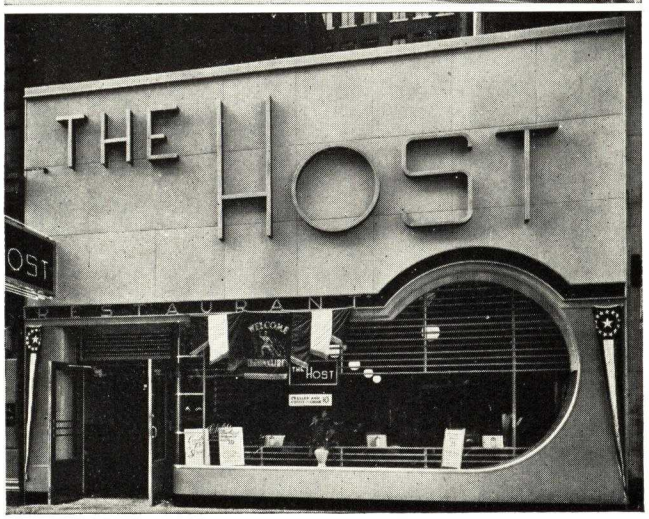
In the manufacture of SUPORCEL Porcelain Metals, special enameling steel sheets of suitable gauge are coated with a porcelain enamel compounded of feldspar, cryolith, fluorspar, and other minerals scientifically blended. These minerals are reduced to a molten mass at a temperature heat of about 2400° F.

When the smelting is completed, the mass is poured into vats of cold water and shattered into fine particles. It is ground in huge revolving mills with water, clay and magnesia to keep it in suspension, and with mineral oxides for color until it attains a creamy consistency; then it is stored and aged. After proper aging, it is applied to the metal (which has been cut to size, punched with holes and chemically cleansed of all dirt, grease and impurities) by spraying. After drying the sheet is fired in its "ground" coat at about 1600°F. The "ground" coat is so compounded that it has an affinity for and fuses with the metal. The second and succeeding coats are applied and fired in the same manner, forming a tough, glasslike, permanent substance.

Service

PORCELAIN METALS, INC., maintains a service department in charge of experienced architects. This department is at the disposal of architects and others desiring information about SUPORCEL Porcelain Metals and their application to specific problems.





Cushman's—201 Beech 116th St., Rockaway Park, L. I., N. Y.; Wm. Fuhrer, architect; A. & P. Adelhardt, New York, contractors.

Manhattan Laundry—1335 Florida Ave., N. W., Washington, D. C.; Bedford Brown IV, Clarendon, Va., architect; Pringle Construction Co., contractor.

Cunard Line—393 Boylston St., Boston, Mass.; Kilham, Hopkins & Greeley, architects; E. A. Abbott Co., contractor.

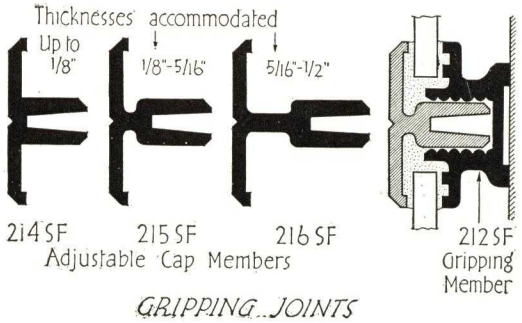
The Host—32 E. 23rd St., New York; Schacchetti & Siegel, architects; Robert Johnson, Inc., contractor.

REVERE COPPER AND BRASS INCORPORATED

EXECUTIVE OFFICES AND GENERAL SALES DEPARTMENT
230 Park Avenue, NEW YORK, N. Y.

For Division Offices and Mills and District Sales Offices, see page on Extruded Shapes
For Other Revere Products, see File Index

THE REVECON SYSTEM



GRIPPING JOINTS

Purpose

The Revecon System is a method of using a framework of extruded Revecon Sections to construct surfaces with any type of rigid sheet finishing material. It may be employed for exterior or interior finish on plane, curved or angular surfaces over either solid or skeleton construction.

General

Sheet materials up to ½ in. thick may be accommodated in the same Revecon installation. Two basic designs—the Capped-joint and the Pointed-joint—are available and may be combined in one installation when desired. These features allow unusual freedom in design of decorative detail and in use of size, color and texture. Entire finish is an integral structural unit with all elements interconnected yet free to expand and contract in individual units without distortion.

Holding Power of Sections—Many extensive tests by outside sources on Olson Testing Machines have been conducted and have shown an average parting load of 1000 lbs. per lin. ft.

Elements in Revecon Construction

Finishing Materials—Any sheet material may be used which is not over ½ in. thick, and is sufficiently rigid to support itself on edge. This includes aluminum, brass, bronze, copper, nickel, silver, steel and other alloys; plate, A-A, or structural glass; Lumar marble, plastics, ceramics, asbestos-cement; Formica, Micarta, Lamicoid wall and insulating boards, and acoustical materials. Further variety may be obtained through crimping, embossing, plating, porcelain-enameling or any other finishing operation, where such treatment is desirable.

Revecon Members—Revecon extruded sections are made of a strong aluminum alloy (53S-T5) combining strength and rigidity with a minimum of weight. Component shapes possess straightness of line and precision of fit that characterize extruded shapes. Sections may be obtained Aluminited in various colors similating various metals.

Revecon Metallic Mastic—Importance of Revecon Metallic Mastic in Revecon Construction can not be overestimated. It not only seals assembly against weather, but permits expansion and contraction within panel areas. Revecon Metallic Mastic has a non-mineral base with a binder of asbestos fibre, and contains aluminum powder which "leafs out" on exposure, forming a protection against light rays and oxidation and keeping underlying ingredients permanently plastic.

Types of Revecon Construction

Capped-joint Construction—In which flat sheet materials are held by the gripping action of the Revecon cap members. These members may be attached direct to supporting surfaces or may be used above, or may ride in the holding members mounted either horizontally or vertically.

Pointed-joint Construction—Which involves the use of formed-edge sheet. The curved edge of the sheet fits the interior contour of the horizontal holding member, while the other edge is supported in the vertical holding channel. Sheets may be formed in any sheet metal shop. Joints between sheets are pointed up with Revecon Metallic Mastic leaving no Revecon member exposed.

Combination Construction—Which applies transition joints between capped-joint and pointed-joint areas in a single installation.

Advantages

Revecon System provides a lightweight, rigid, finishing construction—waterproof and airtight. It uses standard sized flat, decorative sheet building materials, with prefabrication required only in Pointed-joint construction. Shallow depth required for an installation makes it particularly adaptable to remodeling projects. Insulation of any type or thickness may be used. A Revecon installation is readily erected without special tools or equipment. Structural members require no painting or other maintenance. Damaged panels are readily replaced without disturbing adjacent panels. Alterations, when required, may be made with the same Revecon Members.

Uses

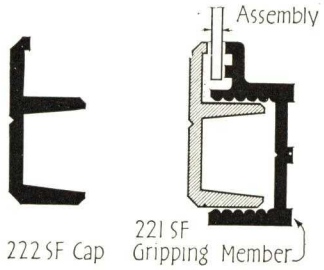
Among the applications to which Revecon System is particularly adapted are the following: Facing and refacing of exterior and interior walls of single or multi-story buildings with decorative sheet materials; store fronts—complete, or combined with products of other manufacturers; garages, service stations or any type of building with light supporting framework; partitions with single sheets, finished both sides, or double walled. Such items as boiler and radiator casings, cabinets, signs and sign panels, spandrels, etc., may be constructed with Revecon sections.

Tools and Accessories

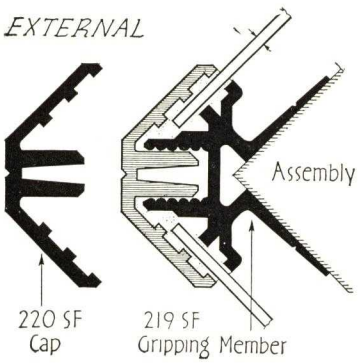
Revecon installations can be erected without special tools. It will be helpful to have a slotted screwdriver for castle nuts, a thick hacksaw blade for notching and fitting Revecon Members, and a caulking gun for applying Revecon Metallic Mastic. Nails, screws and bolts for attaching Revecon Members to supporting area should be as specified.

Revecon Sections and their application to the Revecon System are protected by United States Patents Nos. 1973795; 2005994; 2012070; 2073277; 2073278; 2099337. Canadian Patents Nos. 360122; 365274 and other patents pending.

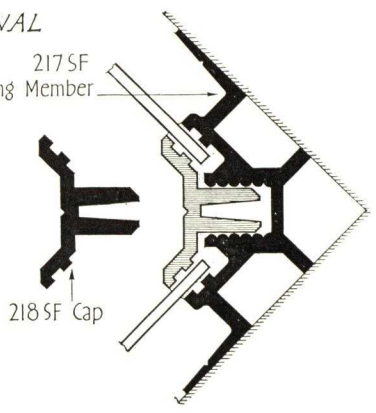
TERMINATIONS



EXTERNAL



INTERNAL

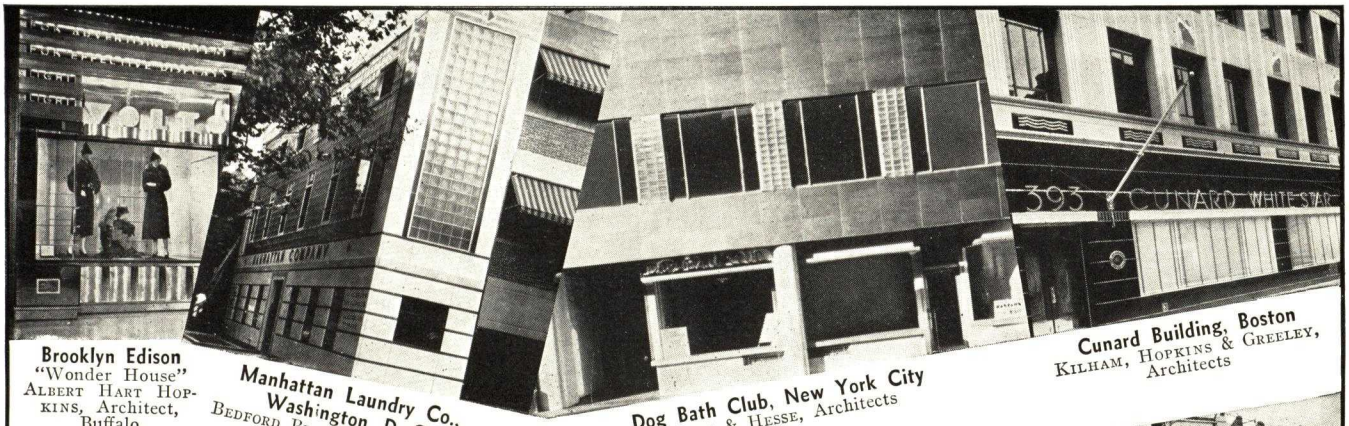


FOUNDED BY PAUL REVERE

1 8 0 1

Complete Information

For complete information about the Revecon System including prices, write to REVERE COPPER AND BRASS INCORPORATED, 230 Park Avenue, New York, N. Y., and ask for Revecon Technical Handbook. Write us on your letterhead for your copy.



Brooklyn Edison
"Wonder House"
ALBERT HART HOPKINS, Architect, Buffalo

Manhattan Laundry Co., Washington, D. C.
BEDFORD BROWN, IV., Architect

Dog Bath Club, New York City
BLOCH & HESSE, Architects

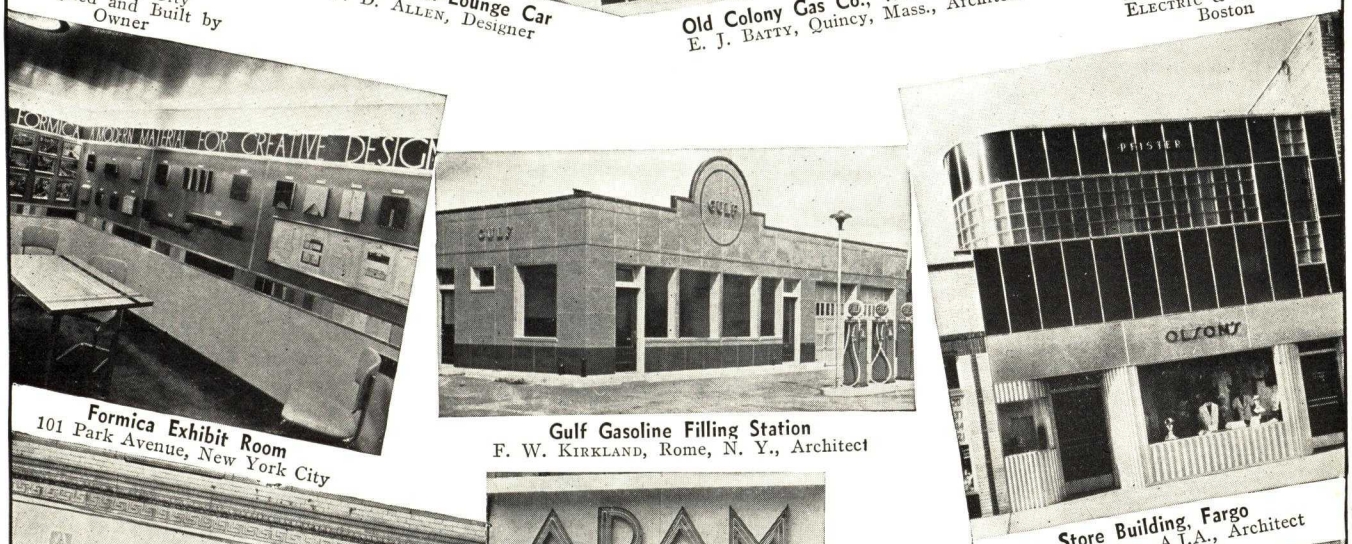
Cunard Building, Boston
KILHAM, HOPKINS & GREELEY, Architects

Bureau of Standards Booth
R. H. Macy & Co., New York City
Designed and Built by Owner

N. Y. C. R. R. Diner-Lounge Car
Miss F. D. ALLEN, Designer

Old Colony Gas Co., Whitman, Mass.
E. J. BATTY, Quincy, Mass., Architect

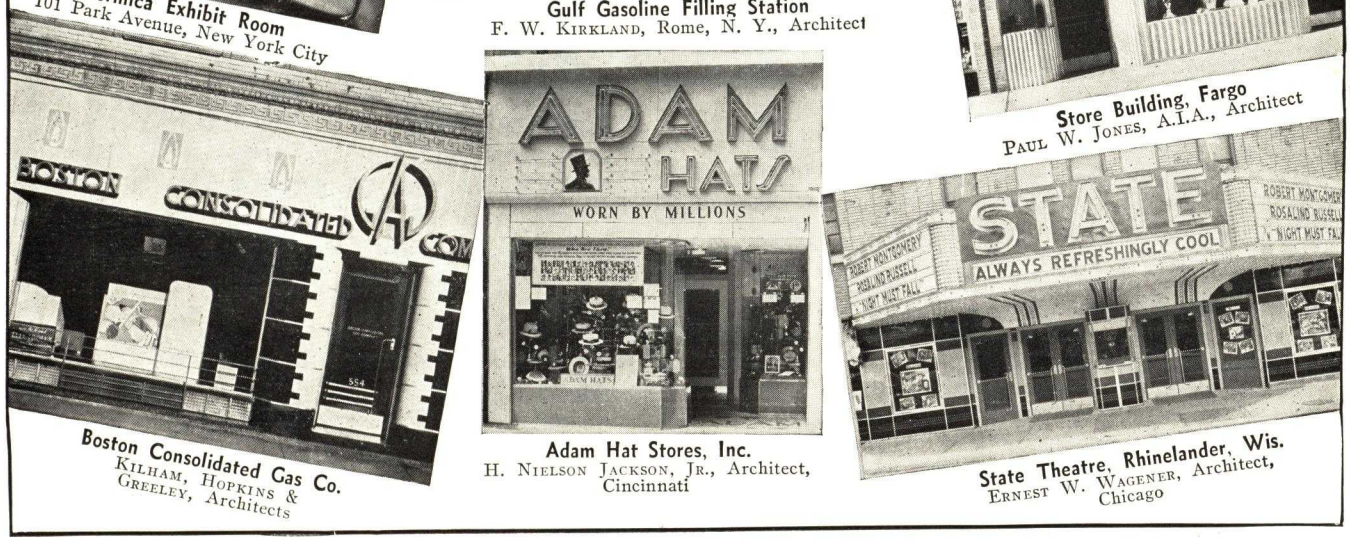
Kane's Furniture Store
Designed by DONNELLY ELECTRIC & NEON CO., Boston



Formica Exhibit Room
101 Park Avenue, New York City

Gulf Gasoline Filling Station
F. W. KIRKLAND, Rome, N. Y., Architect

Store Building, Fargo
PAUL W. JONES, A.I.A., Architect



Boston Consolidated Gas Co.
KILHAM, HOPKINS & GREELEY, Architects

Adam Hat Stores, Inc.
H. NIELSON JACKSON, JR., Architect, Cincinnati

State Theatre, Rhinelander, Wis.
ERNEST W. WAGENER, Architect, Chicago

REVERE COPPER AND BRASS INCORPORATED

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230 Park Avenue, NEW YORK, N. Y.

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CLEVELAND, OHIO, 1110 Midland Bldg.
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MILWAUKEE, WIS., 626 E. Wisconsin Ave.
MINNEAPOLIS, MINN., 724 Metropolitan Bank Bldg.
NEW ORLEANS, LA., 425 Decatur St.
NEW YORK, N. Y., 75 E. 45th St.
PHILADELPHIA, PA., 1201 Architects Bldg.
PITTSBURGH, PA., 727 Gulf Bldg.
PROVIDENCE, R. I., 1215 Industrial Trust Bldg.
ST. LOUIS, MO., 955 Telephone Bldg.
SAN FRANCISCO, CALIF., 562 Russ Bldg.
SEATTLE, WASH., 317-318 Pioneer Bldg.

Products

ARCHITECTURAL METALS in Sheets, Extruded and Drawn Shapes and Tubes; REVERE 60 BRONZE, REVERE 85 BRONZE, and REVERE 90 BRONZE SHEETS; NICKEL SILVER SHEETS; COPPER and BRASS SHEETS.

ARCHITECTURAL BRONZE, BRASS, COPPER, NICKEL SILVER and ALUMINUM EXTRUDED SHAPES, DRAWN SHAPES; BARS, CHANNELS, ANGLES; ROUND, SQUARE, RECTANGULAR and SPECIAL SHAPED TUBES for architectural use.

These materials are sold to fabricators of ornamental and structural metal work for use in doors, windows, entrances, counters, screens, grilles, hand rails, soffits, pilasters, cornices, etc.

For Revere Sheet Copper, Leadtex (Lead-Coated Copper); Cheney Flashing, Revere Thru-Wall Flashing, Brass Pipe, Revere Copper Water Tube Pipe, Revecon System and Herculoy, see File Index.

BRONZES FOR ARCHITECTURAL USE

Sheets

Revere panel sheets are characterized by their flatness, fine finish and uniform color. They are offered in Revere 60 Bronze, Revere 85 Bronze and Revere 90 Bronze.

Revere 60 Bronze Sheets

Revere Copper and Brass Incorporated has more than a century of experience in the production of sheet metals. Revere 60 Bronze Sheets enjoy the highest reputation, and have no superior and are preferred by fabricators because of their flatness, fine finish, uniformity of surface and color as well as the ease with which they are formed. Each step of their manufacture is closely checked and controlled by men of long experience in their production.

Another advantage of Revere 60 Bronze Sheets is the close color match obtained when they are used in connection with Revere Extruded Architectural Bronze Shapes.

Ample stocks of these sheets are carried in a large range of sizes and thicknesses for prompt shipment. In addition, Revere has facilities for producing sheets of extreme width and length, depending on the thickness required.

Revere 85 Bronze and Revere 90 Bronze Sheets

These sheets are recommended for use with drawn shapes and tubular sections of the same alloy as the sheets, color match being thus assured.

Revere Extruded Architectural Bronze Shapes

Extruded architectural shapes are particularly adapted for the construction of entrances, doorways, store fronts, grilles and windows.

These shapes are uniform and accurate in size. As compared to castings, Revere extruded shapes are stronger and lighter; also the cost of finishing them is much less and at the same time rejections are reduced to a negligible factor. The average tensile strength is in excess of 45,000 pounds to the square inch.

Revere has facilities and experience for producing these shapes in plain or intricate design in commercial sizes up to and including six inches overall dimension and in lengths up to twenty feet.

Great care is exercised in the straightening of Revere shapes which is a time-saver in fabricating.

Revere Extruded Architectural Bronze Shapes produce a good color match when used with Revere 60 Bronze Panel Sheets.

Nickel Silver Sheets and Extruded Shapes

Where a white metal with unusually fine surface and finish is desired, Revere Nickel Silver serves a definite architectural purpose.

This material is furnished in both sheet and shape form, making possible an absolute match in color and finish.

Nickel Silver Extruded Architectural Shapes can be supplied up to six inches wide and not less than one-eighth inch in thickness.

Drawn Shapes

Where light weight mouldings and shapes are required for use in interior trim, show cases, store fronts and other places, Revere drawn shapes are recommended.

Rods

Revere Rods for architectural purposes are furnished in the same mixtures as sheet metals and extruded shapes.

Tubes

Revere 85 Bronze is made in round, square, rectangular and special tube forms for architectural purposes such as stiles, railings, and balustrades.

Samples

Samples of the various architectural metals described above will be gladly sent upon request.

REPUBLIC
STEEL
McD

Republic

A Name You Can Depend Upon

A GOOD NAME is an asset without which no building product can gain the confidence of men who plan and build. For buildings become lasting monuments to their creators. If the structure endures and gives faithful service, the architect and builder are honored. If shoddy materials or faulty design cause early failure, discredit is reflected. In no other industry is material quality more important, good reputation more essential.

Republic Steel Corporation and subsidiaries offer the most complete line of steel products for the building industry. At your service are more than sixty plants in nineteen states, sales offices strategically located all over the nation, trained research workers and practical engineers, and production and development resources of one of the world's great makers of iron and steel.

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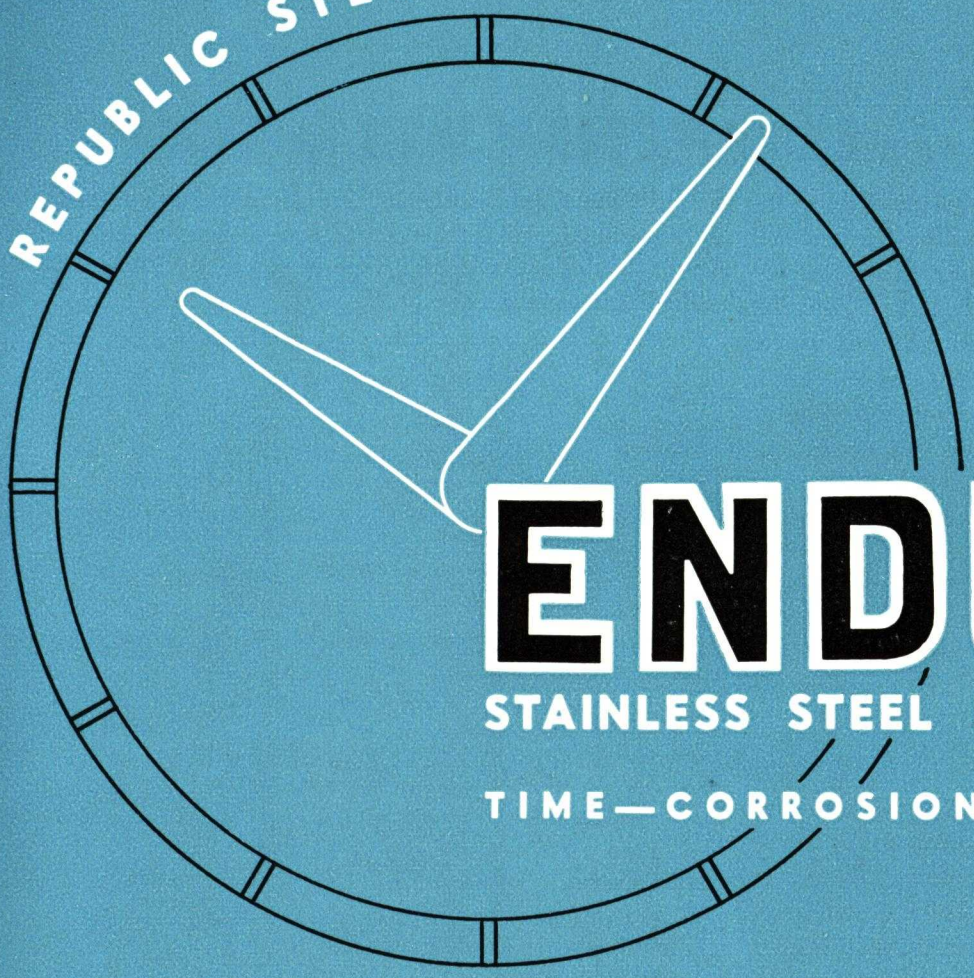
Lockers ..... See File Index
STEEL AND TUBES, INC. ..... See File Index
TRUSCON STEEL CO. ..... See File Index

REPUBLIC STEEL

REPUBLIC STEEL CORPORATION

GENERAL OFFICES • CLEVELAND, OHIO

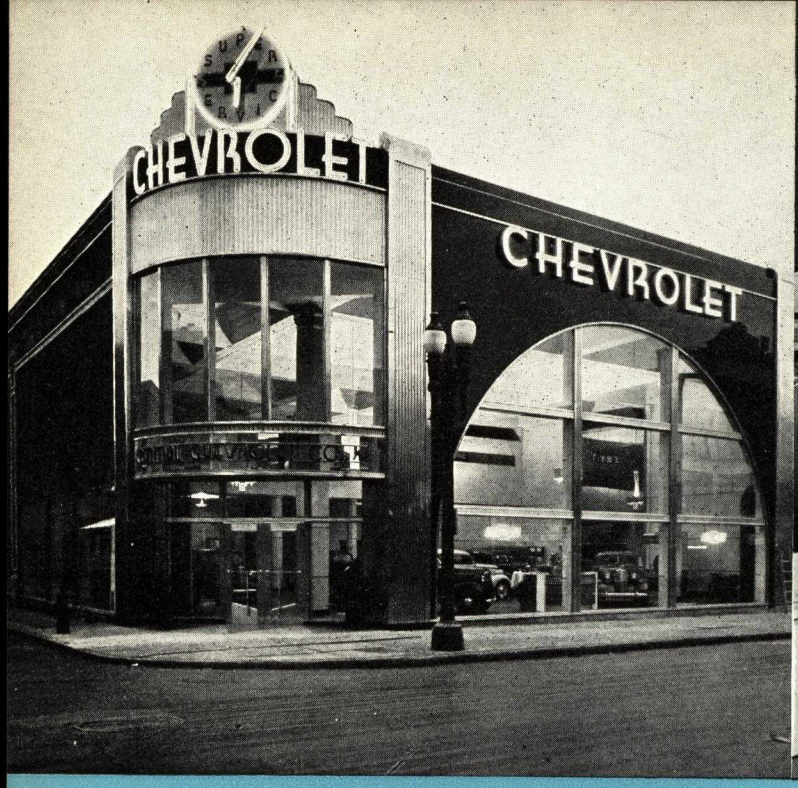
REPUBLIC STEEL'S



ENDURO

STAINLESS STEEL FOR ARCHITECTURE

TIME—CORROSION—RUST - RESISTANT



Central Chevrolet Co., Rochester, N. Y.
Architect — L. H. Friedman, Rochester, N. Y.
Enduro 18-8 used for Pilasters, Door Casings, Coping, Marquee, Marquee Ceiling and Head Trim on Windows.

John C. Wakefield Residence, Winthrop, Mass.
Enduro 18-8 used for Wainscot and Shower Walls, giving a distinctive and beautiful appearance. Enduro also used for downspouts and gutters on this residence.

THERE ARE HUNDREDS OF **ARCHITECTURAL USES for ENDURO***

To attempt to list all the hundreds of possible architectural applications of Enduro Stainless Steel would be merely to catalog the uses for any metal in any building. For there is almost no place in which the usual metals are used where Enduro will not prove highly satisfactory. Not only does the beautiful, silvery-white lustre open for the designer an entirely new field of decorative possibilities, but the corrosion-resisting qualities indicate its use wherever there is liable to be danger of atmospheric attack. For example, Enduro has been used for decorative effects in some of the country's finest buildings and yet its qualities make it equally suitable for such practical purposes as heater smoke pipes and conductor pipe, where it has a life many times that of ordinary pipe with the consequent economy and freedom from trouble.

Two Republic Stainless Steels

Of the many different stainless steels, two are of special interest to the architect because they are particularly suitable for architectural applications. These are Enduro 18-8 and Enduro AA. Enduro 18-8 meets every architectural requirement and is generally used for such purposes. Enduro AA is less expensive than Enduro 18-8 and is used to some extent for interior work.

It is realized that some architects may not be familiar with the many applications of Enduro now being made in the architectural field and the list at right is included simply as indicative of the wide range of possibilities with this unusual metal.

AN INDICATIVE RANGE OF POSSIBLE USES

Air Conditioning Equipment
Beer and Liquor Dispensing Equipment
Blowers
Bolts and Nuts and Nails
Booths
Boxes, Safe Deposit
Bulletin Board Frames

Cabinets
Cable, Wire
Cages
Casements
Ceilings
Chairs
Channels
Chimney Tops (to prevent down drafts)
Chute Covers
Chutes, Mail
Clock Dials
Columns
Conveyor Systems
Cornices, Copings and Gutters
Counter Covers
Courses, Band
Crosses on Churches

Desks
Display Cases (plain or refrigerated)
Domes
Door Jambs, Sashes and Moulding
Door Push Bars and Plates
Doors, Elevator
Doors, Revolving
Doors, Swinging
Doors, Vault
Down Spouts
Drinking Fountains

Elevator Dials
Entrances
Etched Panels

Facades
Flashing
Floor Plates and Tread
Flues
Frames, Advertisement

Gates
Grilles, Radiator and Decorative

Hardware
Hoods, Range and Laboratory

Incinerators

Kick Plates, Door

Laboratory Equipment
Letters, Stamped, Formed and Cast
Lightning Fixtures
Lintels, Window
Louvres

Marine Ornamentation
Marquees
Medallions
Mirrors
Moulding, Windows, etc.
Mullions (Exterior and Interior)

Name Plates
Ornamental Metal Work

Panels, Plain and Fluted
Partitions
Piers
Pilasters
Pillars
Plaques
Play Ground Equipment
Posts
Push Plates, Door

Railing, Decorative
Refrigerators
Risers, Stair
Rings, Circular
Roofing
Rosettes

Safes
Screens (Frames and Cloth)
Scroll Work
Sheathing
Shelving
Shower Cabinets
Signs
Sills, Window
Sinks
Skylights
Smoke Pipe for Furnace
Soffits
Spandrels
Spires
Store Fronts
Structural Members

Tablets, Memorial
Theatre Equipment
Towers

Urns, Decorative

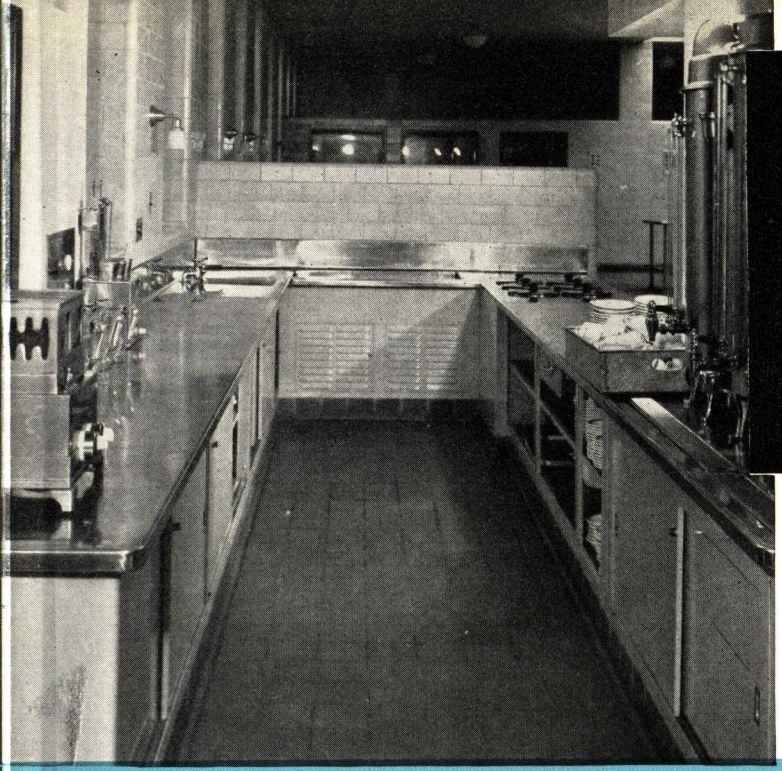
Vaults
Ventilators and Ducts
Vestibules

Window Frames
Wire Cables

*Reg. U. S. Pat. Off.

REPUBLIC STEEL CORPORATION

REPUBLIC STEEL



Westchester County Home, East View, N. Y.
Architects — Morris & O'Connor
An interesting application of Enduro 18-8 on Sinks, Tables and Counters, showing flexibility of usage.

Important Information to Assist the

Architect

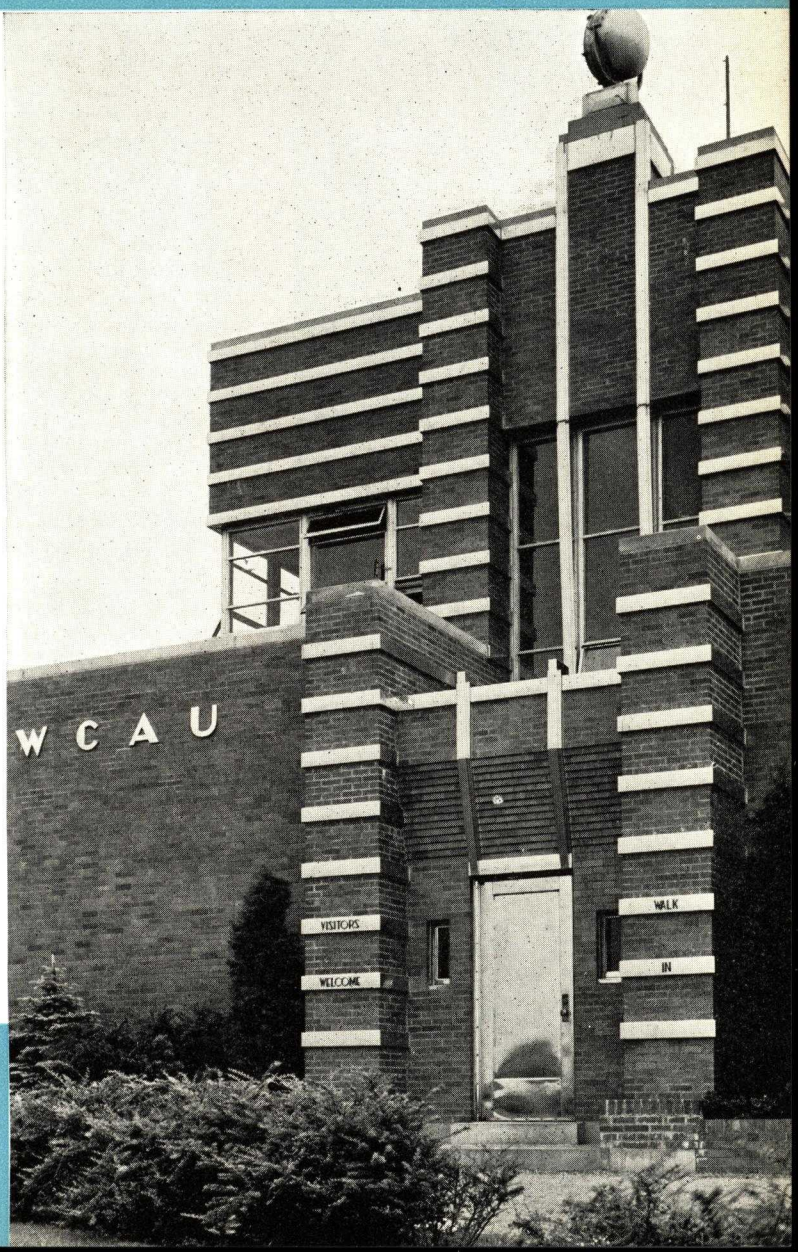
In Designing and Specifying Enduro Stainless Steel to meet best the Requirements of his Project

ENDURO

Republic's Perfected STAINLESS STEEL

ENDURO is the trade name identifying the group of Stainless and Heat-resisting Steels perfected by Republic Steel Corporation at its Alloy Steel Division, Massillon, Ohio. In these pages it is our purpose to present the unusual characteristics and wide range of possible applications of this newest of metals.

Radio Station WCAU, Philadelphia, Pa.
Architect — Gabriel Roth
Enduro 18-8 used for face trim, letters and doors.



STAINLESS STEEL

ARCHITECTURAL SERVICE

In the discussions on the pages which follow, emphasis has been laid on the necessity for selecting the proper type of steel to meet the particular conditions of the use contemplated. To assist the architect in specifying that type which will most satisfactorily meet his requirements, we offer the services of the Metallurgical Department of Alloy Steel Division, Republic Steel Corporation, with its completely equipped modern laboratories where authorities are continually studying every factor connected with the production and application of stainless steels and where specialized advice is freely available.

In connection with the uses of stainless steels shown and described herein it should be borne in mind that Republic Steel Corporation does not sell or furnish the products direct. The Corporation produces only the unfinished material which is fabricated by others. Any of the district sales offices listed on the back cover will be glad to cooperate with the architect and suggest fabricators who are experienced and qualified to handle the work. They will also advise the architect on questions of specifying, detailing and installation.

For such advice or assistance, please call the District Sales Office or the distributor nearest you or write to the Alloy Steel Division of the Corporation at Massillon, Ohio. Samples of various finishes will be furnished any architect on request.

ALLOY STEEL DIVISION, MASSILLON, OHIO
GENERAL OFFICES • CLEVELAND, OHIO

General Description, History, Range, Capabilities and Types of Stainless Steel

Enduro Stainless Steels are silvery-white in appearance and cannot chip, crack or wear thin as they are the same metal all the way through. With reasonable care they do not tarnish, corrode or become dull when properly applied. They can be worked and fabricated for any purpose. They can be given a number of different finishes or combinations, or may be etched and enameled to produce unusually beautiful effects. They may be combined with colored porcelain enamel (or with other metals) to produce a wide variety of pleasing effects. In brief, the unusual properties of Enduro Stainless Steels indicate their use not only for the finest of decorative effects but also for every application subject to possible corrosion.

Probably few persons not directly connected with the industry appreciate the wide range of uses now being made of stainless steel. A list of these would be a roll call of almost every manufacturing process in the United States. From cooking utensils to automobile parts, from golf clubs to bank vaults, stainless steel is finding new applications every day. In the engineering, chemical, power and oil refining fields, the corrosion- and abrasion-resistance and strength of stainless steel at high temperatures are essential.

Although chromium, the element, was discovered in 1789 and the acid-resisting properties of chromium-iron alloy appreciated as early as 1821, it was not until within the past twenty years that commercial application has been made of such alloys. Since 1913 hundreds of patents have been granted both in this country and abroad for various stainless alloys.

Comparison of Stainless Steel and Stainless Iron

Naturally this flood of patents has led to considerable confusion, particularly among laymen, as it seems that nearly every steel manufacturer has entered the stainless field to make this or that analysis. Rash claims have been made regarding the performance of these alloys and far too often the application has been made to suit the alloy on hand rather than applying a specific alloy which would give the desired results.

While different trade designations are still used by various manufacturers, standard type numbers have been assigned to all stainless steel analyses. This has been done under the supervision of the American Iron and Steel Institute.

Technically there is a distinction between stainless iron and stainless steel, although the latter term is popularly, if erroneously, used to designate all stainless alloys.

Stainless Iron generally is an alloy of iron and chromium, or of iron, chromium and nickel, with a *very low carbon* content. The stainless properties of the alloy are due to the ability of chromium to form with iron a solid solution which is resistant to the various corrosive media. It is essential that sufficient chromium be present in solid solution to ensure stainless properties. The chromium content of Enduro Stainless Irons has been adjusted accordingly.

Stainless irons, or stainless steels as they are popularly known, as a class do not respond to hardening by heat treatment. Neither do they require special heat treatment other than that received at the mill to develop stainless properties. Stainless steel lends itself to deep drawing and other forming operations.

To meet the demand for corrosion-resisting alloys suitable for a wide variety of specific purposes, Enduro Stainless Steel has been developed in a number of types. In this development, all factors affecting corrosion-resistance have been considered and their relative importance established. The result is a series of alloys possessing maximum corrosion-resistance and physical properties, consistent with ease of workability, for each field of application. Two of these steels were especially developed for architectural uses and are described in detail on the pages which follow.

Characteristics Analysis and Physical Properties of Enduro 18-8

ENDURO 18-8 Enduro 18-8 contains approximately 18 per cent of chromium and 8 per cent of nickel with carbon over .08-.20 per cent. The addition of nickel — a metal possessing in itself considerable corrosion-resistance — to the stainless analysis greatly increases the corrosion-resistance of the alloy, extending this resistance to a number of materials which attack stainless chromium iron, to the point of complete immunity from attack. The addition of nickel also increases resistance to scaling at high temperatures, reduces grain growth, and at the same time lessens embrittlement after long service at high temperatures. Metallurgically, the effect of the nickel is to produce an alloy of the stable austenitic type; characterized by extraordinary toughness and ductility, no capacity for hardening under heat treatment, high resistance to impact, and the property of being non-magnetic. To take full advantage of the addition of nickel, certain processing is necessary and this forms an important part of the Enduro production method.

TYPICAL ANALYSIS AND AVERAGE PHYSICAL PROPERTIES OF ENDURO 18-8

Analysis

Carbon	over .08-.20%
Chromium	17.5-19.0%
Nickel	8.0-9.5%
Silicon	.75% max.
Manganese	.60% max.
Sulphur	.030% max.
Phosphorus	.030% max.

Weight—virtually the same as steel—0.286 lb. per cubic inch.

Thermal Conductivity expressed in calories per centimeter cubed: .035 Resistance to High Temperature Scaling.

Continuous Service 1600° F.
Intermittent Service 1450° F.
Co-efficient of
Linear Expansion—Temperature x 10^{-6}

0- 100° C.	= 16.0
0- 300° C.	= 17.0
0- 600° C.	= 18.0
0-1000° C.	= 20.0

Melting Point (approximately 2550-2600° F.)

Cold working increases the ultimate strength and yield points over those shown above but reduces ductility.

Average Physical Properties Annealed (24 Gauge Sheet)

Ultimate Strength	85,000 lbs. per sq. in.
Yield Point	35,000 lbs. per sq. in.
Elongation in 2 in.	55.0%
Elongation in 4 in.	50.0%
Elongation in 8 in.	45.0%
Rockwell B	80.0
Olsen Cup Test	.450-.500

(Lighter gauges will have lower cup values)

Average Physical Properties (Annealed Round Bar Stock Up to 2 in. Rd.)

Ultimate Strength	85,000 lbs. per sq. in.
Yield Point	35,000 lbs. per sq. in.
Elongation in 2 in.	55.0%
Red. Area	65.0%
Rockwell B	80
Brinell	156

(Larger sizes will have lower strength values)

It is not uncommon to find 250,000 lbs. tensile strength, 2% elongation and 40-45 Rockwell "C" hardness in cold drawn 18-8 wire.

Cold rolled strip having 150,000 lbs. ultimate strength, with 20% elongation in 2 in., can be obtained. It will stand a 135° bend across the grain of the metal and 135° to 180° with the grain.

Characteristics, Analysis and Physical Properties of Enduro 18-8 (Continued)

FABRICATING ENDURO 18-8

The Importance of Proper Fabrication in Successful Installations

The proper fabrication of any metal is a most important part of a successful installation and for this reason the data below are presented for the information of the architect who may be unfamiliar with the best methods of working and forming Enduro 18-8. Enduro 18-8 is one of the finer metals and should be handled similarly to other high grade materials rather than attempt to fabricate by employing methods generally used on common iron or steel products.

Deep Drawing, Punching and Shearing Qualities of 18-8

Enduro 18-8 is well suited for deep drawing, punching and shearing. Its extremely high elongation and low yield point are indicative of what may be expected of this alloy as compared to regular deep drawing steel. It should, however, be pointed out that Enduro 18-8 work-hardens very rapidly and to a much higher degree than does regular drawing steel. For this reason it is necessary to perform as much work as possible in a single drawing operation and to reanneal between operations. The blanks used should be of sufficient size not to require excessive ironing out in the dies to secure cup depth, as the work-hardening characteristics of the alloy may cause high breakage loss as well as excessive wear on the dies. The use of a special lubricant of suitable consistency and body is quite important. A number of suitable drawing compounds are obtainable from chemical supply concerns and lubricant manufacturers. Speed of the press should be about one-half that used for steel and press capacity should be doubled. Hold-down pressure must be greater than that required for ordinary steel and will vary with the job. Die clearance should be about twice that used for steel or brass.

The work hardening characteristics and high tensile strength of Enduro 18-8 make it necessary to use more power in performing drawing operations than is required in forming and drawing steel of a similar gauge. A very close adjustment of shear blades and of clearance between punches and dies is recommended for punching and shearing operations. The power required will be greater for the reason previously given and it will be necessary to shear through the entire thickness of metal rather than permit it to snap off after a portion of the cross-section has been cut through, as occurs in punching most materials.

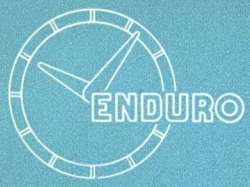
Riveting — Enduro 18-8 is ideal material for Rivets

Enduro 18-8 is ideal material for rivets. As it does not harden on rapid cooling, nor develop coarse crystalline structure on heating, the more accurate temperature control required for straight chromium iron rivets is not necessary. Rivets when driven hot should be heated within a temperature range of 2100-2200° F. Smaller size rivets may be driven cold, as they remain tough and thoroughly dependable. Hot driving is recommended for rivets over 3/16 in. in diameter.

Welding Qualities — Methods by which Enduro 18-8 may be welded

Enduro 18-8 may be welded by either the acetylene torch or electric arc, using specially prepared Enduro 18-8 welding rods or electrodes. It may also be spot and resistance welded, but cannot be forge or hammer welded. Seam welding of light gauge sheets is readily accomplished. Having no capacity for hardening, welds remain tough and ductile and do not develop the coarse, "weak" crystalline structure characteristic of the straight chromium iron alloys.

For acetylene welding, uncoated welding rods should be used. With plates and other heavy materials, chamfer the edges to be welded and place these a small distance apart. Build up a bead between these edges, keeping the flame pointed in the direction



Ways in which Enduro 18-8 may be welded (continued)

of welding so as to preheat the work. Use a slightly reducing flame, and see that it is no larger than necessary for the work to be done. For electric arc welding, specially coated rods or electrodes must be used. Reverse polarity (electrode must be positive and work the negative pole) and regulate the machine to give the same or lower voltage than would be used with plain steel rods, and with sufficient current to give good fusion. Definite instructions cannot be given as much will depend upon the character of the work and the type of machine used. (See Enduro Welding Booklet for further information.)

While welds made with Enduro 18-8 are naturally tough and ductile, the annealing treatment previously mentioned is strongly recommended if the welded material is to withstand severe corrosive attack. This treatment will tend to remove the difference in structure between the weld and the adjacent metal, which is the primary cause of local attack in welded structures. Where acid corrosion may be encountered and annealing of the weld is not possible, Enduro 18-8-S should be used.

Soldering of Enduro 18-8 produces strong and firm joints

Enduro 18-8 may be soldered without difficulty, producing firm, strong joints. For pickled finish sheets, the ordinary muriatic acid, cut with zinc, may be used. However, better results will be obtained with special commercial fluxes, used with ordinary solder, and by pursuing the same procedure as with copper, tin, terne, etc. For polished sheets, the surfaces to be joined should be roughened with a coarse emery wheel or cloth before tinning.

The metal comprising the joints should be properly tinned before assembly. The half tin, half lead type of solder may be used but solder with higher tin content such as 75% tin—25% lead is recommended because it does not discolor as rapidly under atmospheric exposure. Pure block tin can also be used. On account of the low thermal conductivity, use a large soldering iron which will have sufficient heat capacity to heat the metal thoroughly. Immediately after soldering, *all traces of acid must be thoroughly removed* by washing with soap and water to which has been added some washing soda, as the acid attacks the metal readily and will stain if not removed. Soldering should not be depended upon for strength but simply to seal the joint. Riveting, lock seaming or spot welding should be used for strength. Rivets should be tinned to insure adhesion of the solder before driving which, of course, is done cold.

Brazing and Silver Soldering — Satisfactory Fluxes

We recommend welding rather than brazing whenever possible due to the excellent welding properties of 18-8 and to the possibility of intercrystalline penetration of the brazing alloy. This lowers corrosion-resistance and causes embrittlement of the joint under wet corrosive conditions by favoring electrolytic action. Brazing must be carefully done to prevent the penetration of brazing alloy into the grain boundaries of the metal.

For brazing and silver soldering proceed in the usual manner, observing the precaution of having the metal just sufficiently hot for good adhesion. Special stainless steel brazing flux should be used.

Machining and Drilling are best accomplished with Enduro 18-8-FM.

Being an austenitic alloy, Enduro 18-8 is tough and somewhat difficult to machine. In order to overcome the machining difficulties heretofore confronted, Republic has produced a free machining 18-8 alloy which is termed ENDURO 18-8-FM. This free machining alloy, as its name suggests, simplifies to a great extent turning, milling, boring and drilling operations. Its corrosion-resisting properties are comparable to those of the regular ENDURO 18-8. Best results are obtained with slow cutting speeds and moderately heavy cuts.

Protecting the Surface of POLISHED Enduro during Forming, Drawing, Moulding, Construction and Erection

Many applications of Enduro permit the use of mill polished sheets such as No. 4 finish, No. 6 Tampico finish, No. 7 finish and No. 8 mirror finish. A few of these applications are—soda fountain and bar equipment, dairy equipment, meat packing equipment, hospital and kitchen equipment, restaurant and cafeteria equipment and for structural and decorative purposes such as used on the Empire State, Chrysler, Insurance Co. of North America Building and many others.

Preventing of Injury During Fabrication

The polished surfaces must be carefully protected during fabrication. This is accomplished by proper lubrication or by the use of protective paper and tape in brakes.

Protection during Building Construction

When Enduro is used for decorative purposes in building construction it must be protected from cement, plaster, paint, rust from steel work and other "building filth." This may be done by coating with special lacquer which is removed when construction is finished, or by pasting Manilla paper over the surface.

Passivation and Passivation Tanks

The passivation treatment consists of immersing the material, after removing any grease film, in a 25% by volume solution of nitric acid and water at a temperature of 120-130° F. for 20-30 minutes. The purpose of the passivation treatment is to remove any trace of iron or steel which has become abraded on the stainless steel due either to shearing or contact with dies in forming operations. The nitric acid bath will remove this film of iron without affecting the surface of the polished stainless steel.

Bulletins covering in detail each of the operations and treatments which may be applied to Enduro Stainless Steels are available and will be sent gladly to any architect on request.

ENDURO AA

Enduro AA is a straight chromium alloy. It is a fairly ductile, non-hardening alloy with physical properties equal to a high grade medium carbon steel, with resistance to general corrosion and oxidation at high temperatures.

It is recommended *only for interior applications* as its resistance to corrosion is not equal to 18-8.

Fabrication in general is similar to 18-8 except it does not possess the same degree of ductility or welding properties, and does not work harden to any great extent.

All welded joints in straight chromium alloys (without the addition of nickel) have a tendency to embrittlement at and adjacent to the weld, due to the high temperatures required for welding, which causes excessive grain growth.

Characteristics and Recommended Uses of Enduro AA

TYPICAL ANALYSIS AND AVERAGE PHYSICAL PROPERTIES OF ENDURO AA

Analysis

Carbon ..... .12% max.
Chromium .....14.0—18.0%
Silicon ..... .50% max.
Manganese ..... .50% max.
Sulphur ..... .03% max.
Phosphorus ..... .03% max.
Weight per cubic inch—virtually the same as steel. (.277 lbs. per cu. in.)
Thermal Conductivity expressed in calories per centimeter cubed: .045
Resistance to High Temperature Scaling—
Continuous Service 1500° F
Intermittent Service 1600° F.
Coefficient of
Linear Expansion—Temperature x10-6
0-100° C. = 9.6
0-300° C. = 10.1
0-600° C. = 10.9
0-800° C. = 11.2
Melting Point—2650°-2700° F.

Average Physical Properties (Annealed Sheet)

Ultimate Strength .....80,000 lbs. per sq. in.
Yield Point .....50,000 lbs. per sq. in.
Elongation in 2 in.....26.0%
Elongation in 4 in.....22.0%
Elongation in 8 in.....18.0%
Rockwell B 80

Average Physical Properties (Annealed Round Bar Stock)

Ultimate Strength .....80,000 lbs. per sq. in.
Yield Point .....50,000 lbs. per sq. in.
Elongation in 2 in.....25.0%
Reduction of Area.....60.0%
Brinell 160

SHAPES · SIZES · FINISHES OF ENDURO STAINLESS STEEL

Shapes, Sizes and Finishes

Enduro Stainless Steel is furnished in the forms listed below. In addition to these Enduro may be cast and the architect will find many uses for which cast stainless steels are especially appropriate. All shapes are made by fabrication and either formed, rolled or drawn. In the present state of the art Enduro does not lend itself readily to the extruding operation. For detailed information consult any Enduro Stainless Steel Distributor or any of the Republic District Sales Offices listed on the back cover.

Rounds—Hot rolled, cold drawn, centerless ground and polished.

Squares—Hot rolled and cold drawn.

Hexagons—Hot rolled and cold drawn.

Flats—Hot rolled and cold drawn.

Sheets—Standard gauges and sizes, annealed and pickled, polished one side and polished both sides.

Plates in practically any size and thickness obtainable in plain steel; large size one-piece flanged and dished heads.

Strip—Hot rolled and cold rolled.

Forging Blanks—Any reasonable weight or size.

Shapes, Angles, Channels, I-beams, etc. —Sizes on application.

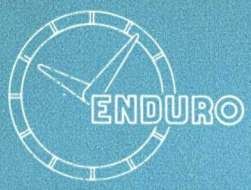
Tubing, seamless, Republic electric resistance welded. Pickled or polished.

Welding Rods, 1/8 in., 5/32 in., 3/16 in. diameter. Coated and uncoated carried in stock for electric and acetylene welding.

Castings can be furnished of Enduro 18-8 analysis by special arrangement.

Bolts and nuts, rivets, screws, nails, tacks, spikes, wire and many other items of Enduro Stainless Steel can be obtained from various sources. Names of manufacturers will be gladly furnished.

Of primary importance to the architect in designing with Enduro Stainless Steel are the many different finishes in which this unusual metal may be obtained. Unlike plated materials, Enduro is the same beautiful color throughout and has no coating to wear off. As it is proof against tarnishing and corrosive attacks when properly fabricated and installed, it can be used with every assurance that the original effect will be retained during the entire life of the building.



Suggestions on the Selections of Finishes — Designations for Sheet Finishes

FINISH DESIGNATIONS

The various sheet finishes are designated as follows:

No. 1 Hot rolled annealed and pickled

No. 2-B Full Finish (Bright cold rolled)

No. 2-D Full Finish (Dull cold rolled)

No. 4 Standard Polish on one side or both sides

No. 6 Standard Polish, Tampico Brushed on one or both sides

No. 7 High Lustre Polish on one or both sides

No. 8 Mirror Finish on one or both sides

Although the architect will probably select the finish to produce the special effect desired, certain restrictions should be borne in mind and the advice of Republic Steel Corporation representatives or distributors secured on any problems not covered here. For example, the finish possible on the stock will depend to a considerable extent on the amount of forming necessary. It is inadvisable to use polished sheets for extra deep drawing operations where score marks from dies are likely to occur in forming or where it is necessary to reanneal to make a second drawing operation. Our No. 1 Finish should be used under these conditions.

Numerous other applications of the No. 1 Finish may be made at points where appearance is not a primary factor but where corrosion-resistance is important, such as mail chutes, tanks, tubing and a variety of other uses.

No. 2B Finish and No. 2D Finish are the same as No. 1 except that they have a slightly higher finish due to cold roll processing.

Polished finish should be used only where stock will be employed without further working, where the degree of working is small or where finish can be protected so that excessive refinishing is unnecessary.

No. 4 Finish, being ground and polished, is very satisfactory for interior application. It possesses a ground surface appearance with a medium lustre and is considered the best commercial type of finish for such applications as bank vaults, restaurant and soda fountain equipment, sterilizers, laundry machinery, packing house refrigerators and equipment, cold storage, canning and preserving equipment, trim for cabinets and numerous other places where a fairly high lustre and ease of cleaning are desired.

No. 6 Finish has a silvery lustre and does not have as high a reflectivity as No. 4. It can often be used to blend in conjunction with finishes of higher lustre or other metals. Higher lustre finishes, such as No. 7, are obtainable and are similar to No. 4 with the exception that the lustre obtained by buffing is much brighter.

No. 8 Finish is the highest obtainable in commercial steel practice. All of the grinding lines are removed and a sheet of high reflectivity is obtained. This finish is used for mirrors and for trim where highest lustre is required.

Enduro Stainless Steel Strip

The finishes of Enduro Stainless Steel strip are designated as follows:

No. 1 Cold rolled, annealed and pickled. Surface has dull sheen.

No. 2 Cold rolled, annealed, pickled and given light skin pass. Somewhat brighter surface than No. 1.

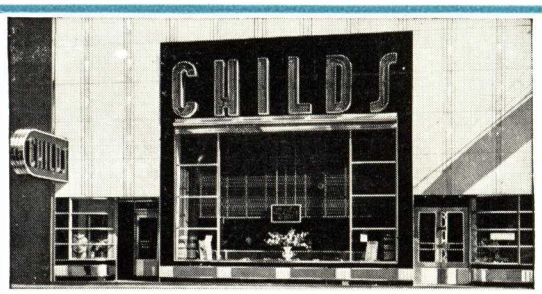
Installation Examples

A REVIEW OF SPECIFIC INSTALLATIONS

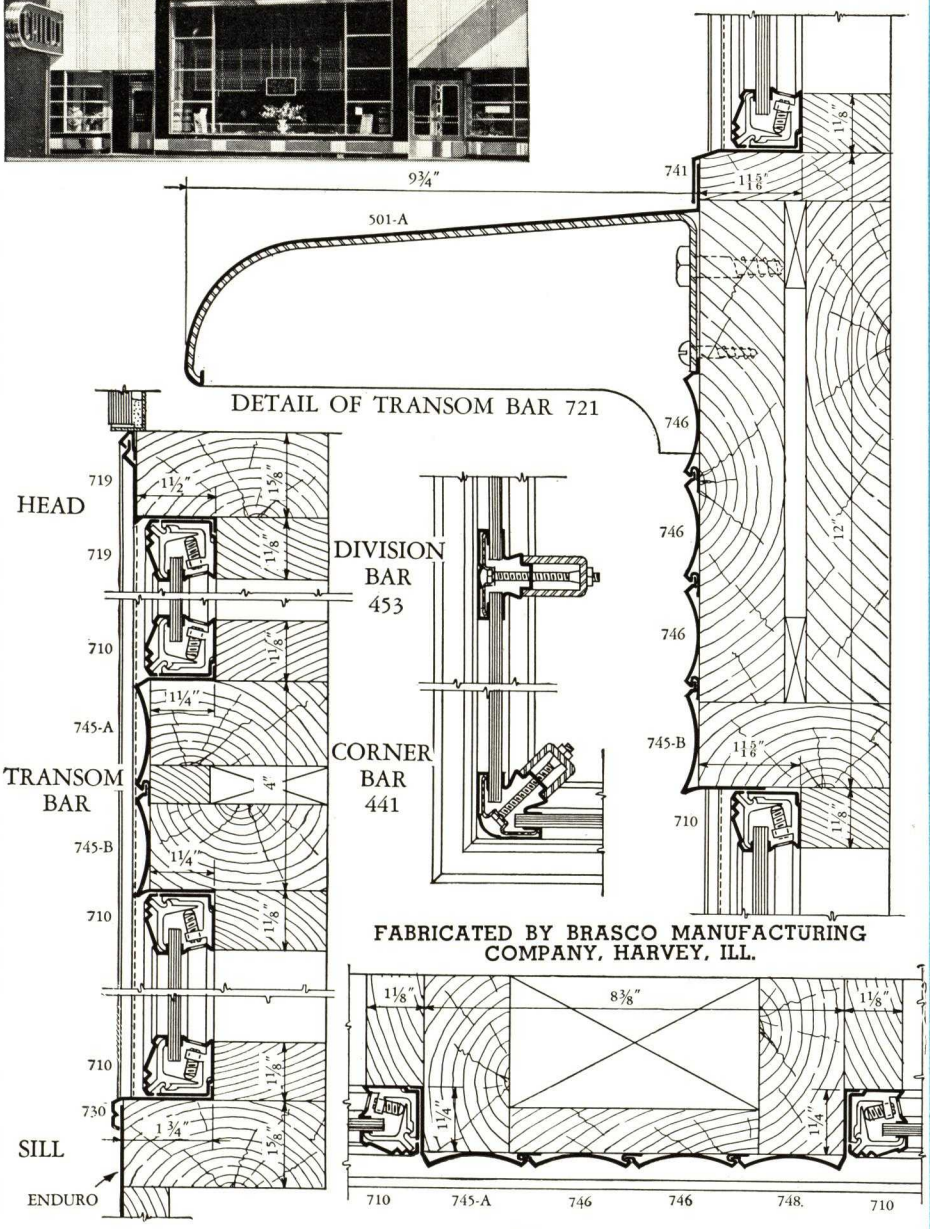
It may be interesting to review the processing procedure applied to the Enduro sheets used on the Chrysler and Empire State Buildings and more recently on the Richman Bros. Building, Detroit, and the Insurance Company of North America Building, New York, as these may be considered typical of such architectural applications. The sheets, which were of Enduro 18-8, after being hot rolled, annealed and pickled, were rough ground with No. 80 grit used dry, followed by successive grease wheels of 100-120, etc., until the finish desired was obtained. The Chrysler sheets received a relatively high finish followed by buffing and passivation (in nitric acid).

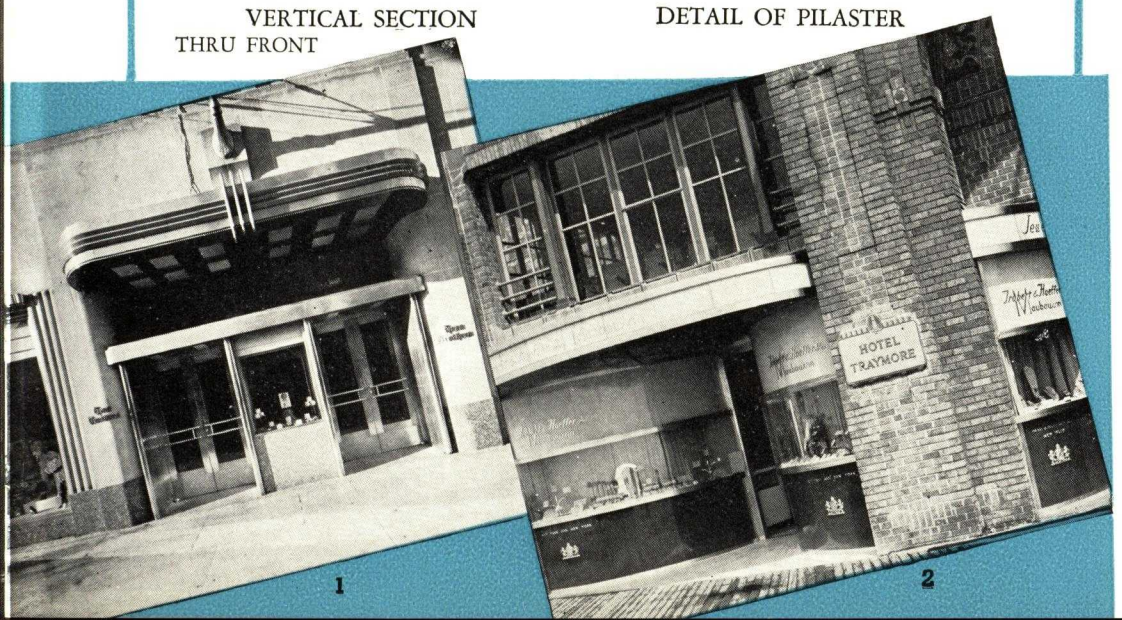
The Empire State Building, Richman Bros. Building, and the Insurance Company of North America Building sheets had a medium finish, followed by a special wheel to dull the lustre, giving a No. 6 Tampico finish. These sheets likewise were given the passivation treatment; then after being formed into panels at the fabricators' plants, they were again passivated, following the removal of the drawing compound by the use of gasoline and whiting. In the foregoing descriptions it has been impossible to give more than a general idea of the appearance of each and the differences between the various effects possible. It has also been found impossible to show these finishes by half-tone engravings. For these reasons we suggest that the architect secure samples of the various finishes from Republic District Sales Offices or Enduro Distributors before making a definite selection.

ENDURO STORE FRONT CONSTRUCTION



APPLICATION OF ENDURO STORE FRONT CONSTRUCTION





In the present trend toward modernism in store front design, usually involving the use of gleaming white metals, Enduro fits perfectly.

The attractive appearance, complete resistance to corrosion and tarnishing, and a wide variety of finishes of this metal, make it the ideal material for the finest of decorative effects as well as for every purpose subject to possible corrosion. Because of these qualities, it is natural that Enduro has come to occupy a most important place in modern store front construction.

In designing a store front the architect plans for a very definite effect. To accomplish this he must use materials which will be striking in appearance, which will contribute to the attention-getting character of the complete design and yet which will not detract from the principal purpose of any window, namely, the sales-influencing display of goods. Likewise, of utmost importance to the designer as well as to the store owner, is the matter of upkeep or cleaning.

It is therefore essential that the architect select a metal which will retain its original beauty as long as it is in place and one which will require only a minimum of cleaning. Enduro will withstand the corrosive action of most acids, smoke and rain water. Washing down the window glass, with its accumulated dust, cannot stain the gleaming surface of Enduro Stainless Steel.

In selecting Enduro the architect will find it a decided advantage to be able to use the same metal for glass settings, awning bars, lettering, display signs, ornamental trim, in fact, for every part of his design.

★

1. Hess Bros. Department Store
Allentown, Penna.
Architects—Thalheimer & Weitz
Philadelphia

Enduro 18-8 used for window trim, doors, ornamental trim over entrance doors and lobby.

2. Trabert & Hoeffer, Inc.
Atlantic City, N. J.
Architect — J. M. Berlinger

Enduro 18-8 used for ornamental trim.

OTHER APPLICATIONS OF ENDURO IN STORE FRONT CONSTRUCTION

Modern design trends have made the store front increasingly prominent in influencing consumer action. Today, the modern store, to attract, must have its own individuality. Its construction materials, therefore, are required to perform a dual function.

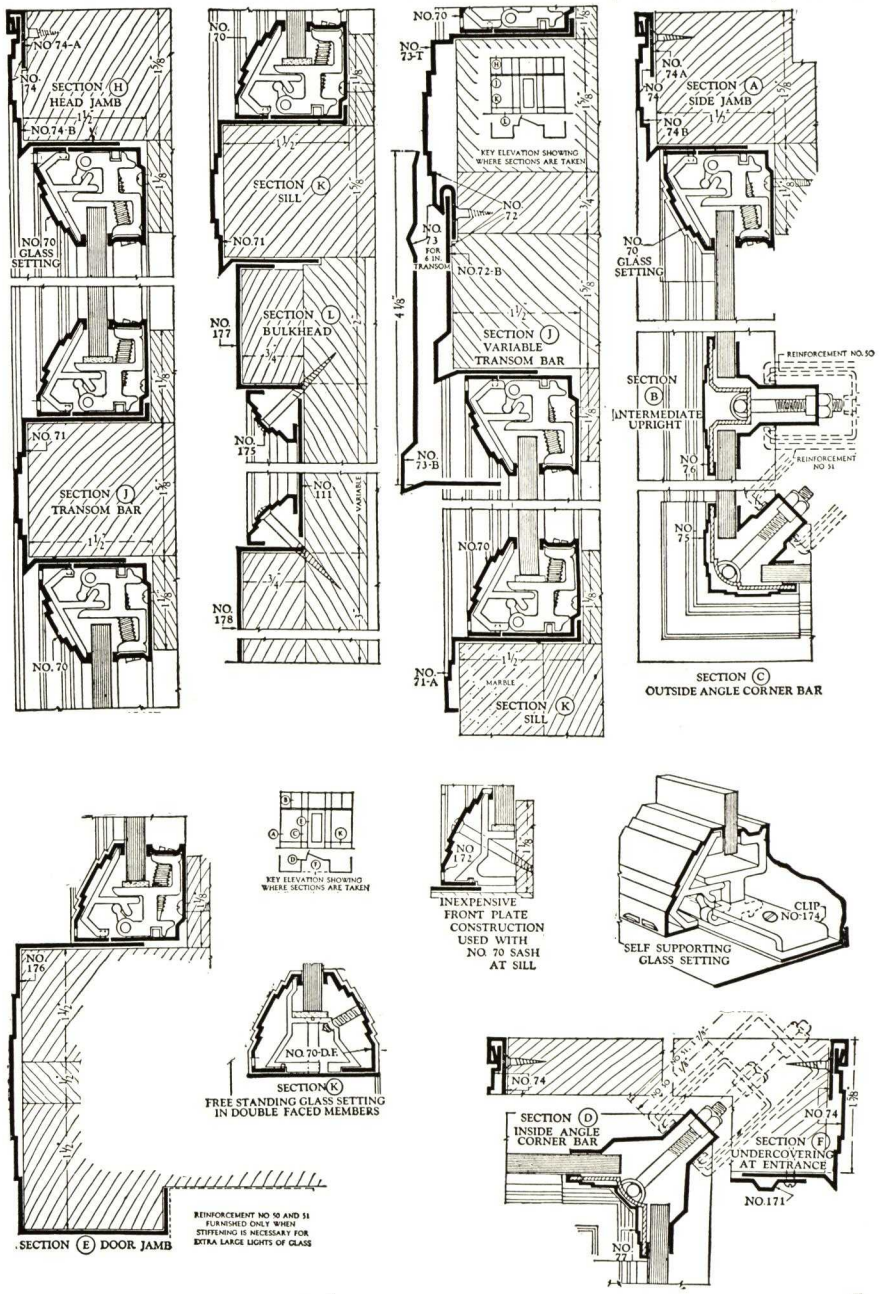
Architects, in recent years, have discovered in Enduro this combination of ease of maintenance, remarkable durability—and unusual versatility. Enduro is no longer restricted to simple ornamental trim—but now includes such applications as embossed signs, medallions and trademarks of a highly decorative nature. In addition, Enduro is also performing a useful service in the form of ventilating louvers and grilles which possess unusual eye-appeal as well as serving their useful purpose.

The architect will indeed be forced to exert his imagination to conceive a usage employing metal —either decorative or practical— that cannot be interpreted in Enduro. The enduring beauty of this metal—coupled with its year-after year durability—rank it as the logical choice for store fronts of outstanding sales influence.

The three store front construction drawings shown on these pages illustrate practical methods of employing Enduro to meet these conditions effectively. The drawings shown do not attempt to present minute details—but merely serve to give an idea of the typical methods employed for fabricating and installing Enduro.

For dynamic attention value, combined with unusual durability and low upkeep cost—specify ENDURO for store front construction.

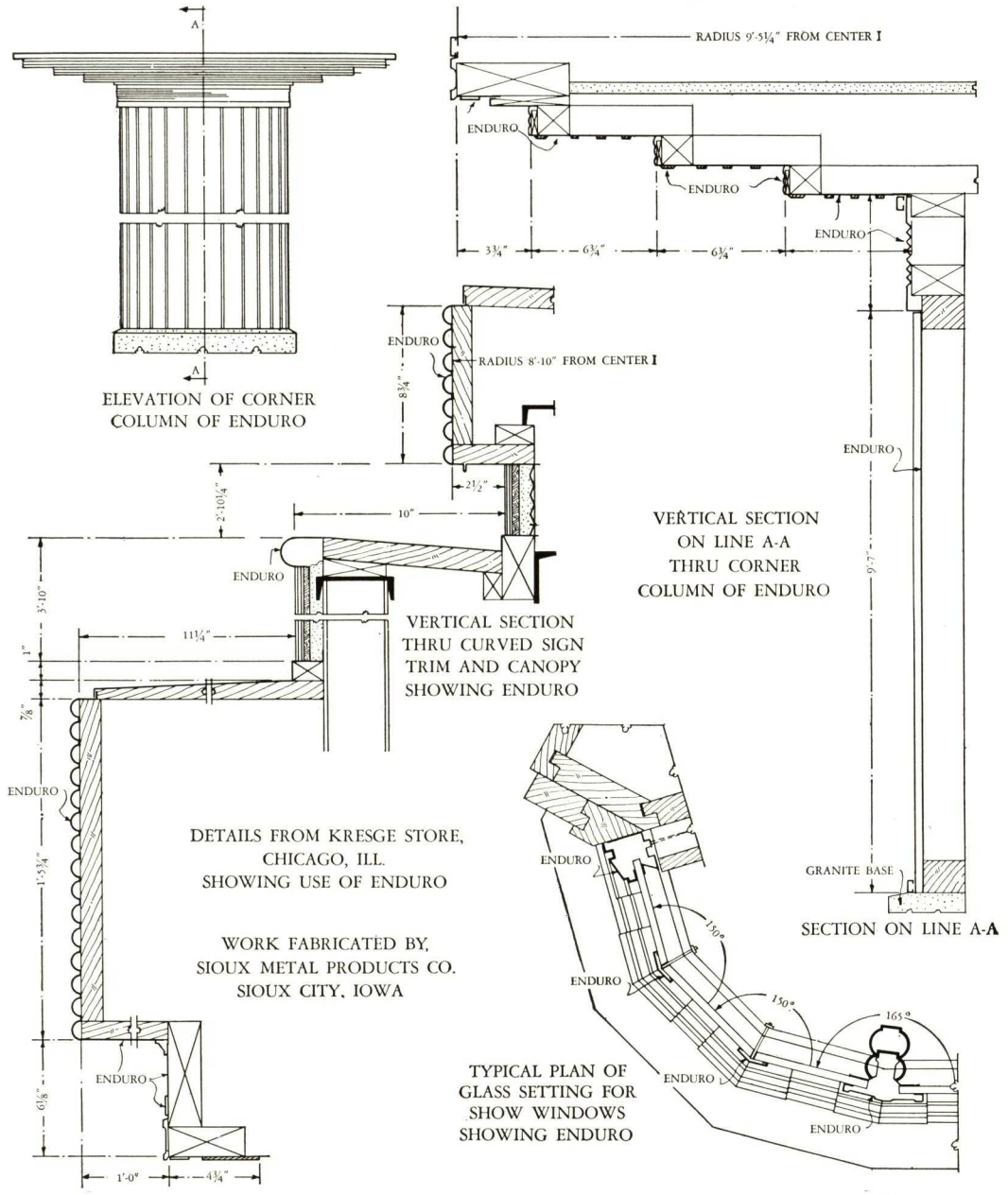
"HIMCO" No. 70—The Himmel Bros. Co., New Haven, Conn.



FRONT CONSTRUCTION

INSTALLATION DETAILS OF ENDURO

Fabricated by Sioux Metal Products Co., Sioux City, Iowa



1. Rosinski Furniture Store
Lackawanna, N. Y.
Architects—Rosinski & Jakiel

Enduro used for side jambs, sills and top bands. The sign letters are made entirely of 20-gauge Enduro, an interesting application.

2. Federal Dept. Store
Detroit, Michigan
Architect—Charles N. Agree
Detroit

The base trim and piers of this modern department store are Enduro.

3. Zingeser's Bakery
Bronx, New York
Designed by Pollack and Son

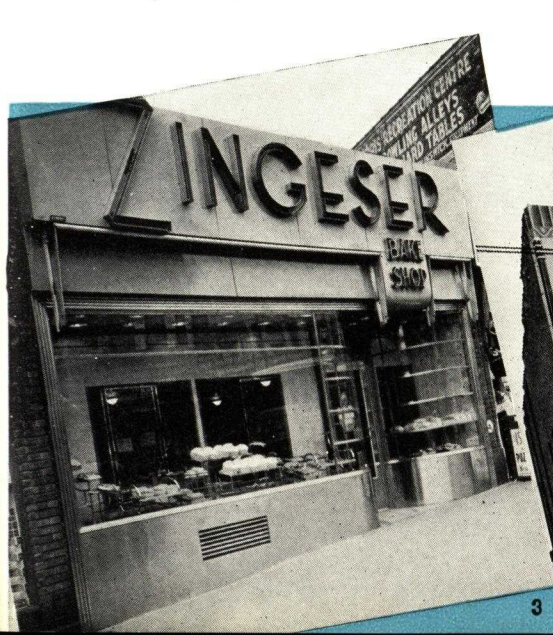
The use of Enduro for this store front and sign have definitely increased the business of this bake shop.

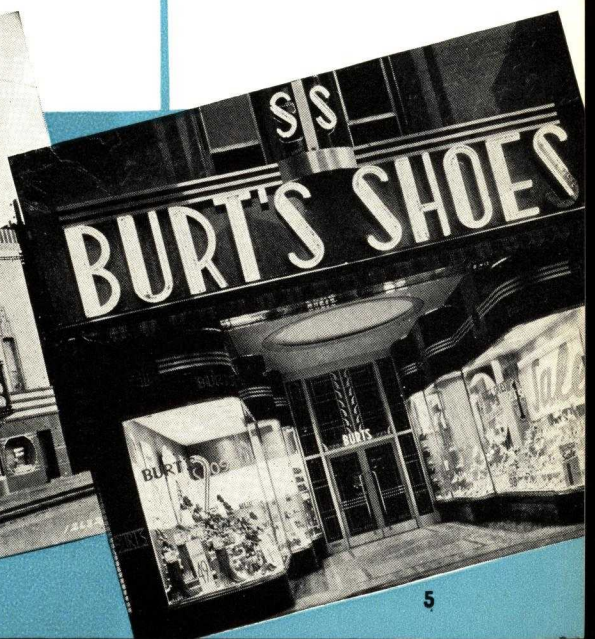
4. Booth Theatre
Detroit, Michigan
Architects — Bennett & Straight

Enduro trim employed to set off the porcelain enamel on this attractive theatre.

5. Burt's Shoe Store
Chicago, Illinois

Enduro 18-8 greatly enhances the attractiveness of this shoe store. Its gleaming beauty will endure for years.





SPANDRELS, TRIM AND ARCHITRAVES OF ENDURO

SPANDRELS, TRIM

Building construction today is taking full advantage of the many practical benefits offered by metal spandrels and trim. For not only do these spandrels and trim offer a wide range of decorative possibilities, but, because of their combined strength and light weight, they ardently follow the present-day trend toward simpler building design and construction. In addition, metal spandrels reduce the dead load on the framework and make possible a reduction in wall thickness between structural columns.

Enduro Stainless Steel, because of its many inherent characteristics, is widely used in spandrels and trim work on buildings of all varieties. This "newest of metals" lends itself to easy fabrication, intricate designing and ready installation. In addition, it is highly resistant to corrosion and will not streak adjoining surfaces. This feature is highly important to architects and building owners.

ARCHITRAVES

The characteristics that make Enduro Stainless Steel so remarkably suited to spandrels and trim, likewise enable this new metal to take its place as the finest metal for architraves. Strong, light in weight, easily fabricated and decorated, architraves of Enduro are built to withstand the ravages of the elements and years of hard wear.

★

1. Canadian National Railway Station, London, Ontario
Architect — John Schofield, Esq.

Enduro used for inner and outer door and vestibule in this modern railway station.

2. Metal Landing Rail for Apartment House Columbus, Ohio

Fabricated Enduro Stainless Steel and Bronze, by Loeben Ornamental Metal Works, Philadelphia, Pa.

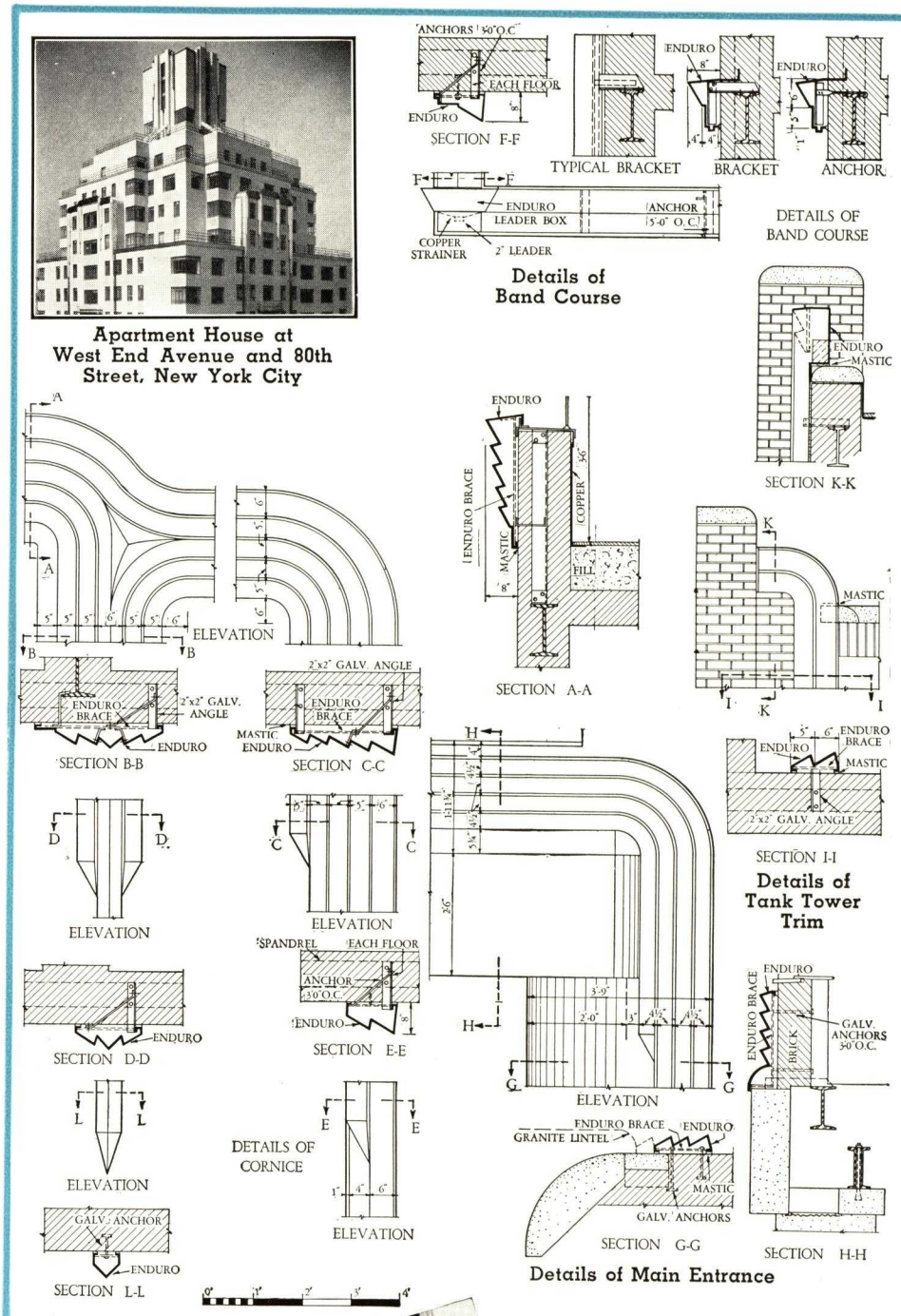
3. Sheffield Farms Store Cleveland, Ohio
Fabricator—Liquid Carbonic Co. Chicago, Ill.

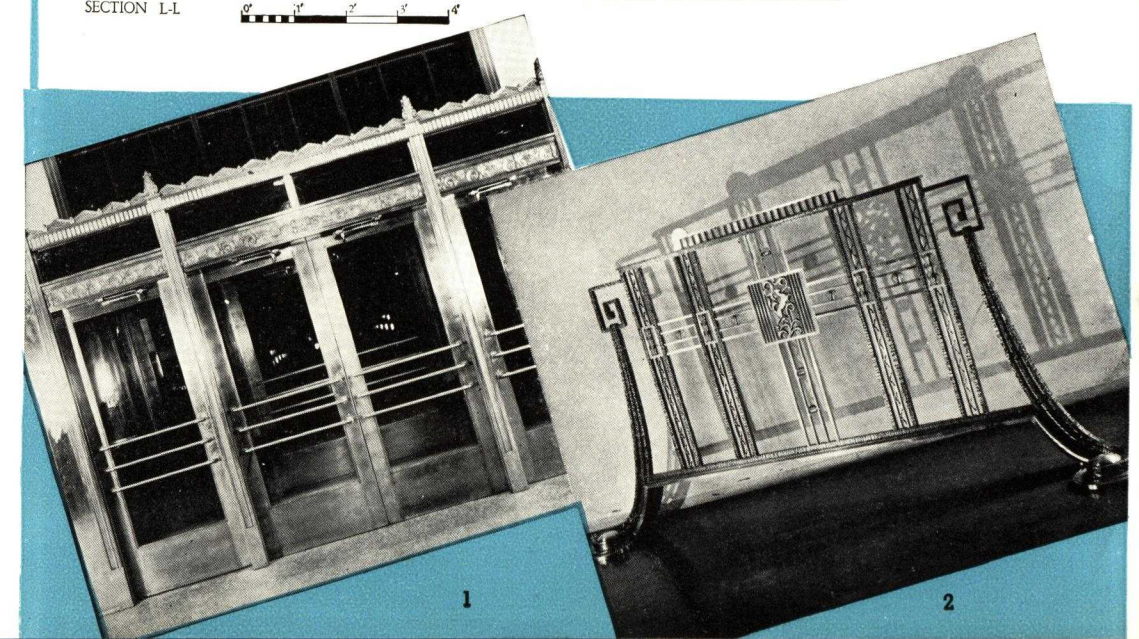
Enduro used for back of counter working surfaces in this attractive soda fountain.

4-5. The Merry-Go-Round Newark, N. J.
Designed by Charles Shilowitz

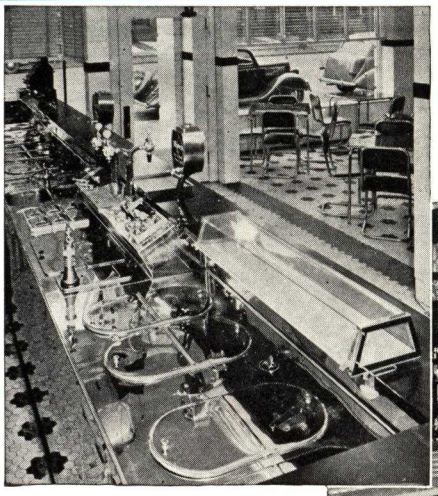
Enduro used in fabricating the beautiful back-bar which is built to provide working space for eight bartenders. All sinks, work benches and the doors to the compartments below the sinks and drainboards are Enduro.

Apartment House at West End Avenue and 80th Street, New York City





BARS AND FOOD EQUIPMENT



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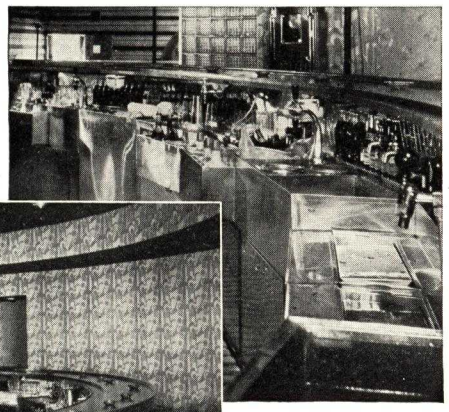

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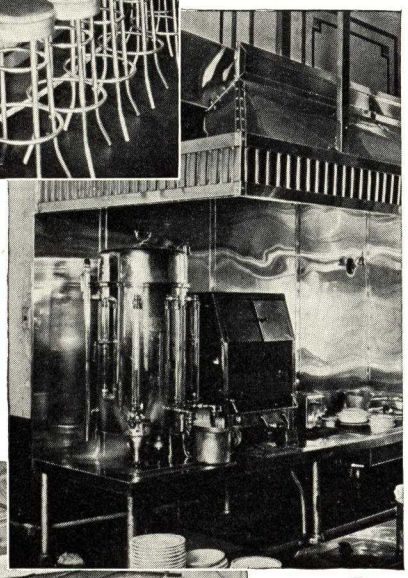

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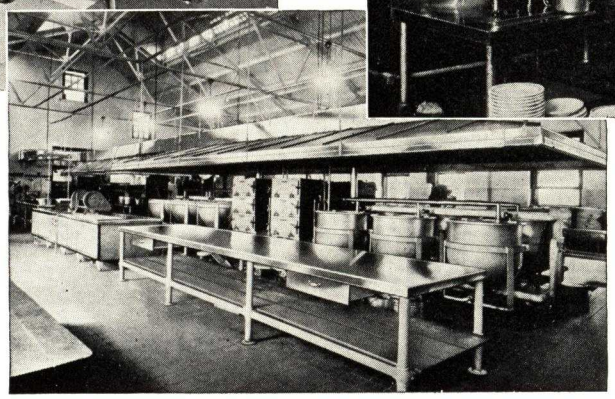

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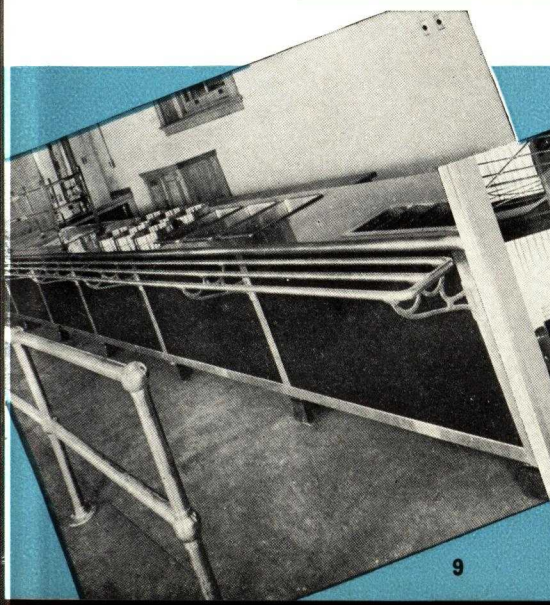

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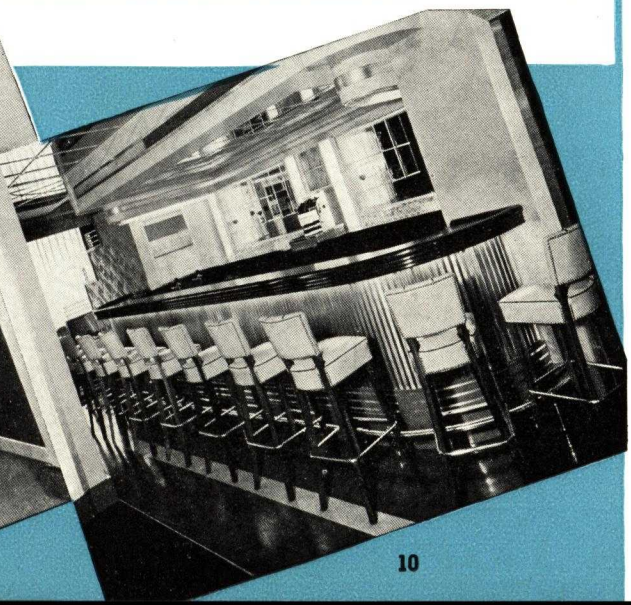

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Enduro has always found one of its most appropriate uses in connection with food service equipment and it was natural that, with the advent of Repeal, Enduro should become a favorite metal for bar equipment. However, the architect's attention is particularly directed to the richly decorative possibilities of Enduro's silvery lustre in modern design. A few typical installations are shown here and many more have been made during the past year. Not only does Enduro meet every requirement of the designer but, for all bar and service equipment such as sinks, tanks, drainboards, counters and table tops, Enduro assures maximum sanitation and permanent resistance to tarnishing, corrosion and general wear.

Whether the conditions called for a material having a beautiful appearance or one which would provide maximum resistance to wear and corrosion or both, Enduro has met every demand with complete satisfaction.

6. Bus Railways Depot
Chicago, Ill.
Architects—Graham, Anderson, Probst and White

Enduro is used on this lunch counter for sink and back counter tops and wainscot below the hood. The result is a thoroughly sanitary and most attractive effect.

7. Slade's Barbecue
Boston, Mass.
Architect — J. G. Morgan

Steam table, hood over steam table, urn stand table top, and back paneling are made of Enduro.

8. Byberry Home for the Indigents
Philadelphia, Pa.
Architect — Philip H. Johnson

Canopies over both the kettles and steamers, ranges and ovens, as well as sinks and cook tables are made of Enduro.

9. Harrisburg State Hospital
Harrisburg, Pa.
Architects — Simon & Simon

The 268-inch service counter, steam table pans, covers, knife, fork and spoon wells and coffee urn are all of Enduro.

10. Crystal Bar and Cocktail Lounge, Hotel Onesto
Canton, Ohio
Designer — Francis A. Onesto

Enduro used for all fixtures behind bar, crimped panels on front of bar, and for foot rail and rails on chairs.

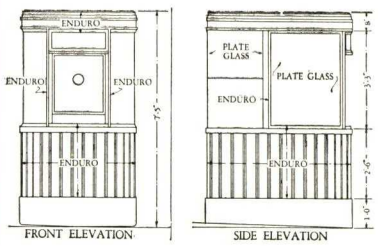
MISCELLANEOUS APPLICATIONS

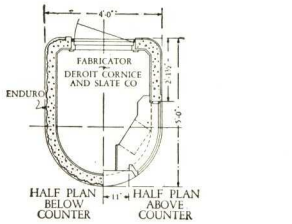
ENDURO Stainless Steel, because of its versatility, corrosion-resistance, high tensile strength and workability, has been employed for almost every decorative and utilitarian usage. The illustrations on this page (described below) show some of the almost innumerable possibilities this enduring and beautiful metal offers.

Naturally all of the various applications of Enduro do not come to our attention. Perhaps you have seen an unusual usage which has prompted you to specify "ENDURO." If this is the case—we would appreciate your contacting our main office . . . explaining the application of Enduro and where it was employed.

Enduro Stainless Steel, as may be seen in the illustrations, is not confined to exterior applications. Frequently, because of its enduring beauty, Enduro is selected for the fabrication of decorative grilles, railings and interior structural units.

When next you specify Stainless Steel — remember the name "ENDURO."





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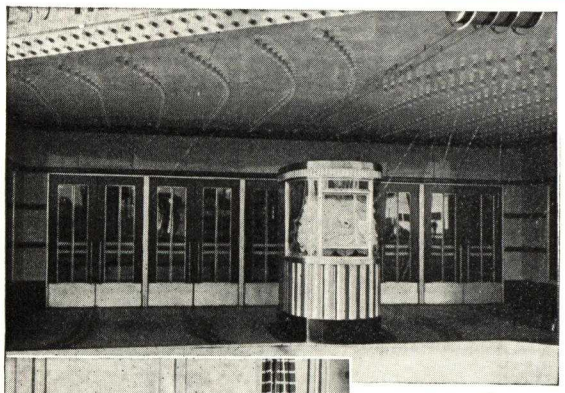

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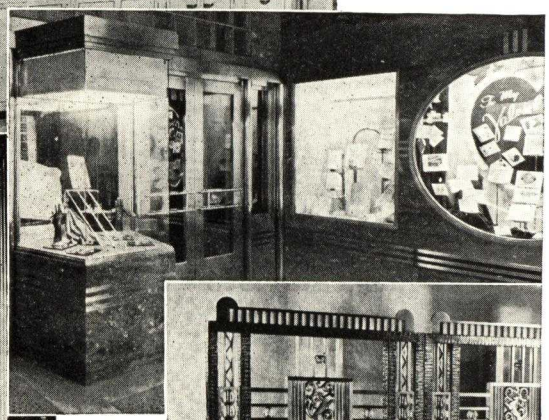

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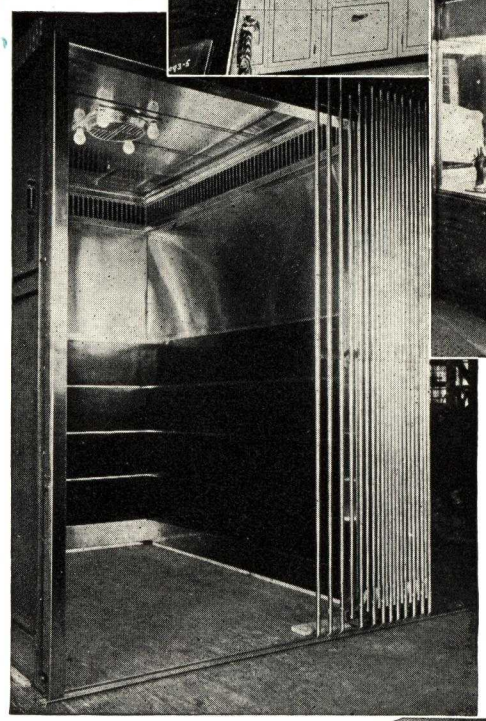

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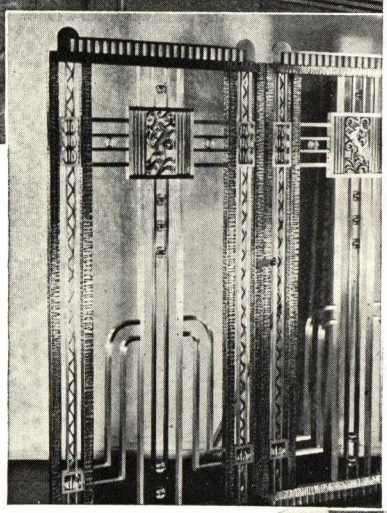

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1.-2. Beverly Theatre Detroit, Mich. Architect—Chas. N. Agree

Enduro used in construction of ticket booth and front entrance to this attractive theatre.

3. Kitchen Sink

Showing Tracy Enduro stainless steel sink and Tracy DeLuxe linoleum top trimmed with Enduro.

4. Hess Bros. (Dept. Store) Allentown, Pa. Architects—Thalheimer & Weitz

Enduro used for window trim, doors, ornamental trim over entrance doors and lobby.

5. Students' Health Center University of Missouri Columbia, Mo. Architects—Jamieson and Spearl

An elevator cabinet constructed entirely of Enduro for beauty and permanence.

6. Metal Gates for Apartment House, Columbus, Ohio Fabricator—Loeben Ornamental Metal Works, Philadelphia, Pa.

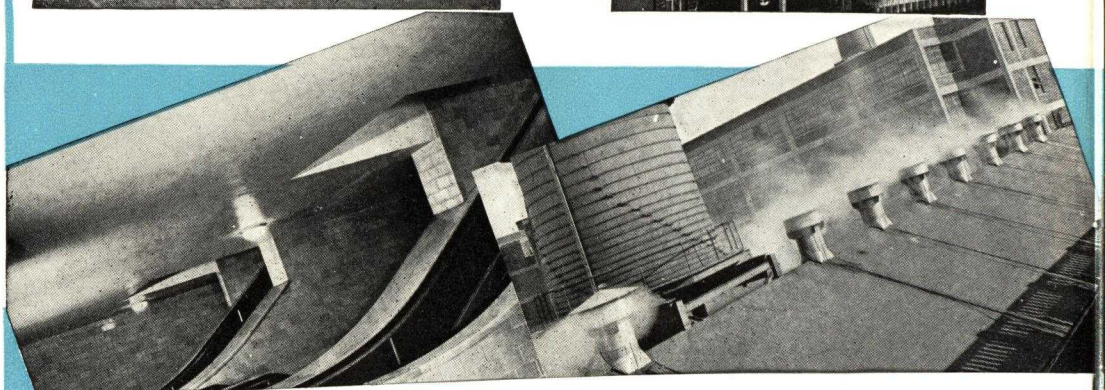
Enduro and Bronze combine to make this beautiful ornamental gate.

7. Pennsylvania Railroad Station, Newark, N. J. Architects—McKim, Mead and White

Enduro used for trim on all escalators—an unusual application.

8. Arcadia Knitting Mills Allentown, Pa. Fabricator—Penn. Ventilator Co. Philadelphia, Pa.

Enduro ventilators, permanent, attractive — corrosion resisting.



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ARCHITECTURAL

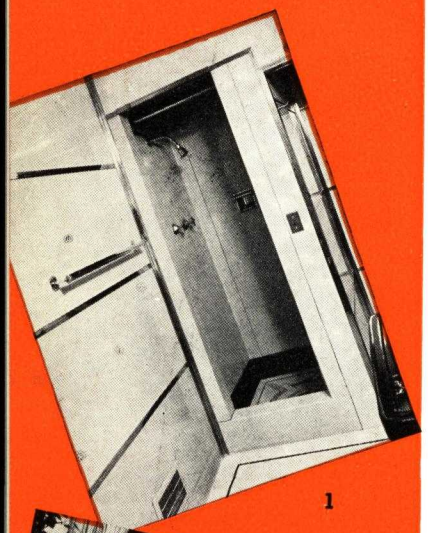
PORCELAIN ENAMEL

Toncan Iron

Corrugating sheets

REPUBLIC STEEL CORPORATION

REPUBLIC STEEL



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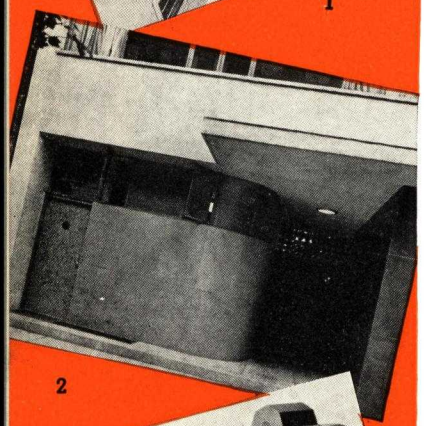

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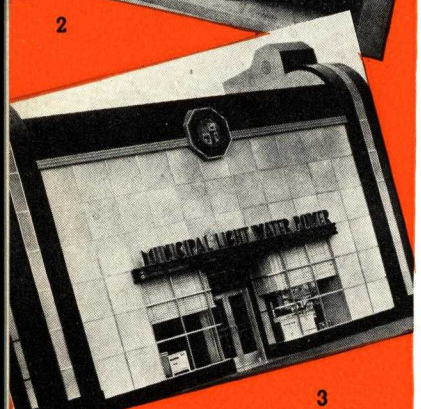

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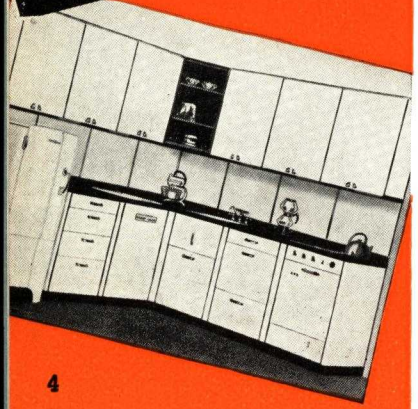

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A New Freedom
IN ARCHITECTURAL DESIGN

HAVE you ever wished for a material that would permit full expression of design and color and at the same time provide practicability at moderate costs? Porcelain enamel is one of the most versatile materials ever developed for architectural purposes. No material offers such a challenge to the creative initiative of the architect. It offers a complete range of lasting, permanent colors, embodying delicate tints and shades — in fact no color limitation. Being a vitreous material it is non-porous and non-absorbent and is as easily cleaned as a china dish. It can be supplied in acid-resisting finishes for service in sulphur-laden atmospheres. It has unusual resistance to abrasion not found in plastics or organic coatings. It has almost unlimited possibilities of surface design, and types of finishes. It can be obtained in welded, stamped or drawn shapes. When using a panel system it is lighter in weight than most masonry products and can be quickly taken down, moved and reassembled practically without loss.

AN ANCIENT PRODUCT BECOMES A MODERN BUILDING MATERIAL

Before the dawn of Christianity, ancient artisans found that minerals could be melted together and fused to a metal base. During the next thousand years or so, porcelain enamel was used in the creation of beautiful cloisonne vases, medallions and ornaments of various kinds. The application of porcelain enamel to cooking utensils, plumbing ware, stoves, refrigerators and other household products came as the next logical forward step.

Porcelain enamel first made its appearance in the architectural field in gasoline service station and hamburger stands because of its cleanliness, low maintenance costs and high salvage value.

Today, architectural porcelain enamel is far more than a "novelty" material. New finishes, including the soft matte finishes, new methods of fabrication allowing greater freedom in design, new methods of erection and concealed fastenings, all have combined to make architectural porcelain enamel an accepted high quality building material — one that can be classified as truly modern.

The application of porcelain enamel is steadily expanding into new fields. There are now companies all over the country that specialize in the fabrication and enameling of iron sheets for architectural purposes. Store fronts, theatre fronts and lobbies, gas stations, dairies, even entire department store building fronts of porcelain enamel are almost as familiar as the porcelain enameled kitchen stove and refrigerator.

WHERE ARCHITECTURAL PORCELAIN ENAMEL IS BEING USED

Gasoline Service Stations: Exterior and interior paneling: Signs.

Food Stands: Exterior and interior paneling: Signs.

Bus Stations: Exterior and interior paneling: Signs.

Store Fronts: Paneling: Signs: Lighting Equipment.

Food Industries, such as Packing Houses, Dairies, Breweries, Bakeries, Canning Plants: Interior paneling, walls and ceiling — for sanitation; Exterior paneling — for low upkeep and publicity value.

Laundries: Interior wall and ceiling paneling and doors — to resist steam and alkalies.

Chemical Laboratories: Walls, doors, ceilings, hoods and shelving — to resist corrosive chemical fumes, calcium chloride smudge — to increase light reflection.

Barber Shops and Beauty Parlors: Interiors.

Elevator Cabs and Lobbies.

Hospital Operating Rooms: Doors, ceiling and wall paneling.

Hotel and Restaurant Wash Rooms: Walls, ceilings, doors, toilet stalls.

Theatre Fronts and Lobbies.

Dental and Medical Offices.

Kitchen and Bathroom Walls and Ceilings.

Office Buildings: Wainscoting.

Miscellaneous Uses: Shower bath stalls, toilet stalls, partitions for beauty parlors, hospitals, etc., shelving, restaurant table tops, formed steel plumbing fixtures, refrigerator display cases, counters, fruit and vegetable stands, kitchen cabinets, light reflectors, bar equipment, soda fountains, blackboards, kick plates, push plates, fireplaces, telephone booths, desk tops, spandrels of office buildings, prefabricated splasher panels for plumbing fixtures.

Republic Steel
CORPORATION
GENERAL OFFICES . . . CLEVELAND, OHIO

What is
ARCHITECTURAL PORCELAIN ENAMEL?

Porcelain enamel is an inorganic material. It is made of several minerals fused together at a high temperature. This enamel is then ground up into powder and fused again upon a ferrous metal base. Because it is inorganic, it does not fade and is impervious to moisture, being non-absorbent. This tough, glass-like coating is not affected by weather or light. Recent developments have led to the production of acid-resisting porcelain enamel which repels the attack of ordinary acids which might be encountered in building service or in the atmosphere.

IMPORTANCE OF TONCAN IRON ENAMELING SHEETS

To meet the requirements of modern architectural applications of porcelain enamel requires a high grade sheet. The physical properties of the sheet are, of course, of an importance equal to its ability to accept a satisfactory coating of porcelain enamel. The widespread use of enameled products prior to their application in the architectural field has involved some of the most difficult fabrication operations which are encountered anywhere in the use of sheet metal.

Experience of many years has demonstrated that open hearth irons are most suitable for porcelain enameling. Toncan Iron is one of the oldest open hearth irons in the market, having been produced for thirty years. Toncan Iron Enameling Sheets, therefore, combine the physical properties required for difficult fabrication and the ability to accept a high grade coat of porcelain enamel.

Before and after enameling, Toncan Iron Enameling Sheets are unusually flat, free from waves and buckles and, in addition, have the highly desirable properties of an open hearth iron for enamel adherence and for freedom from segregated impurities which might react with the porcelain enamel.

Constant research is conducted by Republic in an effort to keep Toncan Iron at all times suitable for all types of porcelain enamel. Close cooperation with the manufacturers of frits, as well as with those plants which produce their own frit, enables us to work out with the enameler any problem in connection with the use of our product.

METALLURGICAL and ARCHITECTURAL SERVICE

Republic Steel Corporation maintains a special engineering and research department devoted to the development of enameling iron. Another department in the Product Development Division is devoted to the study of the application of porcelain enameled iron. Republic engineers are ready to assist architects and designers in the selection of the proper type of porcelain enamel construction for any specific job. For further information regarding this service, write direct to the main office or any of our district offices.

Typical Porcelain Enamel Installations

(Cover) Cole's Shoe Store, Cleveland, Ohio.
Architect—W. Emil Forman, Edison Stores, Inc., St. Louis.
Enameling by—Davidson Enamel Products, Inc., Lima, Ohio.

White Porcelain Enamel in fluted columns on either side of a section of yellow marble. Connecting the two columns at the top is another series of panels trimmed in brown. Ceiling of marquee and entrance is white.

1. A bathroom in an Oakland, California home.
Enameling by—Ferro-Enameling Company of California.
This shower bath is made with a one-piece receptor fabricated, welded and enameled with non-skid porcelain. The walls, corner pieces and threshold are also of Ferro Enamel.

2. Residence, 32 E. 74th St., New York City.
Architect—Howe & Lescaze, New York City.
An unusual treatment of facia work for the front of a modern residence. The left curved facia is in battleship grey and the right vestibule return wall, in blue. The method of construction employs dove-tail joints throughout.

3. Municipal Light Water Power Plant.
Enameling by—U. S. Porcelain Enamel Co., Los Angeles, Calif.
Installation by Luminous Structures.
An extremely modern and interesting application of porcelain enamel. It illustrates the adaptability of porcelain enamel to any design.

4. A Unit Kitchen of Modern Design.
This kitchen installation includes sink, base cabinets, dishwasher, range and refrigerator. The enduring beauty of porcelain enamel adds to the attractiveness of this practical kitchen.

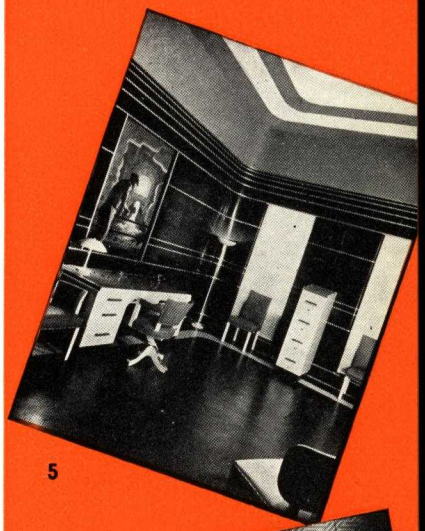
5. Executive Office, Chicago Vitreous Enamel Product Company, Cicero, Ill.
Architect—Harold R. Zook.
This room is an outstanding example of the dramatic possibilities for using porcelain enamel effectively for interior walls and for furniture.

6. U. S. Post Office, Audubon and 165th St., New York City.
Architect—M. Dewey Foster, New York City.
Enameling by—Toledo Porcelain Enamel Products Co., Toledo, Ohio.
An interesting application of porcelain enamel in a government building where durability is of prime importance.

7. Esso Gas Station, Erie, Pa.
Enameling by—Erie Enameling Co., Erie, Pa.
A really beautiful gas station, attractive day or night because of its gleaming smartness. Porcelain enamel pays dividends to gas station owners.

8. Cushman Bakers Store, Chicago, Ill.
Enameling by—General Porcelain & Mfg. Co., Chicago, Ill.
Porcelain enamel is ideal for food stores. Its sparkling beauty is the acme of cleanliness, its ease of maintenance a joy to owners.

TONCAN IRON ENAMELING STOCK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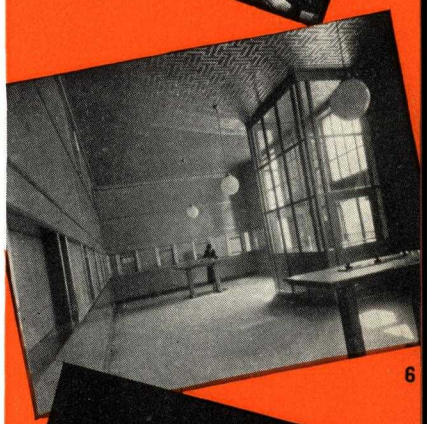
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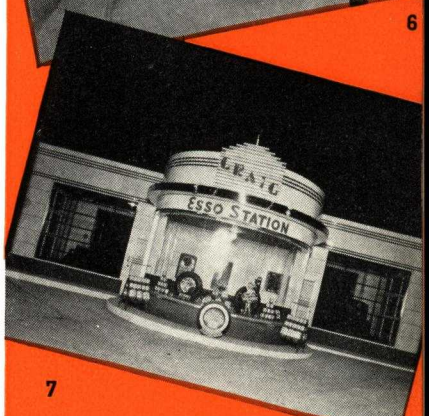

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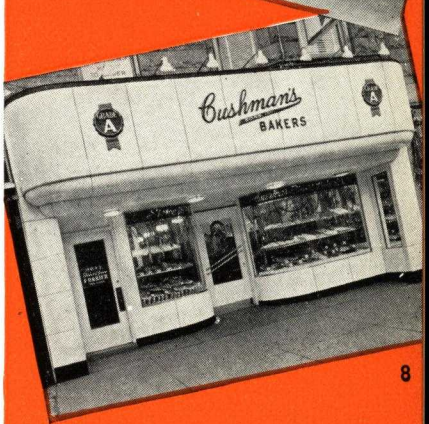

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REPUBLIC STEEL

*Enameling Terms** *for* THE ARCHITECT

Acid-Resistant: Resistant to acids although not necessarily stain-proof. An enameled surface is generally considered acid-resistant if, after being exposed to the action of 10% citric acid solution for 15 minutes, it does not become "chalky."

Adherence: The ability of an enamel to stick to or bond with a given metal surface.

Application: The act of depositing a coating of enamel on a prepared metal surface.

Base Metal: Enamelers, referring to base metal, usually mean the sheet iron or cast iron metal base to which enamel is applied.

Blackboard Enamel: A special type of black enamel designed to give a matte surface finish to blackboards.

Black Edging: A further coat of enamel applied to the fired or unfired ground coat around the edges of the article thus producing an edging blacker than the ground coat.

Blank: A term widely used in sheet metal working to denote the piece cut from the sheet that is to be used in forming the finished article. The blank ordinarily contains exactly the right amount of metal to form a piece of the desired size. The operation which consists of punching the blanks from the original sheet of metal is called blanking.

Burning: Referred to in the enamel industry as the process of fusing vitreous or porcelain enamel on a metal surface.

Burning-Bars: Equipment, usually of heat resisting alloy construction, used for suspending or supporting articles during the fusion of the enamel coating. May be obtained in numerous sizes and designs to best suit the particular type of enamel ware.

Chipping: A spalling or breaking off of the enameled surface in flaky varied size pieces. A defect which can be avoided by proper care in handling, processing, etc.

Cleaner: Usually a mixture of alkalies reinforced with other ingredients and used at a concentration of 6-8 oz. per gallon at a temperature of about 200-212 degrees F. in the pickle room to clean rust, grease and dirt from metal parts prior to enameling.

Color Oxide: A mixture of inorganic materials used in the mill addition to color porcelain enamels.

Cover Coat: A porcelain enamel coating applied over the ground coat and from which it usually differs in color.

Crazing: Almost invisible lines in a finished enameled surface, extending down to the base metal. This condition should not be confused with "Hair-lines."

Crimping: An operation wherein the metal around or along the edge of the piece is shaped into the form of a roll or curl.

Decalcomanias or Decals: Are designs printed on tissue paper in refractory enamel colors rather than in ordinary printer's ink. These designs may be transferred to a burned enamel surface and fired thereon becoming an integral part of the coating.

Drawing: Drawing proper consists in cupping a blank (that is, taking a sheet metal blank and producing a cup-like shape) during which process a flowing of the metal takes place.

Durability: The lasting qualities of an enameled surface.

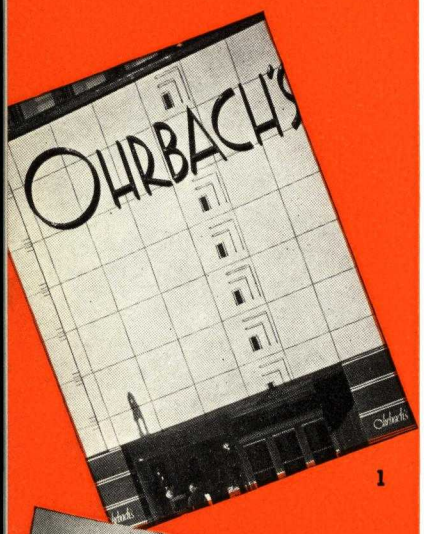
Edging: The process of removing dried cover coat from the edge of a piece of ware to expose an underlying enamel. Edging may also denote the application of colored enamel to the edge after brushing.

Egg-Shell Finish: An enameled surface similar in appearance to the shell of an egg. A desired physical condition in some ground coats.

Finish-Coat: A term often used to designate the final coating of enamel.

Flange: A projecting rib or rim, for strength, as a guide or for attachment to another object.

Flecked: A variation in the solid color secured on enameled ware by mixing into an enamel, sized particles of frit of a different color.



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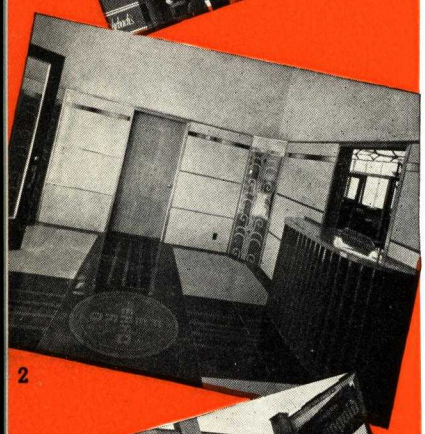
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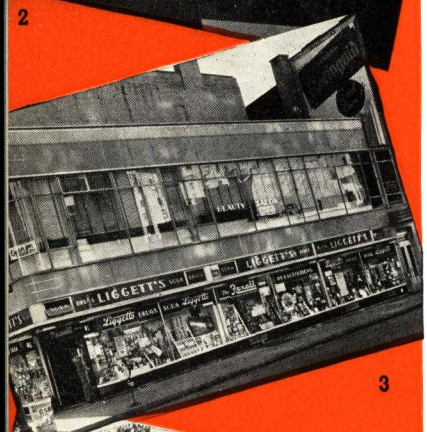

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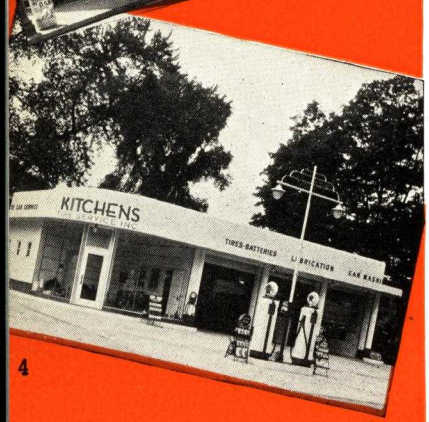

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Typical Porcelain Enamel Installations

1. Ohrbach's Store, New York City.
   Architect—J. M. Berlinger
   Enameling by—Porcelain Metals, Inc., N. Y.
   This beautiful store was designed to emphasize immensity. Ivory and green are the predominating colors which create a very pleasing appearance.
2. Ferro-Enamel Company, Reception Room, Oakland, Calif.
   A colorful and interesting lobby, counter front, sign and wall panels are porcelain enamel. The whole floor is veiled over with a brownish enamel which is non-skid. Color samples are held in place with stainless steel clip strip.
3. Taxpayer, 79th St. and Lexington Ave., New York City.
   Architect—Wm. J. Hohauser.
   Enameling by Porcelain Metals, Inc., N. Y.
   The entire parapet wall, spandrel and bulkhead are porcelain enamel; colors are tan, green and black. The upper facia is constructed with the lock joint system, trim is stainless steel.
4. Kitchen's Tire Service, Erie, Pa.
   Enameling by—Erie Enameling Co., Erie, Pa.
   An attractive service station of porcelain enamel. While service stations were one of the earliest uses for porcelain enamel modern developments have added greatly to the attraction value and pleasing appearance.

Enameling Terms for THE ARCHITECT

Frit: Small, friable pieces of enamel glass resulting from the quenching and shattering of the molten enamel as it is discharged from the smelter into tanks containing cold water.

Fusion: The union or blending of enameling ingredients with the base metal or previously fired enamel coating to produce a uniform surface using heat as the medium.

Gloss: A term used to designate the shine or lustre of a smooth enameled surface.

Graining: The production of an enamel finish resembling wood grain. Similar to the printing of small etchings except that the ink is picked up from the etched plate on a special roller and transferred to the enamel surface to be grained.

Ground Coat: A coat of enamel applied directly to the metal surface and differing in composition from the cover coats to be applied later.

Hair-Lines: Hair-Lines are lines appearing in an enameled surface, which are slightly depressed below the surface in the shape of a groove and not extending to the base metal. In white enamel the lines appear white, but in colored or dark enamels, the lines nearly always appear darker than the surrounding surface.

Lustre: The pearly or silky appearance of an enameled surface.

Marble-ized: An enameled surface color-grained to give the appearance of variegated marble. The color may be applied on either the fired or unfired enamel ware.

Matte: A slightly roughened surface almost, or entirely lacking in lustre.

One-Coat Work: One coating of enamel; ground coat only or finish enamel directly on the metal. In refrigerator and stove sheet iron work, one coat of cover enamel over ground coat is often called "one coat work."

Opacity: The degree of whiteness of a white enamel, calculated by its ability to cover black or blue-black ground coats.

Pickling: The practice of cleaning sheet steel to properly prepare it to receive the enamel coatings.

Printing: Printing on the enamel is done with a rubber or composition stamp having raised letters or design. The ink for this work is composed of a suitable mixture of oils as a vehicle and a ceramic printing oxide.

Semi-Matte Finish: An enameled surface not altogether rough to the touch but having a slight glossy appearance may be known as a semi-matte finish.

Semi-Transparent: An enamel glaze which is partly opaque and not totally transparent. May also be known as semi-opaque enamel.

Shading: A pleasing effect produced in enamel by applying, usually by spraying, an area of dark enamel to a lighter background, the thickness being tapered off in one or more directions.

Sign Enamel: A brilliant high gloss enamel particularly adaptable for sign work.

Speckled Ware: An enamel finish having a background of uniform color into which an enamel of different color or shade is applied in very small specks.

Stain-Proof: An enameled surface is considered "stain-proof" if it is not stained, discolored or otherwise affected by acids (except Hydrofluoric), chemicals, dyes or fruit juices, under atmospheric conditions.

Stencil: A design which may be cut from either cardboard or sheet zinc and placed on the dry enamel coating. A stencil brush is used to remove the dry enamel from the stencil openings.

Two-Coat Work: Enamel ware which has two coats of enamel on the metal, usually one ground coat and one cover coat. Many enamelers refer to two cover coats over a ground coat on sheet iron as "two-coat work" although the buying public refer to it as triple coated ware.

Typical Porcelain Enamel Installations

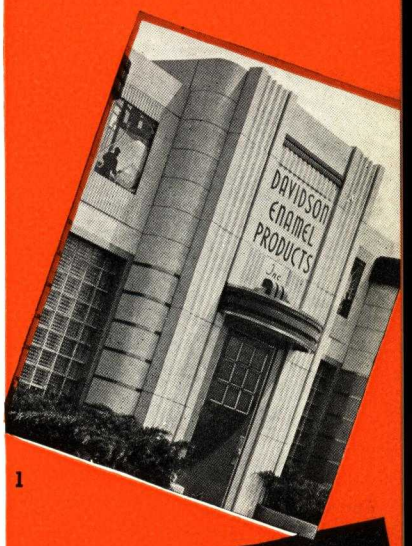
1. Davidson Enamel Products, Inc., Lima, Ohio.
   This manufacturer of porcelain enamel has designed and built his entire building of porcelain enamel. The application of stainless steel trim has added to the effectiveness of the general design.

2. Kewpee Hotels, Toledo, Ohio.
   Enameling by—The Toledo Porcelain Enamel Products Co., Toledo, Ohio.
   The use of porcelain enamel for the construction of hamburger stands is well known. It gives an extremely attractive appearance and is easy to keep clean. The stainless steel trim sets off the porcelain enamel to advantage.

3. Wurster Dairy Company, Ann Arbor, Mich.
   Architect—Ralph W. Hammett.
   Enameling by—The Toledo Porcelain Enamel Products Co., Toledo, Ohio.

4. Parisian Bar, Hotel Hollenden, Cleveland, Ohio.
   By Maul Macotta Corp., Detroit, Mich.
   Porcelain enamel, glass block and stainless steel have been effectively combined in this interesting front of modern design.

TONCAN IRON ENAMELING STOCK



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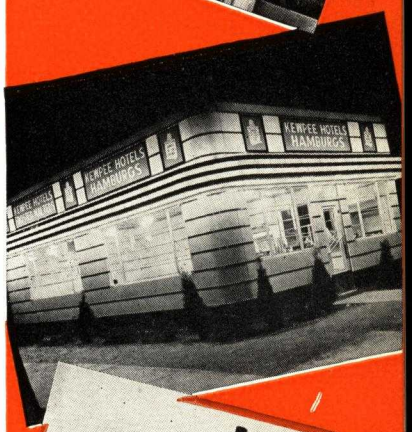

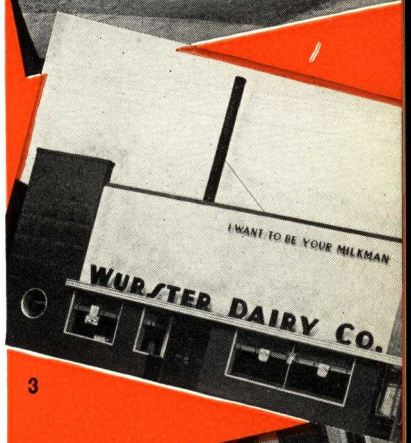

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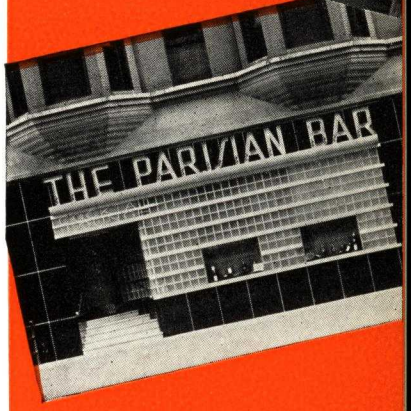
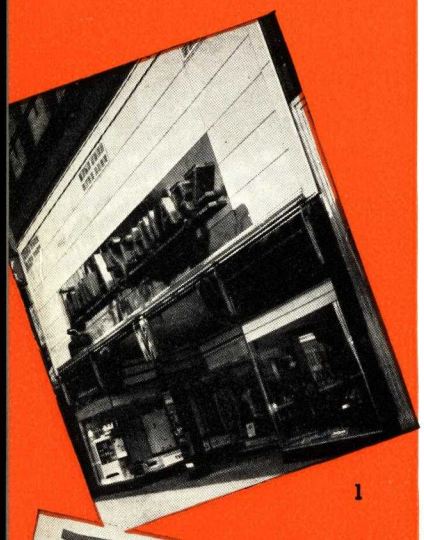


REPUBLIC STEEL



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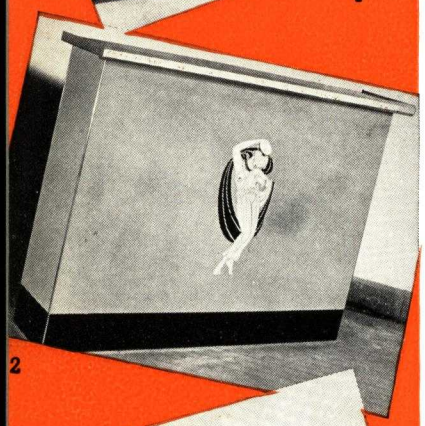

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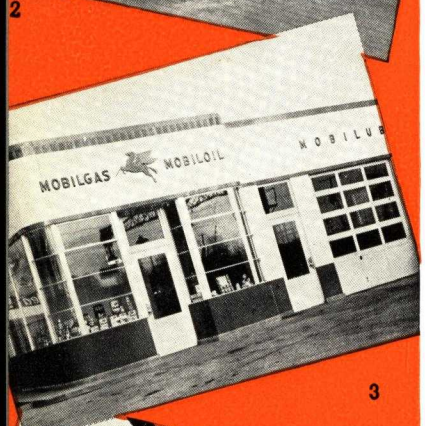

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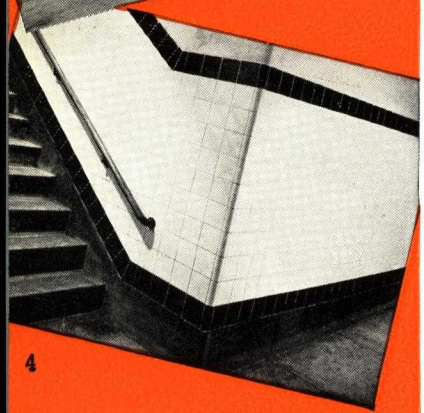


4

FABRICATING THE PANELS

Sheets for porcelain enameling work usually are fabricated in the enameling shop. Drawings with accurate dimensions are necessary since all panels are prefabricated and must fit together on the job. As a general rule, No. 16 or 18 gauge sheets of enameling iron are used, but No. 20 gauge may be employed if the finished panel is carefully backed up or veneered.

Before enameling the sheets are sheared, bent, drawn and punched in the usual manner. These sheets may also be fabricated into special shapes such as flutings, reedings, louvres, etc. Usually the holes in the panel are of predetermined size and location and are punched or cut in the panels before enameling. However, in emergencies the holes can be sawed through the finished porcelain enameled panel on the job by means of a portable, electric ceramic hole saw.

As a general rule, all connections are welded, including flanges, clips, corners, etc. These are then filed smooth before all dirt and grease is removed from the sheets. The sheets are then pickled in acid to remove rust and scale.

ENAMELING THE PANELS

Following the pickling process, which prepares the surface of the panels for bonding with the porcelain enamel, they are given a dark colored base or ground coat. This ground coat is applied either by dip or spray process. This coat is so compounded that it has an affinity for and fuses with the metal itself. Successive coats are usually sprayed on. Each coat is fused in a furnace at 1500 to 1550 deg. F. A standard enameling furnace accommodates panels up to about 4 x 10 ft., thus limiting the size of panels that can be safely fired. Following the applications of the porcelain enamel, all sheet are carefully inspected for imperfections.

For all exterior work, acid-resisting enamels should be specified. Porcelain enamel is available either in glaze, semi-matte or matte finishes; the latter two types having fewer high lights and reflections than are found in a glaze finish. Texture can be obtained by covering a glaze enamel with a semi-matte enamel of the same color and stencilling an appropriate design so that the glaze enamel shows through in a pattern. Stippled effects and designs printed by means of screen process can also be obtained.

TYPICAL PORCELAIN ENAMEL INSTALLATIONS

1. **Joseph A. Schwarz Store, New York City.**
   Enameling by Vesco Sales Corp., New York City.
   Facia is buff with sign backing, valance, pilasters and bulkhead of chocolate brown.

2. **Portable Bar for a Recreation Room.**
   Built by Maul Macotta Corp., Detroit, Michigan.
   Porcelain Enamel is an ideal material for this use because it is easily cleaned, made in bright colors and may be decorated as desired.

3. **Socony Vacuum Oil Co., Cleveland, Ohio.**
   Manufactured and erected by Service Station Division, The Austin Company, Cleveland, Ohio.
   Background is white, base, coping and letters red porcelain enamel. Fluted effect on coping produced by shading the enamel.

4. **Pedestrian Tunnel, Boston, Mass.**
   Enameling by Wolverine Porcelain Enameling Co., Detroit, Mich.
   Porcelain Enamel provided light, clean, non-breakable wall finish.

SUPPORTING STRUCTURES AND INSTALLATION of PANELS

For remodeling work where the panel type of construction is used, the old structures are frequently leveled off with wood or metal furring strips located where the panel joints are to be. Care should be exercised to insure an accurate spacing of the furring strips and a level support for the panels.

On new buildings, if the supporting structure is to be masonry or wood studding, it is necessary that extra caution be taken to hold supporting structures to accurate dimensions and to keep the buildings plumb.

Steel frames are being used for small buildings such as gas stations, food stands, etc. These frames are often made of light gauge "U" channels welded into rectangular sections. These rectangular sections are bolted to the foundations and fastened together on the job (see cuts 3 and 4). These steel frames offer a dependable, accurate, supporting structure for the prefabricated porcelain enameled panels.

When interlocking panel systems are used, the starting points and the end points must be determined for the fastening of the panels to the supporting structure. In remodeling work where custom fitting is involved, each panel should be numbered on the drawing and this number marked on the back of the panels before shipping.

On certain types of construction, the caulking operation can be simplified by "buttering" the flanges of the panels with a knife grade caulking compound. When the panels are fastened in place, the excess caulking is squeezed out and can be trimmed off with a tuck-pointing tool.

Systems of Construction

There are two general types of construction employing porcelain enamel materials: the load-bearing type and the sheet or panel type. Both types are widely used and their use depends upon the conditions to be met, designs required, cost, etc.

On the following pages are shown details of several of the more commonly used systems of constructions. These are not the only practical systems, however, but are typical of the meritorious devices which are constantly being developed.

In the load-bearing type, porcelain enamel sheets or fabricated forms are backed with light weight, load-bearing, concrete units. The panel edges may be trimmed with narrow stainless steel edging to protect these edges from corrosion or the panel may be flanged on all sides. In the sheet or panel type of construction, the porcelain enamel sheets are anchored to a supporting construction by various methods. Some of those in more common use are shown on the following pages.

TYPICAL PORCELAIN ENAMEL INSTALLATIONS

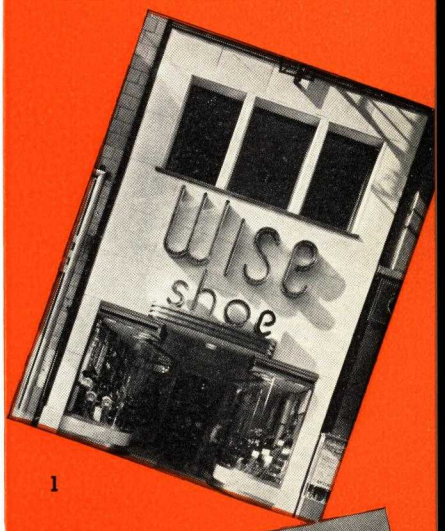
1. Wise Shoe Store, Detroit, Mich.
   Enameling by Erie Enameling Co., Erie, Va.

2. Mantel for Fireplace.
   Built by Maul Macotta Corp., Detroit, Mich.

3. Frame for Filling Station.
   Built by Dressen Engineering Co., Tulsa, Okla.
   Steel members in place ready to apply the porcelain enamel sheets.

4. Same Station as above.
   Porcelain Enamel Sheets partially in place.

TONCAN IRON ENAMELING STOCK



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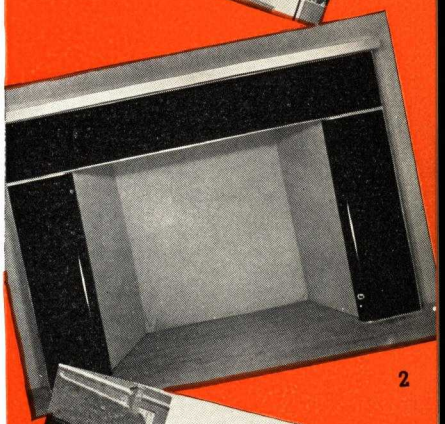
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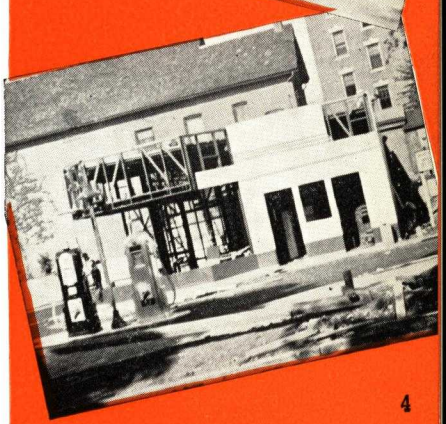
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The danger of warpage in porcelain enameled panels can be reduced greatly by using heavy gauge sheets of enameling iron and by keeping the panel sizes within certain dimensions. Fluted and heavily embossed panels usually have enough rigidity to prevent any noticeable warpage.

The normal warpage in porcelain enameled panels can be removed *after* the panels are enameled by backing up the panels with concrete, plywood, or insulating boards. This backing on the porcelain enameled panels has the additional advantages of removing metallic sound, reducing the transmission of sound, providing insulation against heat and cold, as well as preventing "sweating" on the back of the panels.

When backing up the panels with insulating board or plywood, the material is usually veneered to the panel under pressure, using water-proof caseine glue or synthetic resins as adhesives. It is necessary as in the case in most veneered constructions to balance the veneering with another piece of steel on the back of the insulating board or plywood.

Republic Galvannealed Sheets of 26 or 28 gauge are a good material for this purpose. A galvannealed sheet is one which is hot dipped galvanized in the customary manner but which, before cooling, is annealed. Thus, the protective zinc is made to combine with the steel sheet. The silver matte surface of the galvannealed sheet is a series of zinc-iron alloys bound to the sheet because it is an integral part of the sheet. The zinc coating prevents a chemical reaction from taking place between steel and adhesives. This galvannealed sheet is a better sheet for veneering than is a galvanized sheet because the porous, matte-surface of the galvannealed sheet assures a mechanical bond uniformly stronger than the smooth, greasy surface of the galvanized sheet.

Of the many types of caulking compounds that have been tested, those that contain slow drying oils such as tung oil or China wood oil and long Canadian asbestos fiber, seem to have the longest life, adhering to the porcelain enamel the best and remaining plastic the longest, thus taking care of the thermal expansion of the porcelain enameled panels.

For interior uses, especially between panels on working surfaces a self-vulcanizing rubber putty has been found to bring good results. One of these is made by a leading rubber company and is called "Plastikon Putty."

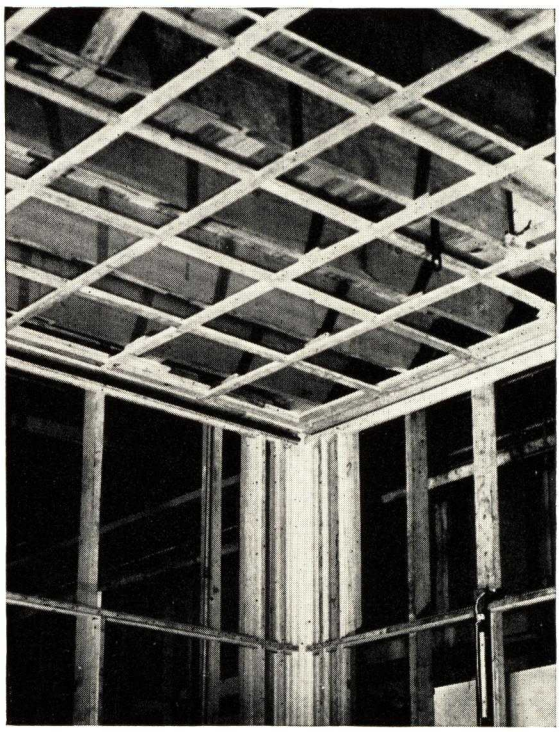
ROSETTE SYSTEM

Simplicity of fabrication and erection, combined with light weight, makes this a very practical system for ceilings where cleanliness is an important consideration. It is suitable for either new work or for use over old ceilings.

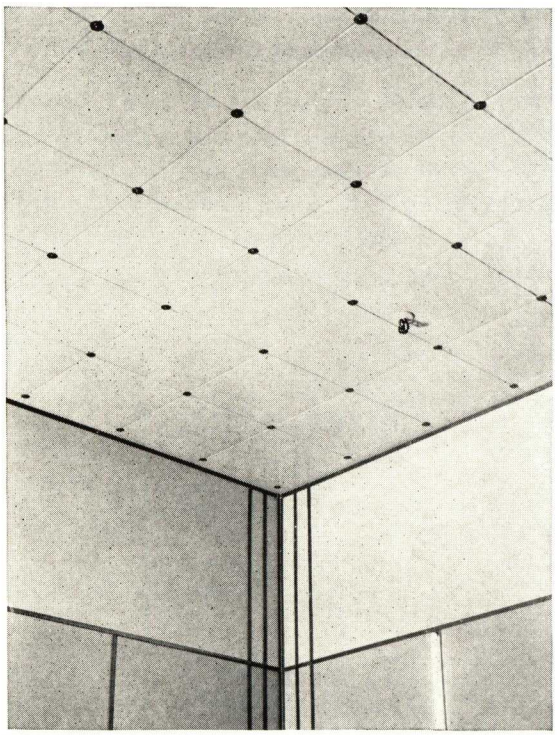
Flat furring strips spaced on centers equal to the size of the panels to be used are fastened to the supporting structure in both directions.

Panels are formed with flange on four sides to form a key for caulking and may be veneered with insulating board for sound deadening.

Panels are held in place by rosettes screwed or nailed to the furring strips at the corners.



Furring strips in place ready for applying the panels.

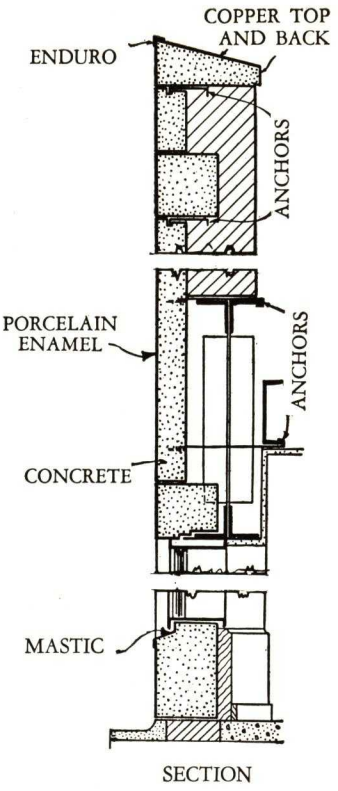


Finished ceiling showing rosettes holding the panels.

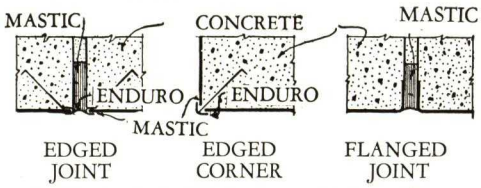
MACOTTA LOAD-BEARING SYSTEM

Riviera Theater, Port Huron, Michigan
Fabricated by Maul Macotta Corp.,
Detroit, Mich.
Enameling by Wolverine Enameling Co.,
Detroit, Mich.

Macotta is a load-bearing, fire-resisting structural unit. It consists of a slab of light weight concrete faced with porcelain enamel joined into one solid unit of any desired thickness. The enamel facings are supplied either with protective stainless steel edges or with enameled flanges. It is set on a mortar bed in a manner similar to limestone or other masonry units.



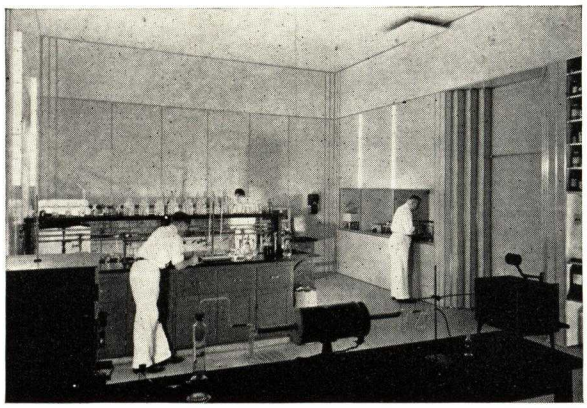
SECTION



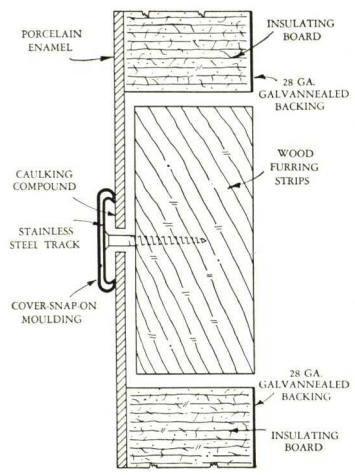
SNAP-ON MOULDING SYSTEM

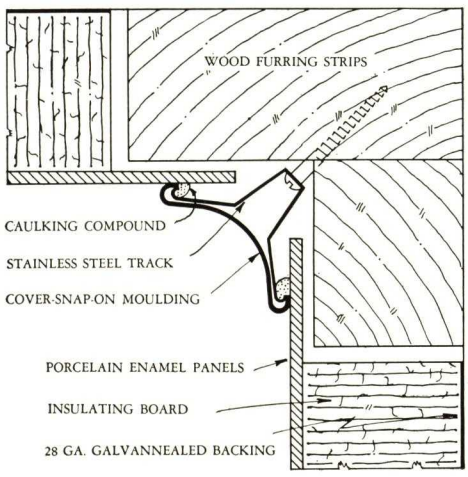
This system is used chiefly on interior work. Stainless Steel mouldings may be used as a part of the design. When run vertically they impart a feeling of height, and when run horizontally one of spaciousness. The mouldings are in two parts. The lower portion or track is fastened to the wall or furring strip by screws and overlaps the edges of the panels holding them securely. When in place the cover or finish moulding is snapped in place. In chemical, food and beverage plants and wherever sanitation is important the strips should run vertically so that water used in washing the walls will not settle in the joint. Where the walls are to be washed frequently, caulking compound is placed between the track or lower portion of the moulding and the panel. Where special flatness is important the sheets should be backed with insulation board with Republic Galvannealed Sheets on the reverse side.

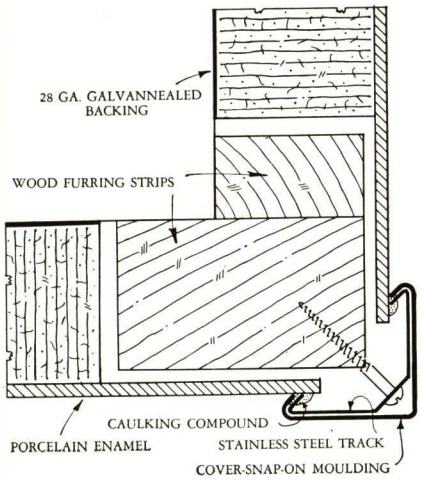
The sheets do not interlock and any panel may be removed without disturbing the others.



Laboratory of Chicago Vitreous Enamel Product Co.
Harold R. Zook, Architect.
The walls, ceiling, door, shelving and exhaust hood are all porcelain enameled. Panels are held in place by snap-on mouldings.

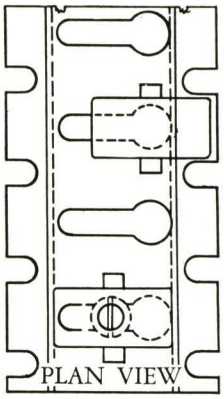


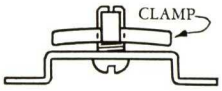




METAL FURRING STRIP AND SCREW CLAMP SYSTEM

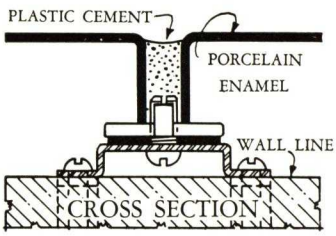
A special metal furring strip is used in this system in place of the wood strips used in many systems. These strips are secured to the wall by screws in the slots on the sides. Panels are fastened to the strips by means of special screw clamp, which extends through slots in the sides of the panels. Head of the screw is slipped into the keyhole slot in the furring strip and tightened by a slot for screw driver in the end of the screw. Clamps are single or double used at border panels or adjoining panels respectively. Joints are filled with mastic or may be covered with "snap-on" metal moulding which is held by a special stud. An extension bracket is used to line up irregularities in the under surface.



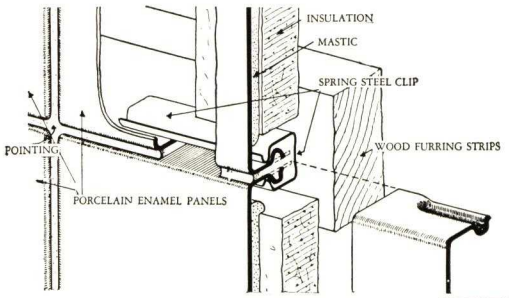


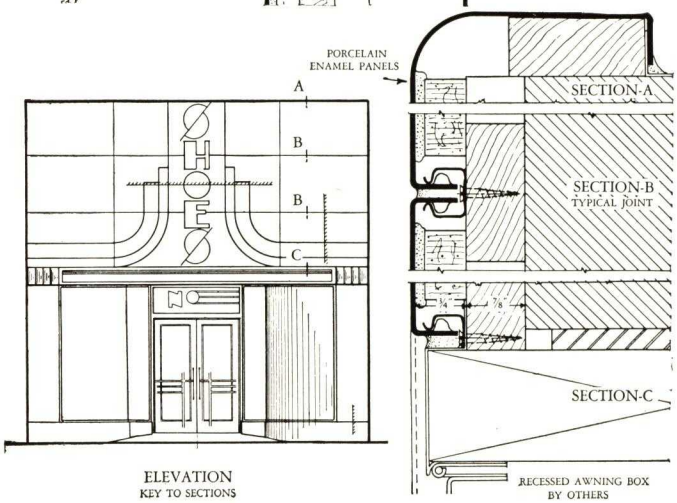
Thornton-Fuller Building, Philadelphia, Pa.

Faced with porcelain enameled sheets applied by the metal furring strip and screw clamp system. Detailed and erected under supervision of the Enamel Products Co., Cleveland, Ohio.



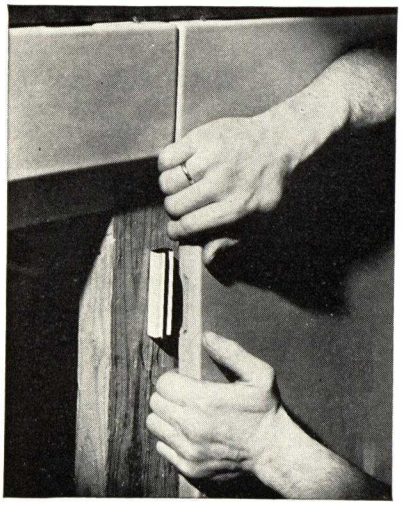
SPRING CLIP SYSTEM





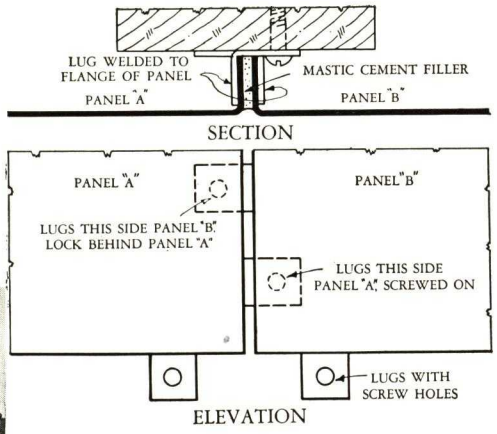
ELEVATION
KEY TO SECTIONS

This is a non-interlocking system and any panel may be removed without disturbing adjacent panels. Indentations in the flanges of the panels snap over special spring clips which have previously been fastened to the wall. The clips give a floating panel construction which allows for expansion and contraction and for absorbing vibration shocks. For exterior work the joints are filled with mastic. For interior work the joints are narrow and require no filler.



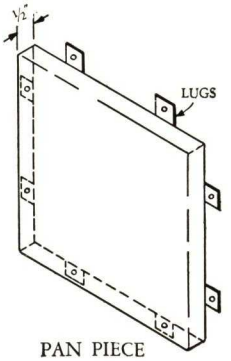
PAN AND LUG SYSTEM

Lugs are welded to each side of the panel before enameling. After one panel is fastened in place by screws through the lugs, those on the adjoining panel are interlocked under the edge of the first panel and the other sides held by screws. On exterior work the joint is filled with mastic. On interior work the joints may be made so narrow no filler is required. This simple system is used largely on remodeling work.



Fleetwing Service Station, Cleveland, Ohio

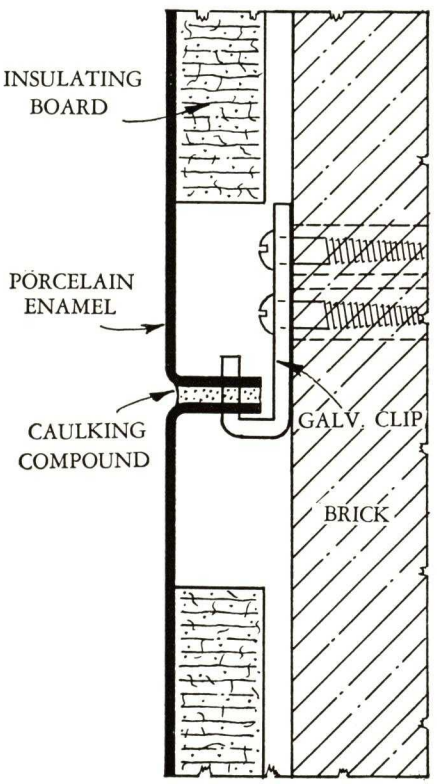
The old building at the right was remodeled and enlarged into the above modern station by the use of the pan and lug system of paneling fastened to wood furring strips. By means of curved panels and stainless steel moldings, the two sections were made to blend into a unified building mass. Note the reeded door pilasters of stamped and enameled sections. Enameling work by Erie Enameling Co., Erie, Pa.



HANGING HOOK SYSTEM

The edges of the sheets are turned back ½ inch and slotted at intervals. Galvanized clips are fastened to the building and the panels hung on the clips which fit through the slots in the panels. Washers may be placed over the hook between the edges of the sheets to insure uniform width of joints, which are approximately ⅛ inch, filled with mastic. This renders them watertight, prevents vibrations and allows for expansion and contraction caused by temperature changes. The panels may be veneered to a backing of ½ inch insulation board and 28 ga. Republic Galvannealed Sheets to make them flat.

A variation of the construction shown uses a screw through the horizontal part of the hanger. Slots in the sheets fit over the screw and threaded washer is screwed down to clamp the sheet.



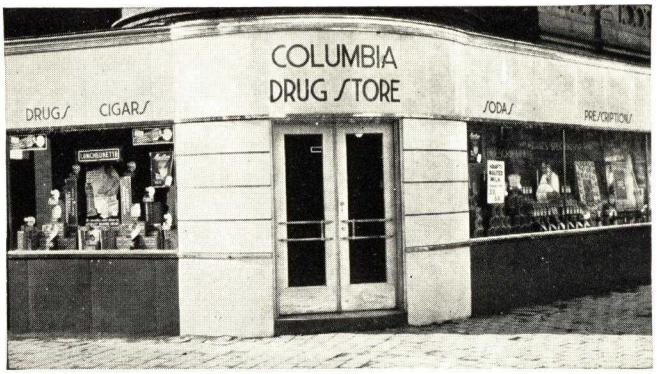
Philco Radio Salon, Chicago, Ill.

Porcelain enamel eliminated frequent and costly repainting and gave an attractive, modern exterior here. Note curved and reeded sections at door and small window. Colors light blue gray and maroon. Panels veneered with ½" Celotex and Galvannealed sheets. Designed and constructed by Federal Electric Company, Chicago, Ill.

LOCK JOINT SYSTEM

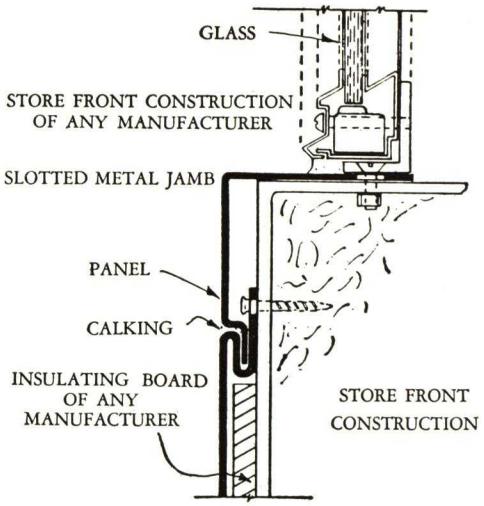
This lock joint construction makes it possible to attach the panels directly to the old walls without the use of furring strips, adding only about ⅜" to the old walls.

The edges of the panels are formed to dovetail together as shown. The lower panel is fastened to the building by screws on wooden structures or expansion bolts on concrete. The next panel is then dovetailed into the first. The joint is filled with mastic which not only makes it watertight but also prevents any vibration. As the joints are narrow only a small amount of mastic is required in this system.



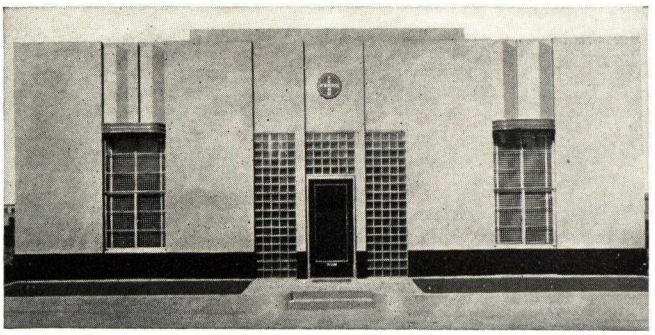
Columbia Drug Store, Washington, D. C.

The lock joint system here solved a difficult problem of modernization. The building was already 2" over the building line and the building commission refused to allow further encroachment on the sidewalk until it was explained that the porcelain enameled panels would add only ⅜" to the watts. Fabrication and enameling by Toledo Porcelain Enamel Products Co., Toledo, Ohio.



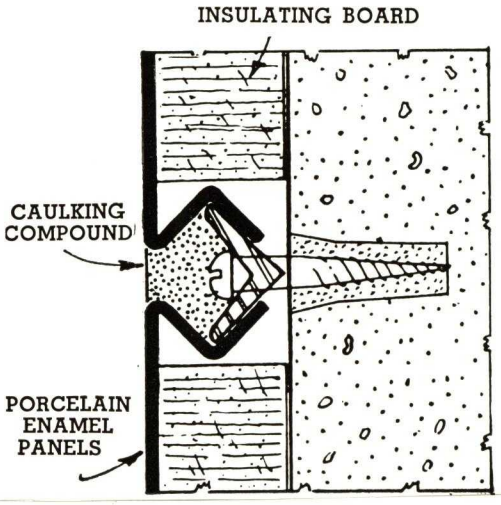
VEE CLAMP SYSTEM

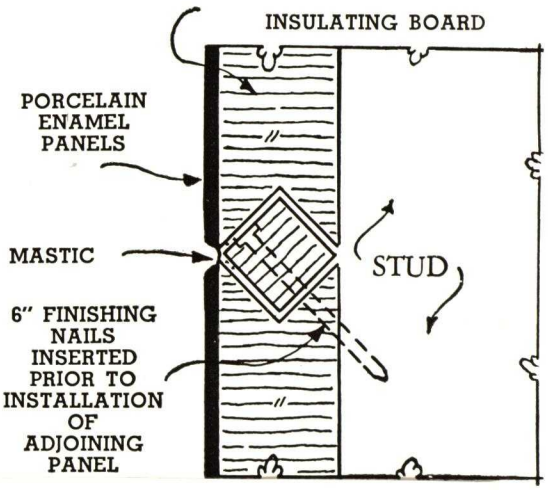
On concrete structures the edges of the panels are formed to fit under the sides of a special vee clamp which is secured to the structure by screws which are tightened into expansion plugs after the panels are in place. The joints are then filled with caulking compound. On wooden structures a square strip of wood is fitted into a recess in the edge of the insulating backing sheets. The strips are nailed to the structure before the adjoining panel is set in place after which the joint is filled with mastic.



Office Building, Ferro-Enameling Company, Oakland, Calif.

Sheets applied by the Vee clamp system. An impression of depth was created by using two tones of one color to obtain the illusion of shadows in the wall panels above the windows.





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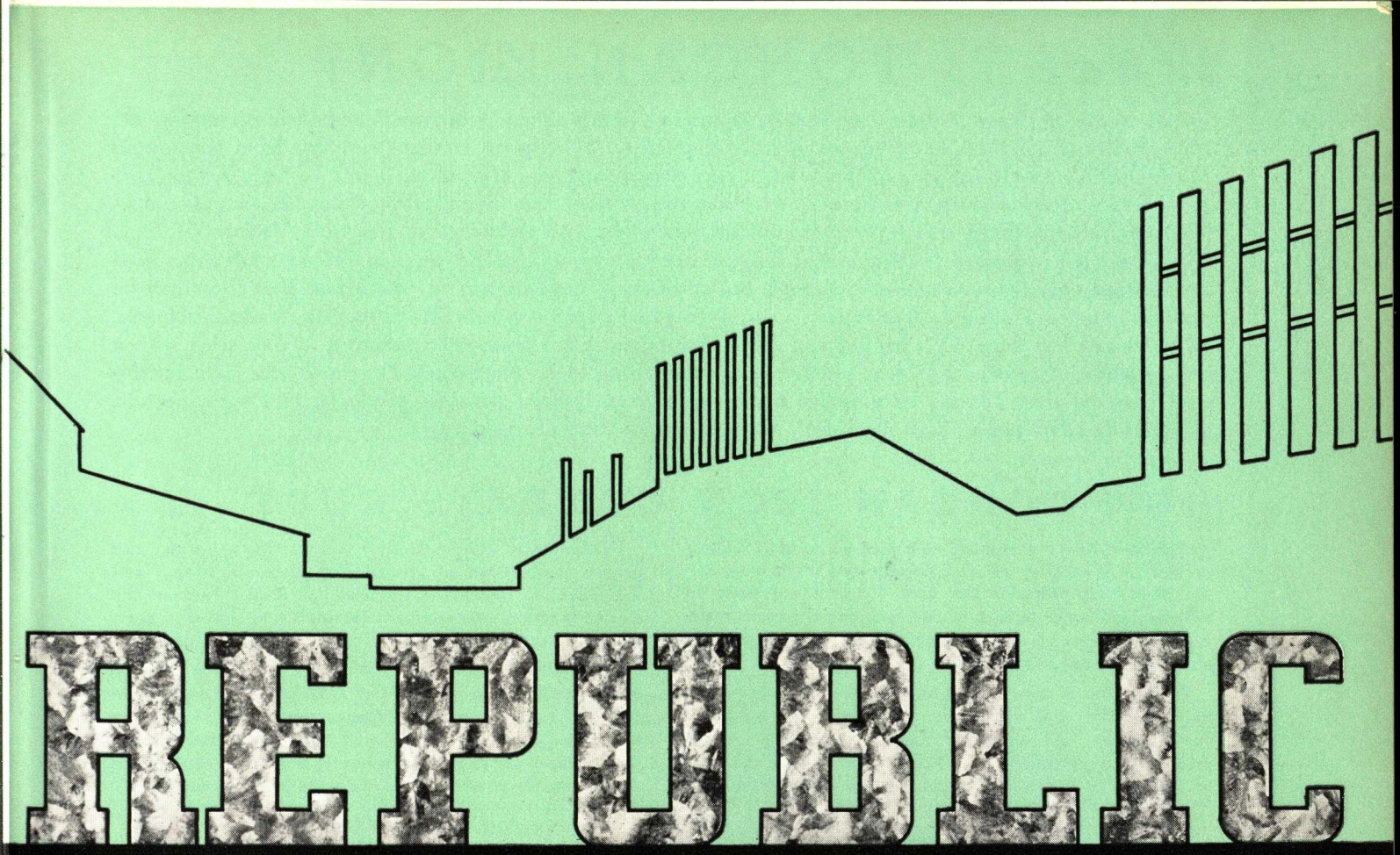

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REPUBLIC STEEL

What is TONCAN IRON?

As originated over 28 years ago, Toncan Iron was a highly refined iron, unalloyed with other elements but containing a minimum of rust-promoting impurities. Subsequent changes resulted from continuous research and relentless testing. Copper, in proper proportion, was alloyed with iron to form a new iron-copper alloy which was more resistant to rust than the original iron. Then followed the addition of molybdenum which produced an iron-copper-molybdenum alloy with resistance to rust never before attained. Experience has demonstrated that neither copper nor molybdenum alone can contribute its full individual properties to the iron — it is only through the addition of *both* in correct proportion that these can be realized. Such is Toncan Iron of today . . . an open hearth iron, scientifically refined to reasonable limits, in which not less than .40% copper and .07% molybdenum are uniformly dissolved . . . an alloy with a proved superior resistance to rust among the ferrous metals in its price class. Time and tests have conclusively proved that Toncan Iron brings to users *of sheets, plates, finished products,* and *pipe,* certain outstanding advantages which are briefly enumerated on the following pages.

HOW TONCAN IRON COMBATS RUST

Toncan Iron is a rust-resistant ferrous material chiefly because it is an alloy of iron, copper, and molybdenum — the alloy that possesses the most inherent resistance to solution, and hence to rust, of any commercial ferrous material in its price class—the alloy that is most noble, and hence most rust-resistant.

Toncan Iron is rust-resistant also because it is chemically uniform. Chemical uniformity is essential for maximum rust-resistance, as otherwise chemical differences would create electropotential differences which hasten the rate of solution in a harmfully localized and selective manner.

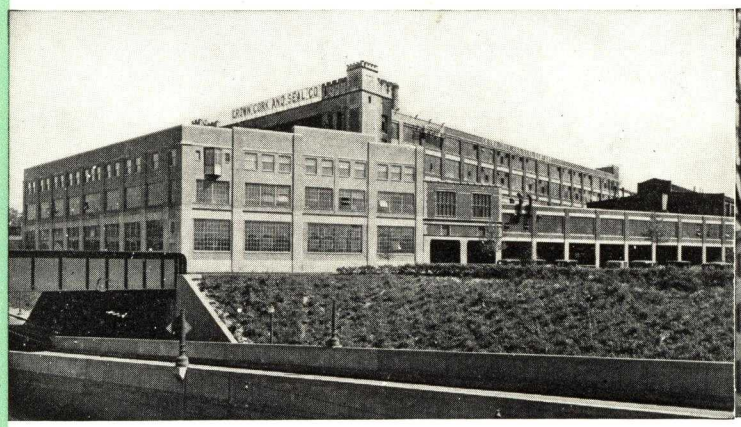
Furthermore, Toncan Iron is structurally uniform. The proper combination of the alloying elements, copper and molybdenum, under the influence of proper furnace and rolling practice, creates and maintains a fine equi-axed grain structure which contributes additional rust-resistance.

It should be pointed out that under conditions favoring rust formation, a protective film may be found on the surface of Toncan Iron. This film is not of the loose, flaky type usually associated with rusted metals but is darker, more inert, denser and more adherent. It is, in fact, so adherent that it actually protects the uncorroded surface beneath it.

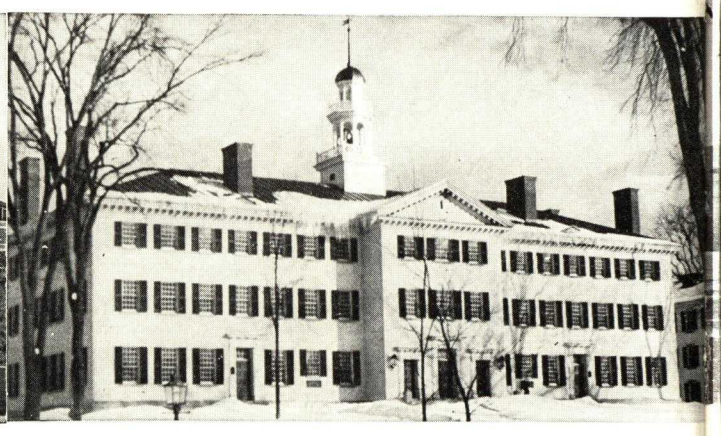
WHERE IT CAN BE USED

Toncan Iron offers to the architect the highest degree of resistance to rust and corrosion obtainable among ferrous metals in its price class. It also assures unsurpassed ductility and working qualities. Because of its versatility, Toncan Iron has met with broad usage and has proved itself in countless installations under severe conditions. The list below will serve to show some of the more common applications of Toncan Iron in the building field.

Air conditioners
Airplane hangars
Arches for bridge flooring
Awning covers
Balustrades
Bathroom cabinets
Belt guards
Blower ducts
Boiler breechings
Boiler jackets
Bridge arches
Brine tanks
Bulletin boards
Cabinet heaters
Cabinets
Canopies
Catch basins
Chimney tops
Cistern filters
Clothes chutes
Clothes dryers
Coal chutes
Condensation pans
Conductor pipe
Coping
Cornices
Corrugated culverts
Dampers
Dishwashers
Doors (exterior)
Downspouts
Drainboards
Drinking fountains
Dryers
Ducts, heating, ventilating and air conditioning
Dust collectors
Eaves trough
Electric heaters
Electrical terminal boxes
Fan housing
Fire doors
Flashing
Forged iron lanterns
Furnaces and pipes
Gas radiators
Gas and oil pipe
Gravel strips for roofs
Gutters
Hospital equipment
Hotel and restaurant equipment
Humidifying pans
Incinerators
Kitchen cabinets
Laboratory equipment
Laundry tubs
Lighting fixtures
Lockers for bathing beaches
Louvres
Mail boxes
Marquees
Metal ceilings
Metal doors
Metal lath
Metal partitions
Oven lining
Pilasters
Playground equipment
Radiator shields
Range boilers
Ranges (coal, gas, electric, oil and gasoline)
Reflectors
Refrigerators
Registers
Roofing
Roof flashings and valleys
Rubbish burners
Septic tanks
Shingles (metal)
Siding
Signs
Sinks
Skylights
Smoke pipe
Stand pipe
Stationary tubs
Switch boxes and covers
Tanks
Underground garbage holders
Urns
Vats
Ventilators
Wall boxes
Waste paper boxes
Water tanks
Window boxes
Window frames
Window sash
Window ventilators



Crown Cork and Seal Company, Baltimore, Md.
Architect—Lucius White
Toncan Iron Sheets used for ventilating and air conditioning ducts.



Old Dartmouth Hall, Dartmouth College, Hanover, N. H.
Architect—J. Fredrich Larson
Toncan Iron used for all sheet metal replacements after fire had badly damaged the building.

TONCAN IRON IS EASY TO FORM

Toncan Iron is exceedingly ductile and can be formed into any commodity which is ordinarily made up of sheet steel or iron. It is much softer than mild steel and, because of its workability, it can be deep drawn, formed, bent, flanged, stamped or spun. It is easy to cut or shear and requires less power and less labor for working. Toncan Iron can be annealed at a temperature of 1200° to 1250° F., to relieve strains caused by working and can be normalized at a temperature of 1700° F., followed by cooling in air to improve the grain structure of the iron after working. It can be welded, soldered, brazed, riveted, etc., and may be protected with various coatings or galvanized, galvannealed, sherardized, etc. The remarkable rust-resistance of Toncan Iron extends uniformly throughout the entire thickness of the metal—not on the surface only—and it is the only commercial ferrous material with rust-resistance practically unaffected by cold-working or deformation. Other ferrous sheet materials ordinarily first dissolve and rust most rapidly at or adjacent to parts which have been cold-worked —such as seams, cut ends, bends and punched holes.

WELDING PROPERTIES OF TONCAN IRON

The excellent welding properties and smooth-flowing behavior of Toncan Iron are valuable in that they make Toncan Iron the ideal metal for work where all joints are to be welded. Toncan Iron lends itself equally well to welding by either the electric arc or gas process. In gas welding, a slight reducing flame should be maintained in order to reduce oxidation to a minimum. In electric arc welding, the use of coated Toncan Iron Welding Rod is recommended. In gas welding, the deposited metal is practically as resistant to corrosion as the metal itself. This is due to the fact that there is no change in the alloy during the welding operation, for the copper and molybdenum remain unaffected in their relation to the iron with which they are alloyed. Practically the same results can be obtained by the electric arc method, but the use of Toncan Iron electrodes is recommended. The use of Toncan Iron Welding Wire insures a completed job of uniformly high resistance to rust and corrosion throughout.

PHYSICAL PROPERTIES AND CONSTANTS OF TONCAN IRON

The analysis and the chemical and structural uniformity of Toncan Iron assure satisfactory and dependable physical properties. Toncan iron is unique in that it combines with its remarkable rust- and corrosion-resistance, physical properties not found in the best grades of open-hearth steel. Many of these properties are due to the alloy addition of molybdenum. This element entirely dissolves without loss in the iron and thereby has a positive and beneficial effect. It produces a grain refinement which results in an improvement in strength and ductility, as well as greater rust-resistance. It increases the ability of the metal to withstand shock. It increases the susceptibility of the metal to heat treatment. It increases the elastic ratio, that is, the ratio between elastic limit and tensile strength. These advantages are reflected in the following figures, showing a range for all Toncan Iron Products.

Physical Properties

Tensile Strength—45,000-58,000 lbs. per sq. in.

Elastic Limit, 30,000-40,000 lbs. per sq. in.

Elongation in 2 in., 30-40%.

Reduction of Area, 60-80%.

Rockwell Hardness, 36-46 (B scale).

Brinell Hardness, 90-120.

Specific Gravity, 7.88 approximately; about 2% greater than that of unalloyed iron or steel.

Electrical Conductivity, about 12½% that of copper.

Thermal Conductivity, slightly better than steel or iron products.

Co-efficient of Expansion, .00000674 in. per degree F. melting point, 2775° F.

Physical Constants

Weight—.283 lb./cubic inch.

Specific gravity—7.88 or approximately that of iron or steel.

Melting point—2775° Fahrenheit.

At room temperature (20° C. or 68° F.):

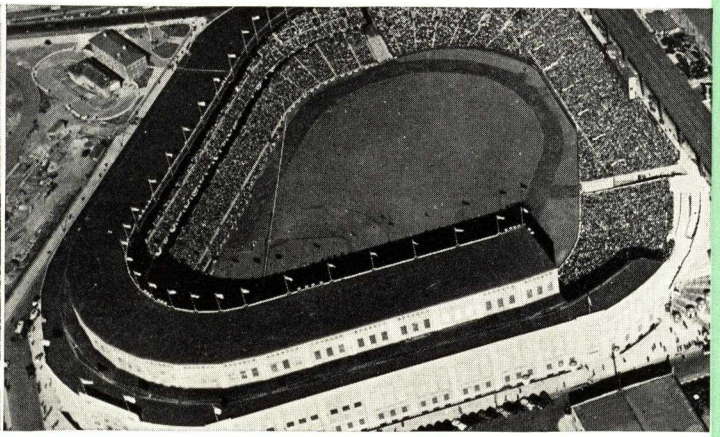
Electrical resistivity—eight times that of copper or approximately .0000137 ohm/cm. cube = 13.7 microhm/cm. cube = 77 ohm/circular mil foot.

Electrical conductivity—12½% that of copper or approximately 73,000 reciprocal ohm/cm. cube = .013 ohm/circular mil foot.

Thermal conductivity—Slightly better than iron or steel or approximately .18 cal/cm. cube/sec/degree C = .7 watt/cm. cube/sec/degree C.

Linear co-efficient of thermal expansion—.0000121 cm./cm./degree C., 0-100° C. = .00000674 inch/inch/degree F., 32-212° F.

Polytechnic High School, Long Beach, Cal.
Architect—Hugh Davies
Toncan Iron Galvanized Sheets used for all general cornice work, air conditioning, heating ducts, downspouts and gutters.



Yankee Stadium, New York, N. Y.
Engineers—Osborn Engineering Co.
Toncan Iron Sheets used for all Louvres. Air view by Acme Newspictures, Inc.

FORMS AND FINISHES

Hot-Rolled, Hot-Rolled Annealed, Galvanized, Galvannealed, Terne Coated Flat Sheets, in all the usual gauges and various popular forms of roofing, galvanized or painted, are available at all times. Roofing may be had in 2, 2½, 3 and 5″ corrugated; in Pressed Standing Seam; in 2, 3, 4, 5 and 6 V-Crimp; Pressed Standing Seam; Double Cross Lock Roll Roofing; Roll and Cap Roofing; Weatherboard Siding; Cross Corrugated; and in Plain and Rock Face Brick and Stone Siding.

SIZES AND GAUGES

COMMERCIAL GALVANIZED AND SPECIAL TIGHT COAT, as well as formed roofing products. 12 to 28 U. S. Gauge, inclusive. Width range, 24″ to 48″. Length, 60″ to a maximum of 144″.

HOT-ROLLED AND ANNEALED SHEETS—17 to 26 U. S. Width range, 24″ to 60″. Length, 60″ to a maximum of 180″.

HOT-ROLLED AND ANNEALED SHEETS—17 to 26 U. S. Gauge, inclusive. Width range, 24″ to 60″. Length, 60″ to a maximum of 144″.

HEAVY COLD ROLLED AND LIGHT COLD ROLLED. 7 to 24 U. S. Gauge, inclusive. Width range, 24″ to 63″. Length, 60″ to a maximum of 120″.

LONG TERNES—14 to 28 U. S. Gauge, inclusive. Width range, 24″ to 49″. Length, 60″ to a maximum of 144″.

TONCAN IRON OVEN LINING AND TONCAN IRON GALVANNEALED—Gauges 16 to 28, inclusive. Widths up to 54″. Lengths to 144″.

CORRUGATED ROOFING AND SIDING—

(a) Galvanized—Present standard widths and corrugations. In all lengths, 5′ 0″ to 12′ 0″ in 28 gauge and heavier.

(b) Painted —Present standard widths and corrugations. In all lengths, 5′ 0″ to 12′ 0″ in 26 gauge and heavier, even gauges.

MAXIMUM SIZES OF SHEETS

This table indicates the rolling limits of Toncan Iron Sheets in hot rolled, annealed, galvanized, heavy hot rolled annealed and special finishes — with the exception that hot rolled, annealed Toncan Iron Sheets are not made lighter than 26-gauge, while galvanized sheets are not supplied in greater length than 144 in. *Uncoated sheets can be furnished in widths and lengths greatly in excess of those shown here. Details upon application.*

GAUGE	LENGTH IN INCHES																		
Width	24″	26″	28″	30″	32″	34″	36″	38″	40″	42″	44″	46″	48″	50″	52″	54″	56″	58″	60″
No. 28	144	144	144	144	144	144	144	144	120	....	....	....	....	....	....	....	....	....	....
No. 27	144	144	144	144	144	144	144	144	120	120	....	....	....	....	....	....	....	....	....
No. 26	144	144	144	144	144	144	144	144	144	144	120	120	120	....	....	....	....	....	....
Nos. 25 and 24	144	144	144	144	144	144	144	144	144	144	144	120	120	....	....	....	....	....	....
No. 23	144	144	144	144	144	144	144	144	144	144	144	144	120	....	....	....	....	....	....
Nos. 22 and 21	144	144	144	144	144	144	144	144	144	144	144	144	144	....	....	....	....	....	....
No. 20 & heavier	144	144	144	144	144	144	144	144	144	144	144	144	144	120	120	120	120	120	120

TONCAN IRON PLATES

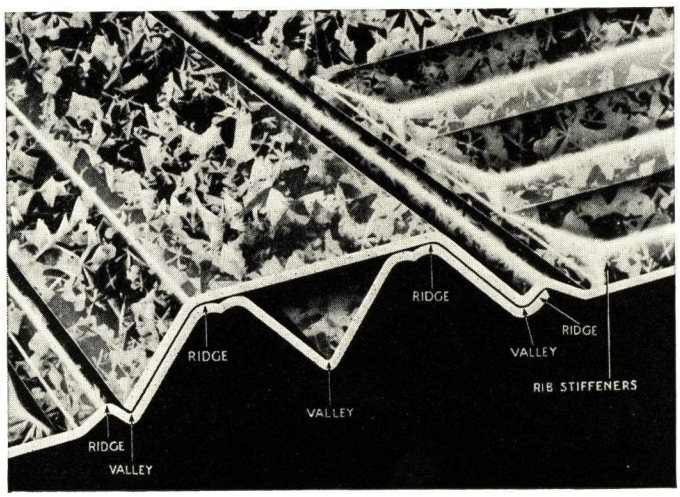
Rust-resisting Toncan Iron Plates are made in thicknesses ranging from No. 10 BWG to 2 in. Sizes range from 24 to 150 in. in width and from 190 to 640 in. in length, depending upon thickness. Hot rolled plates are also available in Steel, Republic Double Strength Steel and Enduro Stainless Steel.

TONCAN IRON STRIP

Hot-rolled Toncan Iron Strip is available in widths from 3½ inches to 36 inches. Through special arrangements, it can be made in widths narrower than 3½ inches, in which case the lightest limit is 16 gauge.

The lightest gauge in which cold-rolled Toncan Iron Strip is offered is 22 gauge. It is available in all widths.

REPUBLIC TRIPLE DRAIN ROOFING



Republic Steel's new Triple Drain Roofing is the ideal channel roofing. Not just a single channel, not merely a double channel—there are actually three channels. With this vastly improved design neither driving rain nor capillary attraction (syphonage or seepage) can cause leaks. A beaded channel makes a tight fit at the overlapping edge, creating a vacuum action. Any rain passing this point through the action of gravity is carried into the center channel which is larger than that on ordinary roofing. Furthermore, rib stiffeners at the end laps of the sheet provide a storm-tight edge.

For convenience in erection, blue lines clearly indicate the proper area for nailing. Lead headed nails are recommended. For roofs of one-quarter pitch or more.

Covering width—24 inches. Lengths, 5 to 12 feet inclusive. Triple Drain adjustable ridge roll, end wall flashing, gambrel roof joints, overhang eaves drip and gable end starters are also available.

V-CRIMPED ROOFING

• V-crimped is the oldest form of roofing, and has been used extensively. The construction is simple and makes a good appearance at reasonable cost. This roof can be applied over close sheathing, to strips spaced four or five inches apart or over old shingles. The 3V-crimped is a pleasing variation from the standard and makes a stiffer sheet, while 5V-crimped is still stronger. All three styles are supplied in lengths of 5, 6, 7, 8, 9, 10, 11, and 12 feet and in gauges 24 and lighter. Actual covering width of each style is 24 inches.

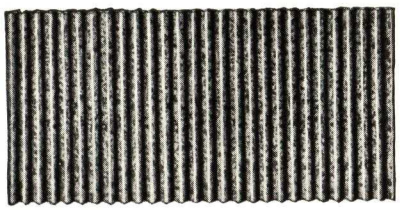
CORRUGATED SHEETS

• Corrugated sheets offer the advantage of light weight with great lineal rigidity. This advantage, plus the fire protection offered by corrugated sheets, accounts for their almost universal use in roofing and siding for industrial buildings, warehouses, mine buildings, and other large structures in the vicinity of railroads. Corrugated sheets are also an ideal material for barns, garages, sheds, and a wide variety of other buildings. The 1¼-inch style is supplied in gauges 20 and lighter; the 2½-inch style in gauges 10 and lighter. Both styles are 26 or 27½ inches wide; lengths, 5, 6, 7, 8, 9, 10, 11, and 12 feet.

ROLL ROOFING

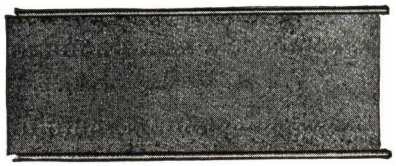
• Especially useful where pitch of roof is slight and for wide areas. Cross seams are double locked. Each roll contains 50 lineal feet. Covering width is 24 inches. Gauges 26, 28, and 29.

CROSS-CORRUGATED SHEETS



• Used for elevators and other high buildings where there is some motion of the building in the wind or where the structure may settle. The nails in each sheet are driven 2 inches above the edge of the sheet below, which allows the building to settle or move without loosening the sheets. The standard size for this type of sheet is 26 x 32 inches, providing for a covering width of 24 inches, with a 2 inch lap.

PRESSED STANDING SEAM ROOFING



• Strong and attractive, this is one of the most perfectly watertight of all metal roofings when properly applied, as no nails are driven through the roofing sheets. Covering width, 24 inches. Lengths, 5, 6, 7, 8, 9, 10, 11, and 12 feet. Galvanized; gauges 28, 26, and 24. Painted; gauges 26 and 24.

RIDGE ROLL

Plain

Made with or without nailing flange; lengths, 10 feet. Size of rolls, 1¼, 1½, 2, 2½, and 3 inches. Size of aprons, 1¾, 2, 2½, 3 and 3½ inches. Girths, 7, 8, 10, 12 and 14 inches. Gauges, 29 and 26.

Corrugated

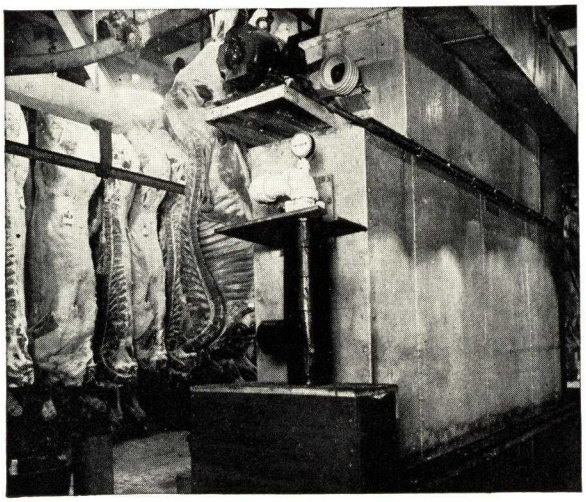
Used with corrugated roofing. Length, 28 and 96 inches. Made with 2½-inch or 1¼-inch corrugations with 2-inch roll; 4-inch apron; 12-inch girth.

ARCHITECTURAL FORUM

Hillside Heights Development, Long Island, N. Y.

Toncan Iron used on all gutters and downspouts in this 150-home development. Courtesy Carl Evers, Realty Associates.

TONCAN IRON PRODUCTS *in* *Air Conditioning*



Laclede Packing Company, St. Louis, Mo.
Engineers—R. H. Tait & Sons Corp.
Toncan Iron used for 600 feet of pipe and for structural sheets in the all-welded conditioning unit.

Toncan Iron Pipe and Sheets Offer Maximum Corrosion-Resistance in Air Conditioning

The marked superiority of Toncan Iron Pipe for water supply, circulating and effluent lines, ammonia cooling coils and steam coils has been amply demonstrated. Toncan Iron Sheets for ducts and other sheet metal applications in air conditioning have already established records for long life under severe conditions. The reason for this outstanding performance lies in the base metal itself—an alloy of refined open hearth iron, copper and molybdenum which possesses greatest corrosion-resistance among ferrous metals in its price class.

Corrosion Is Major Problem

In the selection of ferrous materials for air conditioning systems, the architect and the engineer are faced with a definite problem of combating corrosion in (1) central station air conditioning units and (2) ducts through which the conditioned air is carried to different parts of the building. Replacement of failed metal parts in air conditioning installations is an extremely costly matter. Hence, insurance of maximum life for these parts is a fixed responsibility of the architect or engineer.

Corrosion in Central Station Systems

In this type of air conditioning system, impurities are removed from the air in varying degrees by passing it through water sprays. The impurities which are thus removed by washing are mainly acidic in character, such as carbon dioxide, sulphur dioxide and, to a lesser degree, sulphur trioxide. The system also acts as a humidifier or dehumidifier according to outside weather conditions.

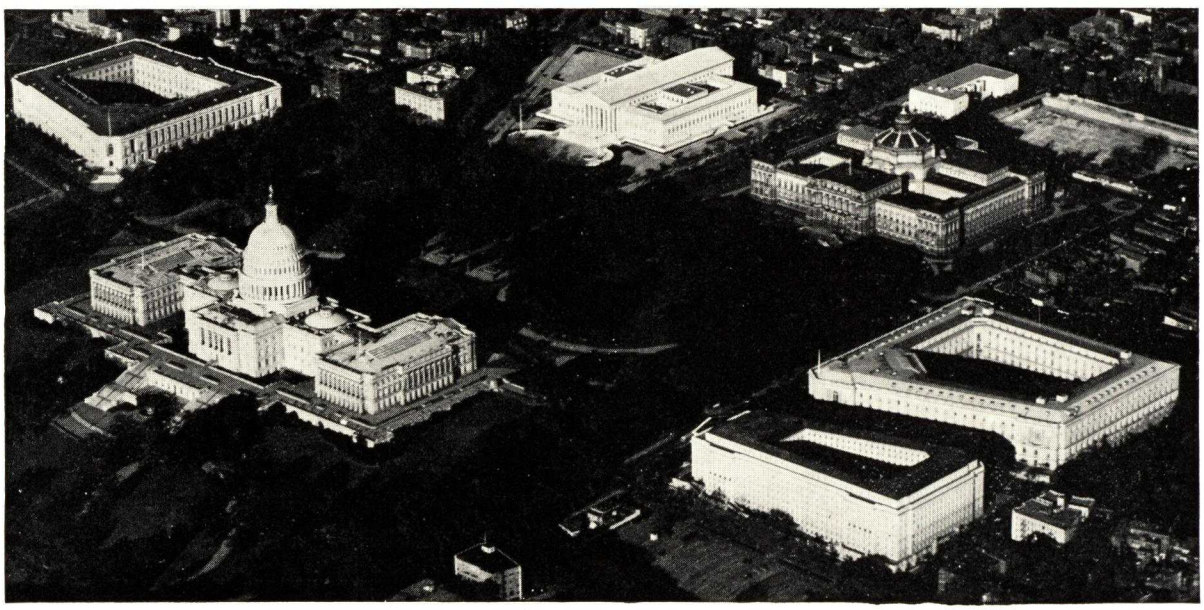
Both the water supply lines and the circulating or effluent lines are subject to corrosive conditions—the supply lines from raw water and the circulating lines from water containing impurities removed from the air. In many cases the water supply is treated to remove impurities which tend to attack the pipe. Such treatment, however, is not fool-proof. The pipe which carries the water to the sprays must be able to withstand corrosive attack during *any* period when conditions are *abnormal* and when all impurities are *not* removed. Even though the water may be satisfactorily treated for six days out of the week, provision must be made to combat corrosion on the seventh day when treatment may not remove all impurities.

Superiority of Toncan Iron Pipe for these lines is due to the high corrosion-resistance of the metal demonstrated in both laboratory and field.

Corrosion in Air Conditioning Ducts

The life of galvanized ferrous sheets in duct systems is affected by the following:

(1) Moisture originally present in the air as water vapor, or moisture held in mechanical suspension deposits out on the sheet as a result of temperature changes. This applies to *both* the interior and exterior of the duct. A cold air duct passing through a warm room will "sweat" on the exterior.



Capitol, Senate and House Office Buildings, Washington, D. C.
Toncan Iron used for pipe lines and air conditioning equipment.

(2) Moisture deposits out in certain critical areas of the ducts as a result of the circuitous, angular paths often necessary. Air flow obstructions cause deposit of moisture mechanically and electro-mechanically.

(3) Moisture deposits out as a result of the presence of dust particles or hygroscopic products of corrosion.

(4) Improperly or insufficiently washed or filtered air contaminates the moisture with sulphurous acid, sulphuric acid and hydrogen sulphide.

These Tests Show Why Toncan Iron Should Be Used

Test No. 1—Air conditioning system operates 8 hours a day for 5 days a week. Test specimens immersed in *untreated water* in dehumidifier.

Test No. 2—Air conditioning system operates 24 hours a day, 7 days a week. Test specimens immersed in *treated* water spray in dehumidifier.

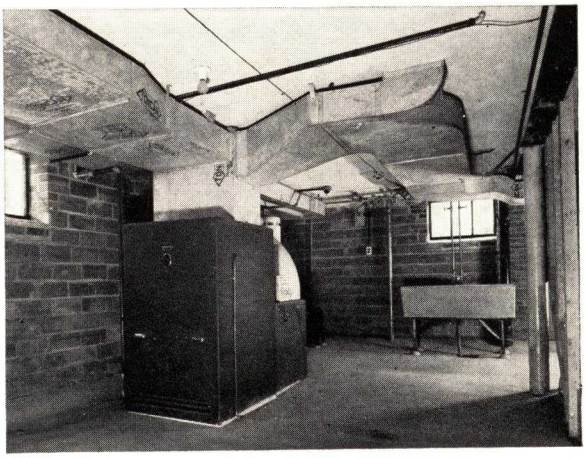
Corrosion Loss

Material	Milligrams per sq. in.		Appearance	
	Test No. 1	Test No. 2	Test No. 1	Test No. 2
Plain Open Hearth Steel	73.2	.93	Deep, scattered pits	Few shallow pits
Copper-Bearing Steel	71.8	.80	Deep, scattered pits	Fewer shallow pits
Toncan Iron	67.7	.67	Shallow scattered pits —uniform attack	No pits—uniform attack

The above results of scientifically conducted tests show the ability of Toncan Copper Molybdenum Iron Sheets and Pipe to resist corrosive action of both treated and untreated water used in air conditioning. Toncan Iron justifies its use in air conditioning applications because:

(1) It affords highest degree of resistance to corrosion, thus assuring longest service performance.

(2) It will save much replacement cost, especially when ducts are built-in or are otherwise inaccessible. This is true even though best operating control of treated water and air is assured.



(Above)
Grand Central News Reel Theater, New York, N. Y.
Architect, Sloan & Robertson
Toncan pipe and sheets used for refrigeration and air conditioning ducts.

Residence of Mr. Moses King, Shaker Heights, Ohio
Architect, John W. Little
Toncan Iron used for all Air Conditioning Ducts; also for gutters and downspouts.

How to Specify Toncan Iron Sheets

Toncan Iron Sheets are stocked by jobbers in all large cities. Be sure to specify: "All sheet metal work shall be rust-resisting Toncan Copper Molybdenum Iron manufactured by Republic Steel Corporation." In cases where public institutions do not use trade-names in specifications, Toncan Iron Sheets may be specified as: "Alloyed iron sheets of open hearth iron, copper and molybdenum produced by the basic open hearth process, containing no less than .40 per cent copper and .05 per cent molybdenum."

For your protection, every Toncan Iron galvanized sheet is stenciled at approximately two-foot intervals with the Toncan Iron trade-mark in green. Smaller formed products are die stamped with the trade-mark and maker's name. The gauge also is clearly shown.

Look for the green Toncan Iron trade-mark—it's your assurance of longer sheet life, easier working quality, and greater economy.

REPUBLIC TAYLOR ROOFING TERNES

"TARGET AND ARROW" BRAND

Since 1810 the Taylor name has identified tin roofing of the high quality obtained only by coating the sheets by means of the so-called "old style" process. This process calls for craftsmanship of the highest order and insures perfect amalgamation of the three metals. Consequently, Taylor "Target and Arrow" Brand Roofing Ternes offer unexcelled durability.

To assure maximum service life, the base metal of these ternes is rust-resisting copper-bearing steel. Thus, to the highly efficient protective terne coating is added the ability of the base metal to resist to a high degree the attacks of corrosion, resulting in a roofing material of easy workability and long life.

Forms Available

Republic Taylor Copper-Bearing Roofing Ternes are supplied in standard flat sheets and in rolls of 100 square feet or 100 lineal feet.

Sizes and Gauges

Available in two sizes, sheets 14″ x 20″ and 20″ x 28″, packed 112 sheets to the box. Furnished in IC thickness (approximately 30 U. S. Gauge) and IX thickness (approximately 28 U. S. Gauge). Weight per 100 square feet laid on the roof, about 65 pounds for IC thickness. Coating weights: In addition to Target and Arrow Brand, plates can be furnished in coatings as follows—8 lb. (Saxon); 15 lb. (Avalon); 20, 25 and 30 lb. (Old Method); 40 lb. (Old Method and Taylor Extra Coated); 20 lb. (Fire Protection).

100 Square Foot Rolls contain 28 sheets, each 20″ x 28″. Width either 20″ or 28″. Rolls 14″ wide contain 56 sheets 14″ x 20″. Surface measurement approximately 103 square feet. Seams are carefully soldered. Painted one or both sides.

100 Lineal Foot Rolls are available in 14″, 20″ and 28″ widths.

Identification

Sheets are stamped with weight of coating, grade and brand. This information is also stenciled on boxes.

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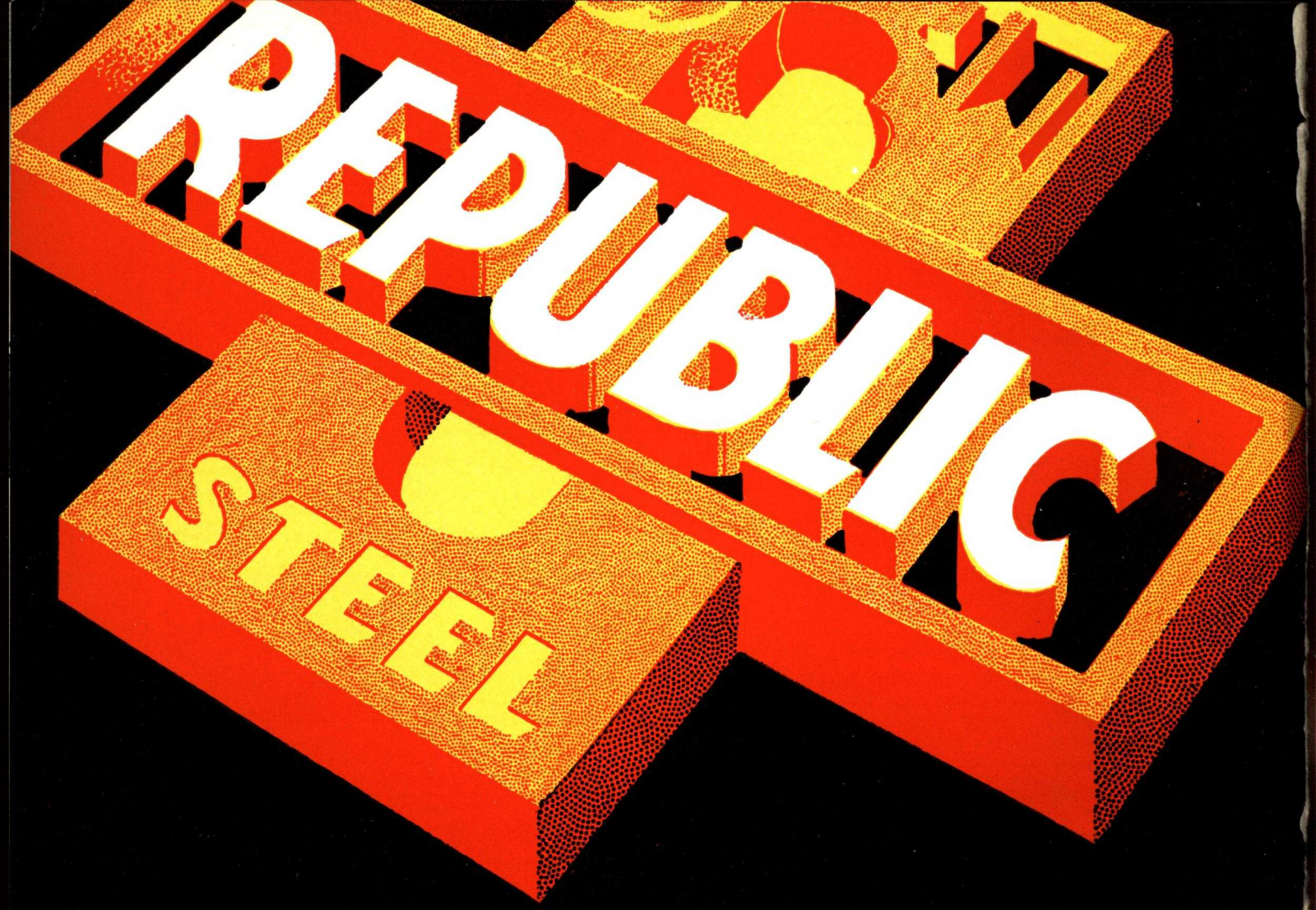

REPUBLIC STEEL CORPORATION

GENERAL OFFICES . . . . . CLEVELAND, OHIO
ALLOY STEEL DIVISION . . . . . MASSILLON, OHIO

DISTRICT SALES OFFICES

ALBANY, N. Y., State Bank Bldg.
BIRMINGHAM, ALA., Empire Bldg.
BOSTON, MASS., 250 Stuart St.
BUFFALO, N. Y., Liberty Bank Bldg.
CHICAGO, ILL., McCormick Bldg.
CINCINNATI, OHIO, Carew Tower
CLEVELAND, OHIO, Republic Bldg.
DENVER, COLO., Continental Oil Bldg.
DETROIT, MICH., Fisher Bldg.
GRAND RAPIDS, MICH., Grand Rapids Trust Bldg.
HOUSTON, TEX., Gulf Bldg.
INDIANAPOLIS, IND., Circle Tower
KANSAS CITY, MO., Fairfax Bldg.
LOS ANGELES, CALIF., Edison Bldg.
MILWAUKEE, WIS., First Wisconsin National Bank Bldg.
NEW YORK, N. Y., Chrysler Bldg.
PHILADELPHIA, PA., Broad Street Station Bldg.
PITTSBURGH, PA., Oliver Bldg.
ST. LOUIS, MO., Paul Brown Bldg.
ST. PAUL, MINN., First National Bank Bldg.
SALT LAKE CITY, UTAH, Atlas Bldg.
SAN FRANCISCO, CALIF., Rialto Bldg.
SEATTLE, WASH., White-Henry-Stuart Bldg.
TOLEDO, OHIO, Ohio Bank Bldg.
TULSA, OKLA., Thompson Bldg.
WASHINGTON, D. C., Shoreham Bldg.
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Canadian Representative, Toronto, Ont.

EXPORT DEPARTMENT, Chrysler Bldg., NEW YORK, N. Y., U. S. A.

Warehouse Stocks of Enduro Stainless Steel and Toncan Copper Molybdenum Iron are carried in Principal Cities. For Local Distribution contact the nearest Republic Sales Office

Enduro Licensed under Chemical Foundation Patent No. 1339378

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THE TOLEDO PORCELAIN ENAMEL PRODUCTS CO.

Porcelain Enameled Steel Building Units and Store Fixtures

2275 Smead Avenue, TOLEDO, OHIO

DISTRIBUTORS IN PRINCIPAL CITIES

PORCELAIN ENAMELED STEEL DISPLAY FIXTURES

Vegetable Racks
Wall Paneling
Aisle Units
Counters
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Tables

TOLEDOHIO

PORCELAIN ENAMELED BUILDING MATERIAL

Exterior Facings
Interior Panels
Store Fronts
Ornaments
Spandrels
Ceilings

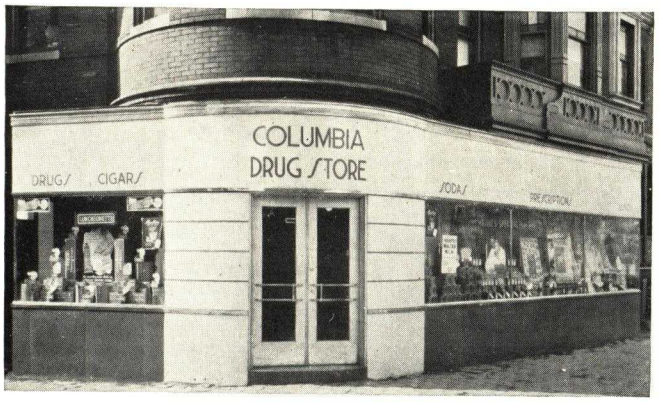
PORCELAIN ENAMEL

Porcelain enamel is glass fused to steel at high temperatures. It retains its full display value at practically no maintenance cost. It is adapted to many designs with many permanent colored finishes.

Before

Drug Store

After



Food Store

BUILDING MATERIAL

Porcelain enameled building material can be used wherever permanence, beauty and sanitation are desired. For hospitals, schools, gas stations, restaurants, exposition buildings, etc.

Theatre

STORE FIXTURES

Toledohio manufactures, we believe, the only com plete line of porcelain enameled steel shelving and store fixtures. They assure every merchant equipment which keeps its 100% sales value indefinitely.

DETAILS AND SAMPLES

Descriptive literature, details and samples will be furnished upon request.

THE AMERICAN BRASS COMPANY

Manufacturers of Extruded Bronze, Brass, Copper and Nickel Silver for Ornamental and Structural Purposes; Sheets, Wire, Rods and Tubes

GENERAL OFFICES
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MANUFACTURING PLANTS

ANSONIA, CONNECTICUT
BUFFALO, NEW YORK
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OFFICES AND AGENCIES IN PRINCIPAL CITIES

IN CANADA: Anaconda American Brass Limited, NEW TORONTO, ONT.

PRODUCTS

ANACONDA from mine to consumer
REG. U.S. PAT. OFF.

ANACONDA ARCHITECTURAL BRONZE, BRASS, COPPER and NICKEL SILVER for ornamental and structural purposes, in Extruded and Drawn Shapes, Sheets, Rods and Tubes for the fabrication of ornamental and structural metal work, including Cornices, Pilasters, Grilles, Counter Screens, Doors, Windows, Trim, Saddles, Hand Rails, etc.

For Other Pages, see File Index.

EXTRUDED ARCHITECTURAL SHAPES

ANACONDA Architectural Bronze, Copper and certain Nickel Silver Alloys are successfully wrought into finished shapes of irregular cross-section as well as angles, channels, etc., by the extrusion process which results in sections characterized by unusually smooth surface, accuracy in dimensions, strength and durability. They are entirely free from pitted surfaces and porosity and their edges are sharp and clean. Extruded Architectural Shapes are superior to castings in every way.

Shapes Available

Thousands of dies, made up during a period of more than thirty years, for the production of extruded bronze shapes from designs by many leading architects, have been released for general use. The availability of these dies often eliminates the expense of special die-making, reducing the cost of the finished metal work. It is possible for the architect to create an almost unlimited number of original designs by means of various combinations of these standard shapes.

SAMPLES DISPLAYED WITH ARCHITECTS SAMPLES CORPORATION NEW YORK, N.Y.

The illustrations on the following page show a typical use of standard shapes in the execution of original designs.

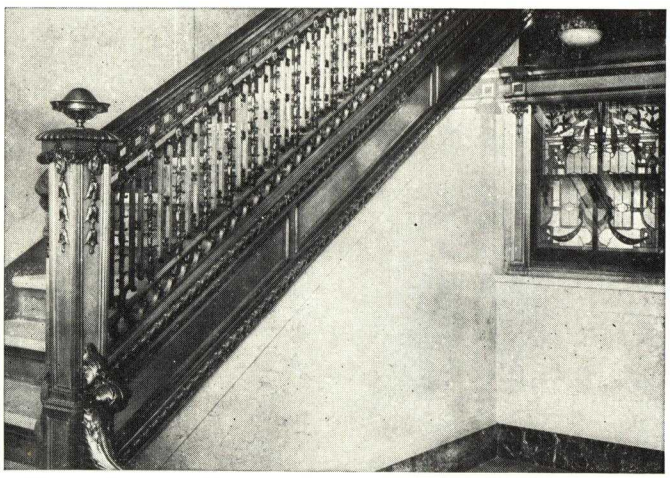
THE AMERICAN BRASS COMPANY has recently published a revised and enlarged catalog showing cross-sections of over four thousand ANACONDA Extruded Architectural Shapes in actual size. This book has been four years in the making. Its organization and scope are such as to make it a distinct improvement over any similar work published in the past. Architects may obtain copies without cost by writing to THE AMERICAN BRASS COMPANY on their firm letterheads. Ask for Catalog No. AB-7.

COLD DRAWN ARCHITECTURAL SHAPES

When light moldings and shapes are required in gauges and alloys not extrudable, the cold drawn process is used. Seamless tubing with plain and irregular cross-sections are also produced by this method. These cold drawn shapes are used for numerous architectural purposes, such as trim, window frames, showcases, store fronts, etc. A wide range of alloys can be worked by this method, offering color combinations not possible with extruded shapes.

Catalog No. AS-7 illustrating the dimensional cross-sections of the thousands of cold drawn shapes for which dies are available without tool cost, will be mailed to architects and draftsmen upon request.

Anaconda Extruded Bronze Lends Simple Dignity to This Store Front
FRANK H. HOLDEN, Architect; J. STOTT DAWSON, Associate



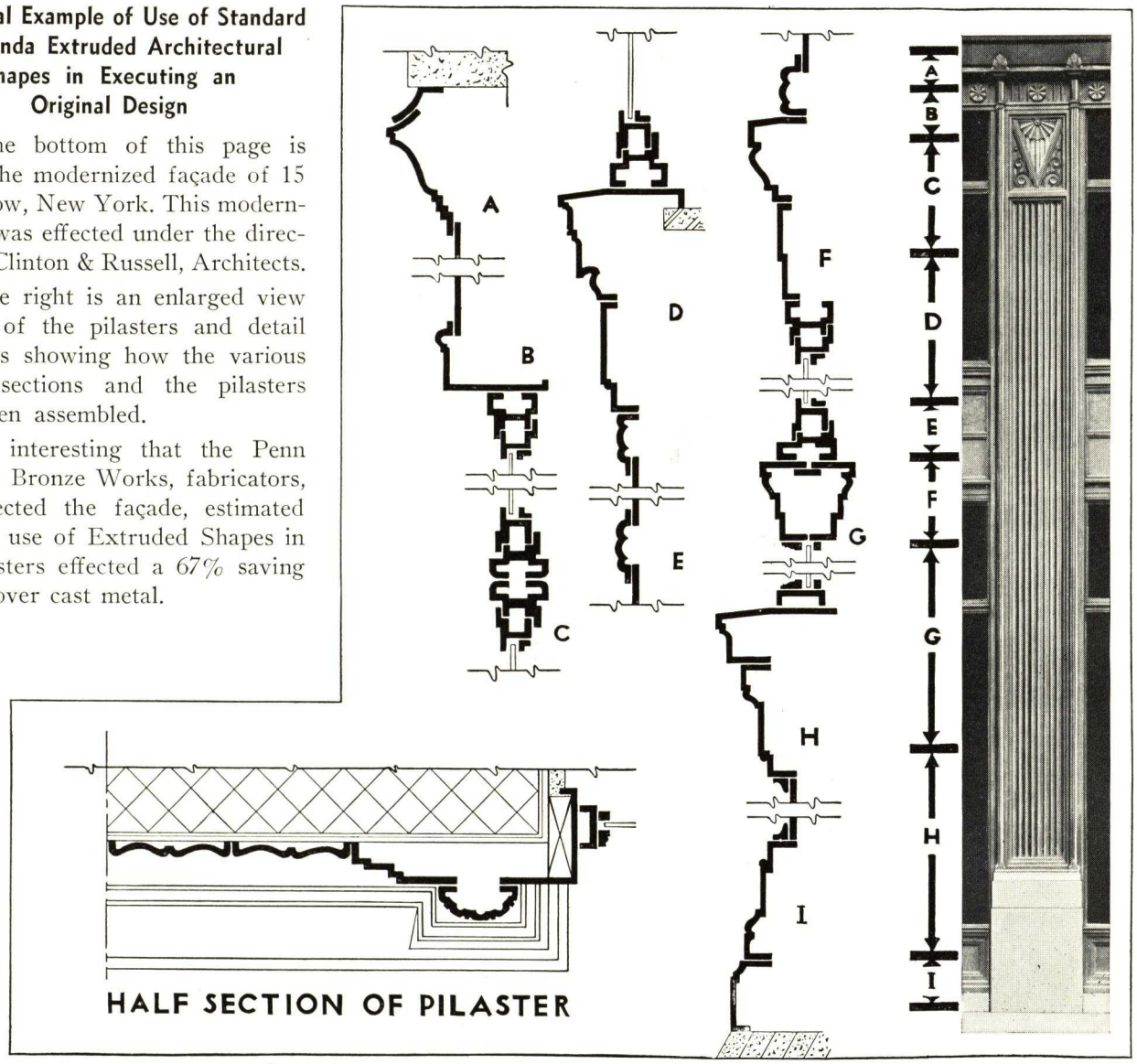
Anaconda Extruded Nickel Silver Combined with Nickel Silver Sheets and Cast Benedict Nickel
DENNISON & HIRONS, Architects

A Typical Example of Use of Standard Anaconda Extruded Architectural Shapes in Executing an Original Design

At the bottom of this page is shown the modernized façade of 15 Park Row, New York. This modernization was effected under the direction of Clinton & Russell, Architects.

At the right is an enlarged view of one of the pilasters and detail drawings showing how the various lateral sections and the pilasters have been assembled.

It is interesting that the Penn Brass & Bronze Works, fabricators, who erected the façade, estimated that the use of Extruded Shapes in the pilasters effected a 67% saving in cost over cast metal.



AMERICAN BRONZE CO.

Ornamental and Architectural Bronze, Aluminum and Non-ferrous Metal Work

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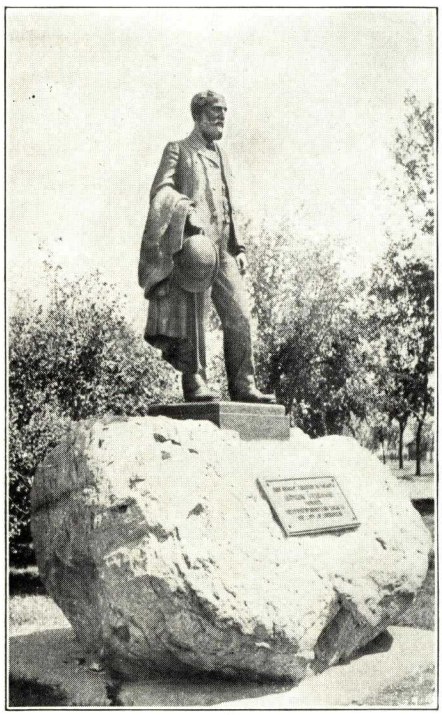
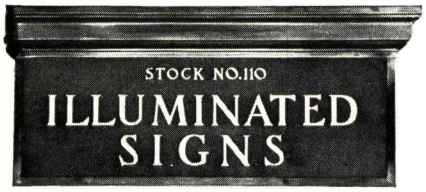
1316-1318 West 63rd Street, CHICAGO, ILL.

Bronze Plaque Erected at Adler Planetarium, Chicago, Ill.



Statue Erected at City of Aberdeen, S. D.



Cast Bronze Illuminated Sign with Glass Face

Products

ORNAMENTAL, ARCHITECTURAL and STATUARY BRONZE, ALUMINUM, NON - FERROUS METAL WORK, which includes: Monumental Work; Doors; Memorial and Commercial Tablets; Statuary; Letters; Rails; Brackets; Grilles and Wickets; Thresholds; Flagpole Bases; Fountains; Clocks; Check Desks; Inkwell Stands combined with Reflectors; Name Plates; Illuminated Signs; Exterior and Interior Directories and Bulletin Boards for commercial offices and professional buildings; Altar Rails; Altar Gates; Sanctuary Rails; Tabernacle Doors; Candlesticks and Candelabra for churches; Mausoleum Doors, Grave Markers and Gates for cemeteries; Ornamental Exterior and Interior Lighting Fixtures.

Service

All work is made to order, in any size, or shape. Architects' special designs and ideas will be carefully followed.

Work made and shipped complete, ready for erection, to any part of the country. All workmanship and material is guaranteed to be of the very best.

Bronze Plaque Erected in St. Bernard's Church, Chicago, Ill.

Bronze Doors

Prices

Quotations submitted promptly upon receipt of specifications.

Catalogues

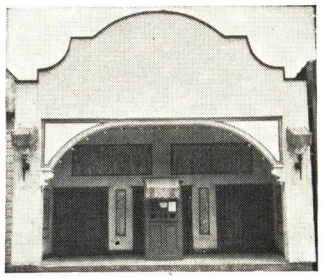
Obtained on application.

THE ARTKRAFT SIGN CO.

Designers and Manufacturers of Pre-Fabricated Marquees, Porcelain Fronts, Extruded Aluminum Poster Frames, for New Construction or Modernization

Kibby and Black Streets, LIMA, OHIO

150 SALES OFFICES THROUGHOUT AMERICA AND ABROAD



Orpheum Theatre—Before Modernization

The ARTKRAFT ZEPHYR PRE-FABRICATED MARQUEE

An Artkraft Modernization Installation

These two Orpheum Theatre pictures illustrate a complete Artkraft modernization job—including Artkraft Porcelain front, Artkraft pre-fabricated marquee and Artkraft extruded aluminum poster frames.

Standardization of parts and mass production methods of Artkraft make possible inexpensive front modernization and marquees of quality heretofore unheard of. Flexibility of standardized units make available a great variety of applications, both on old and new structures.

The accompanying views give a splendid example of application in modernization of an old building.

Orpheum Theatre—After Modernization

Pre-fabricated in Any Design

Although we have many standard styles, there is no limit to the individuality obtainable in an Artkraft Zephyr Pre-fabricated Marquee. Built to fit any structure, old or new, regardless of type, to your design or ours.

No Cantilever Beams Needed to Erect

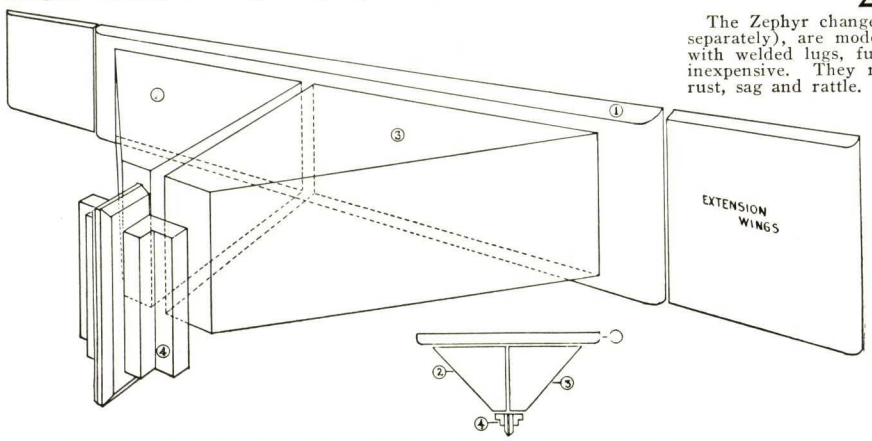
The arc-welded galvanized angle iron construction of the marquees, is in itself a feature unheard of until Artkraft developed its secret process of welding galvanized angle iron. This gives the everlasting, rustproof qualities of a galvanized angle iron frame and the tremendous strength and rigidity of the welded frame, engineered and built like a bridge. No cantilever beams are needed for the support of a Zephyr Pre-fabricated Marquee. Because of this great rigidity and strength all top guys and braces can be concealed if desired. *Note:* Can be designed to slip onto cantilever beams if desired.

Porcelain Reflectors Cut Current Consumption

Most designs used have been equipped with porcelain reflectors back of changeable letter copy, which saves from 65% to 80% of current consumed by ordinary marquees. Soffits are usually furnished in porcelain enamel, which increases light on sidewalk, with decreased current consumption, improves appearance and eliminates unsightly peeling and costly repainting. Face of marquees and signs may also be furnished in everlasting porcelain. *Note: All Artkraft porcelain enamel guaranteed for ten years against fading, chipping, cracking, crazing or peeling by reason of the elements.*

Zephyr Changeable Letters

The Zephyr changeable letters furnished with these marquees (or sold separately), are modernly designed, made of 18-gauge galvannealed steel with welded lugs, furnished in porcelain if desired—are everlasting and inexpensive. They mount on ¼-in. drawn aluminum rods—eliminating rust, sag and rattle.



Schematic Drawing of a Typical Example of an Artkraft Pre-fabricated Marquee

Artkraft Zephyr Pre-fabricated Marquees are built in sections—each section is crated and shipped as a unit—each section is erected separately and numerically as shown on drawing. Section 1 of a standard 20-ft. marquee has 36 holes for bolting to building structure. Thus ample through bolts can be obtained at available points of attachment. The truss structure eliminates necessity of beams across average opening and provides for greater strength and rigidity than previous commonly used methods, also saves expense.

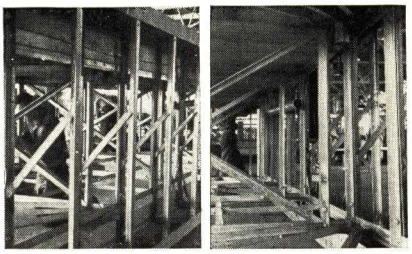
Section 1 is attached to building first by means of through-bolts and lag screws, the remaining sections are then raised to position in order and bolted to Section 1 and each other.

Extension wings, as shown, can be had with neon or lamp borders or with changeable letter boards.

Door in roof permits easy access to inside for bolting sections together, making electrical connection and also for future servicing. Complete operating equipment installed within the marquee.

Made to Fit Any Building

An Artkraft Zephyr Pre-fabricated Marquee must fit when it is erected because it is completely assembled in our plant, and then taken apart for shipment.



Arc-welded galvanized angle iron construction of Zephyr Pre-fabricated Marquee. Note bridge-like structure which makes it rigid and self-supporting

An all-porcelain Artkraft Zephyr Pre-fabricated Marquee and Vertical Sign. Note use of extension wings with neon and lamp borders

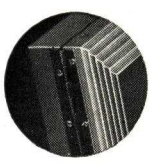
Architects' Handbook and Sketches Furnished Upon Request Without Obligation

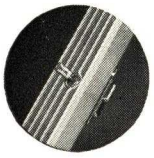
Many architects save time and trouble by drawing in on their plans some one of our standard Zephyr Pre-fabricated Marquees. We are always delighted to figure and manufacture from architect's plans.

Artkraft products guaranteed for a period of one year against electrical and mechanical defects.

The STANDARD THE ARTKRAFT SIGN CO. of COMPARISON

Another Typical Artkraft Pre-fabricated Installation Made to Architect's Specifications





Left:

Poster Frame Close-up View

These are made of heavy extruded (die-cast) aluminum. Note piano hinges and barrel lock. Obtained in any size. Can be wired for luminline lamp illumination

All Artkraft Signs and Marquees bear the Underwriters' Label and the Four Union Labels

ATLANTIC STEEL COMPANY

Hand Rail Sections of Basic Open Hearth Steel

ATLANTA, GEORGIA

For Foundation or Wall Ventilators, see File Index

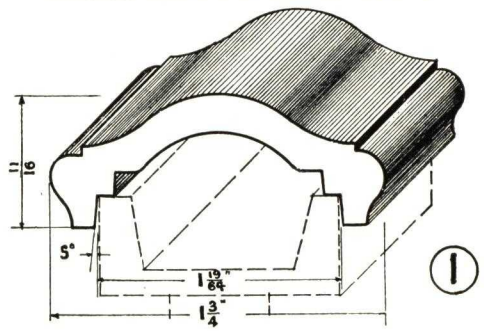
The Company and the Product

To supply the need for American-made steel Hand Rail Sections, the ATLANTIC STEEL COMPANY has designed the five popular sections shown in actual size below. Graceful curvature and symmetry of design characterize Dixisteel Hand Rail Sections, all five of which are available for prompt shipment, in lengths of 20 feet, from large stocks at the mill. Hand samples are furnished, free of charge, upon request.

DIXISTEEL
TRADE-MARK

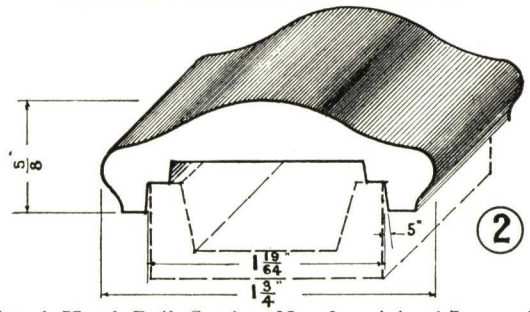
Specifications should be worded "Dixisteel Hand Rail Section No. ——, made by ATLANTIC STEEL COMPANY, Atlanta, Georgia," so that fabricators will know exactly what to order from their sources of supply.

Dixisteel Hand Rail Section No. 1



Dixisteel Hand Rail Section No. 1 weighs 1.5 pounds per lineal foot. The over-all height is 11/16 in. and the over-all width is 1¾ in. The double-cove construction permits the use of channels either 1 in. or 1¼ in. wide. No. 1 is our lightest-weight Hand Rail Section and its use materially reduces the total weight of the installation.

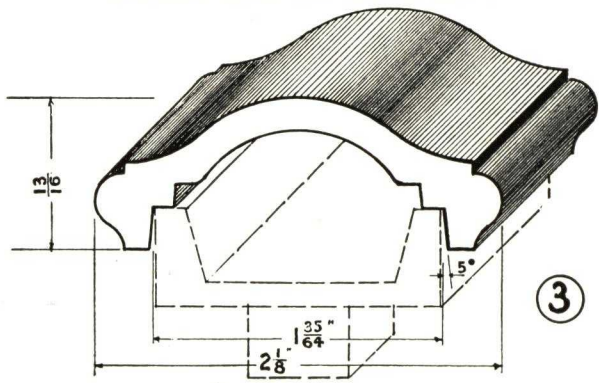
Dixisteel Hand Rail Section No. 2



Dixisteel Hand Rail Section No. 2 weighs 1.7 pounds per lineal foot. The over-all height is ⅝ in. and the over-all width is 1¾ in. Because of the double-cove construction, channels either 1 in. or 1¼ in. wide can be used. No. 2 is a very popular Hand Rail Section. Of artistic design, its weight is not excessive, yet it has sufficient body to take unusually sharp turns without spreading and it forms a perfect union with the channel under all conditions.

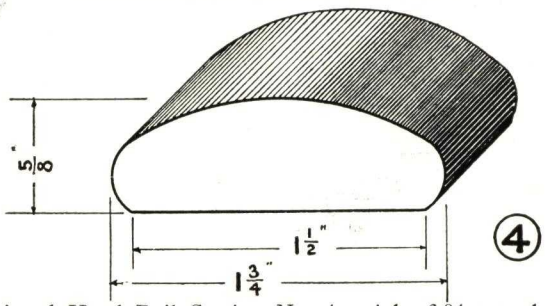
Dixisteel Hand Rail Section No. 3

Dixisteel Hand Rail Section No. 3 is the same shapely design as Section No. 1, but it is somewhat larger and proportionately heavier. It weighs 1.85 pounds per lineal foot.



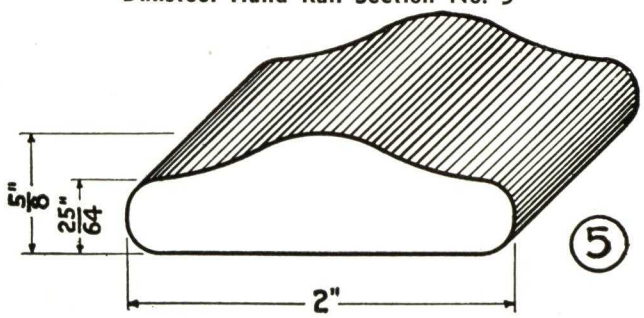
The over-all height of Section No. 3 is 13/16 in. and the over-all width is 2⅛ in. Channels either 1¼ in. or 1½ in. wide can be used because of the double-cove construction.

Dixisteel Hand Rail Section No. 4



Dixisteel Hand Rail Section No. 4 weighs 3.04 pounds per lineal foot. The over-all thickness is ⅝ in. and the over-all width is 1¾ in. Section No. 4 meets the demand for a solid section of plain design. Government specifications frequently call for Section No. 4.

Dixisteel Hand Rail Section No. 5



Dixisteel Hand Rail Section No. 5 weighs 3.15 pounds per lineal foot. The over-all thickness is ⅝ in. and the over-all width is 2 in. It is a solid section of shapely design, and is frequently specified on Government work.

CHICAGO ARCHITECTURAL BRONZE CO.

1019 West Lake Street
CHICAGO, ILL.

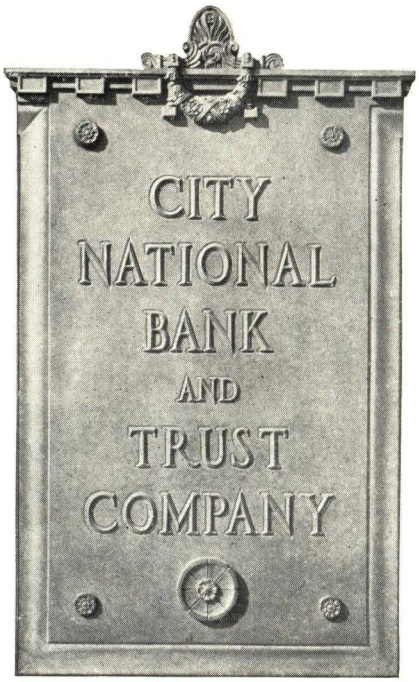
TELEPHONE
Haymarket 0369

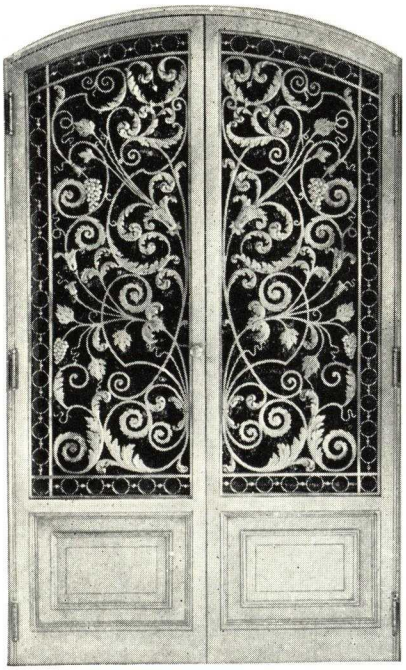
Products

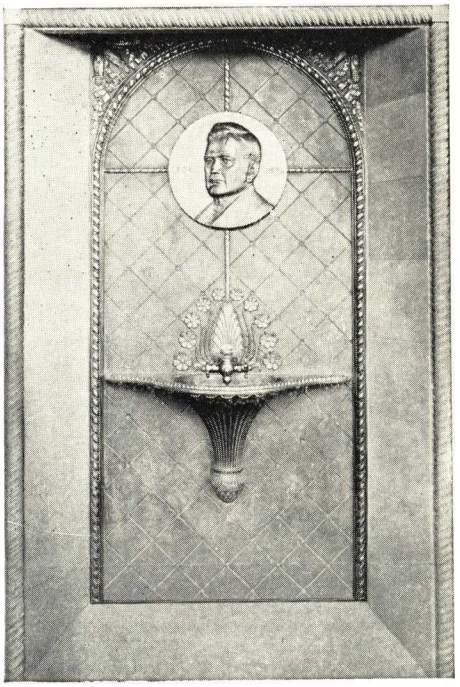
Bronze Tablets, Signs, Letters, Ornaments, Desk and Door Plates, Bronze and Brass Railings, Special Builders' Hardware, Plaques, Busts, Mausoleum Doors, Trade Marks, Lamp Standards and Brass Specialty Hardware of all descriptions.

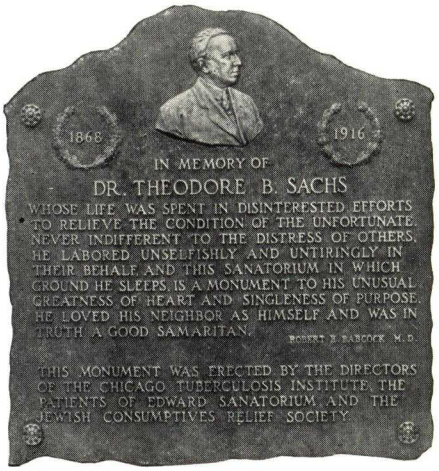
Facilities

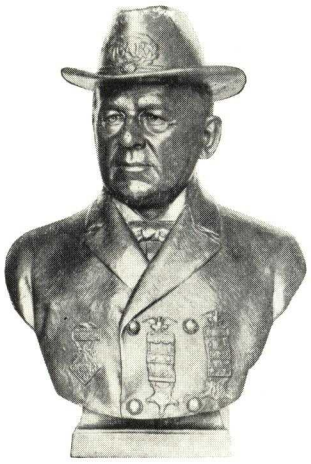
The shops of the CHICAGO ARCHITECTURAL BRONZE COMPANY are equipped to manufacture the highest grade of bronze work, from the plainest to the most ornate. Expert designers and sculptors, as well as competent chasers, are a permanent part of our staff.

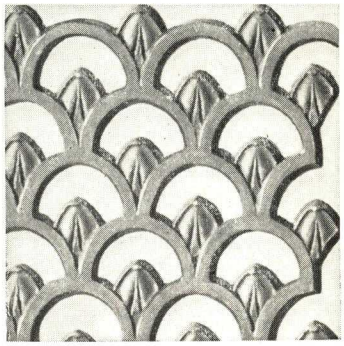












Examples of a Few Products Available from the Chicago Architectural Bronze Co.

JOHN M. DOYLE

ESTABLISHED 1859

Designers and Manufacturers of Tablets, Signs and Letters, in Any Metal with Raised or Engraved Lettering

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ASSEMBLED METAL SIGNS: cast metal letters mounted on oxidized sheet copper background.

ENGRAVED PLATES—also Directional Signs, Bank and Desk Name-Plates.

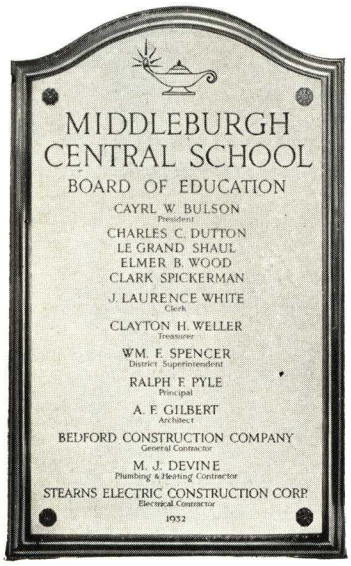
Vitreous Enamel Bronze Sign

Letters are engraved and ivory enamel inlaid (also available with raised letters). Border is extruded bronze and background sheet bronze. The only *permanent* sign which *does not require polishing*

SERVICE

A complete corps of artisans—whose experience is based on our 78 years of designing and executing fine memorials and signs.

Designs and suggestions are cheerfully furnished. When you have a lettering problem—write or call on us.

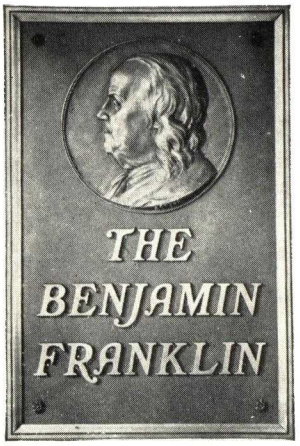


Hand Engraved Tablet

Engraved on sheet bronze with V-cut lettering. Extruded bronze moulding. Oxidized light statuary. Only master craftsmen can produce work of this character

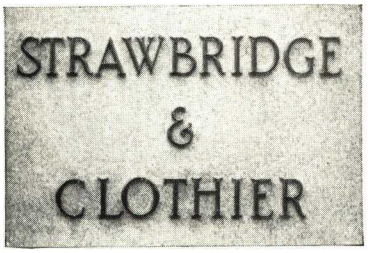
Fret Cut Boxed Ribbon For Neon

Fabricated Sheet Metal Letters are now very popular. Made from your details in Stainless Steel, Bronze, Aluminum and Galvanized



Bronze Tablet

Erected on Ben Franklin Hotel, Philadelphia. Note the fine bas-relief and the Colonial simplicity of design

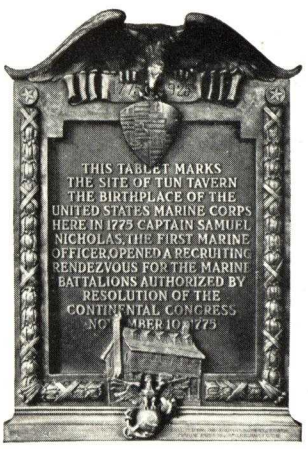


Cast Individual Bronze Letters

Bronze letters are used for fronts of buildings and embedding in sidewalks. Furnished in many cross sections, cast or fabricated sheet metal

Assembled Bronze Sign

Made with cast bronze letters and moulding. Oxidized sheet copper background. A fine looking sign is thereby produced for a reasonable price



Modeled Bronze Tablet

Erected at birthplace of U. S. Marine Corps. Hand modeled bas-relief tablet with Runic Letters. A fine example of expert craftsmanship

ESTABLISHED 1911

ELLISON BRONZE COMPANY, INC.

JAMESTOWN, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

Ornamental bronze, aluminum, nickel silver, stainless steel and monel metal:

Entrance Doors		Tablets and Signs
Store Fronts	Mausoleum Equipment	Bronze Windows
Elevator Fronts	Bank Fixtures	Special Hardware

Literature gladly mailed on request.

For our pages on Balanced Doors and Louvre Ventilation see File Index.

Facilities

A most complete establishment devoted entirely to the manufacture of the mentioned products.

This thoroughly experienced organization offers personal supervision and expert engineering and manufacturing service.

Our factory includes modeling and pattern room, foundry, press room, machine shop, welding room, assembly department, chasing room, polishing and plating department, all using the best and latest equipment.

One of the Entrance Units to Kalamazoo County Building, Kalamazoo, Mich.
Doors and Frames of Stainless Steel with Bronze Grilles and Placques
M. C. Billingham, Architect, Kalamazoo
Smith, Hinchman & Grylls, Associates, Detroit

A Few Typical Installations

Building and Location	Architect
Erie County Savings Bank, Buffalo, N. Y.	Green & James
Memorial Allegheny Cemetery, Pittsburgh, Pa.	Brandon Smith
Thalhimer Brothers, Inc., Richmond, Va.	Carneal, Johnston & Wright
Hume Mansur Building, Indianapolis, Ind.	Vonnegut, Bohn & Mueller
Technical Data Bldg., Wright Field, Ohio	Pretzinger & Pretzinger
Provident Institution for Savings, Boston, Mass.	James Purdon
Department of Public Works, Boston, Mass.	Edward T. P. Graham
Atlantic National Bank, Boston, Mass.	Thomas M. James Company
Boston Automatic Fire Alarm Co., Boston, Mass.	Blackall, Clapp, Whittemore & Clark
Baltimore Trust Building, Baltimore, Md.	Taylor & Fisher, Smith & May

Building and Location	Architect
Baltimore Life Insurance Co., Baltimore, Md.	Mottu & White
Scottish Rite Temple, Baltimore, Md.	Friz & Friz
Penn Power & Light Co., Allentown, Pa.	Helmle, Corbett & Harrison
Women's World War Memorial, Washington, D. C.	Trowbridge & Livingston
Chapel Georgetown Preparatory School, Washington, D. C.	Maginnis & Walsh
Indiana & Michigan Electric Co., South Bend, Ind.	Austin & Shambleau
Scottish Rite Temple, Kansas City, Mo.	Keene & Simpson
Medical Arts Building, Pittsburgh, Pa.	M. Nirdlinger
First National Bank, Scranton, Pa.	Davis & Lewis

THE FLOUR CITY ORNAMENTAL IRON CO.

ESTABLISHED 1893

MINNEAPOLIS, MINNESOTA

REPRESENTATIVES IN PRINCIPAL CITIES

You have drawings and specifications in process involving the use of ornamental metal work. You desire, for your client, the maximum in value and satisfaction in return for his investment.

Many materials are available, each with its particular advantages and limitations. There are cast iron, wrought iron, and steel; bronze, nickel silver and aluminum in cast, wrought and extruded forms; monel and stainless steel; copper, lead and brass. Proper choice of materials, with details and specifications conforming to their advantages and limitations, are essential in order that utmost value may be realized.

To aid architects and owners in selection of metals, preparation of details and specifications, this company has long maintained a Consultation Service which many have found helpful. This service is available without obligation.

With an experienced personnel and a complete plant for production in all metals, this company has specialized in fine metal work for more than forty years. Plant facilities include patterns and modeling, iron, bronze and aluminum foundries, ample fitting shops with modern machines, and complete welding and forming apparatus, enameling ovens and spraying equipment for finishing iron and steel; bronze coloring and finishing; and a most complete plant for applying alumilite finish to aluminum. The alumilite plant will accommodate pieces as large as can be handled and shipped.

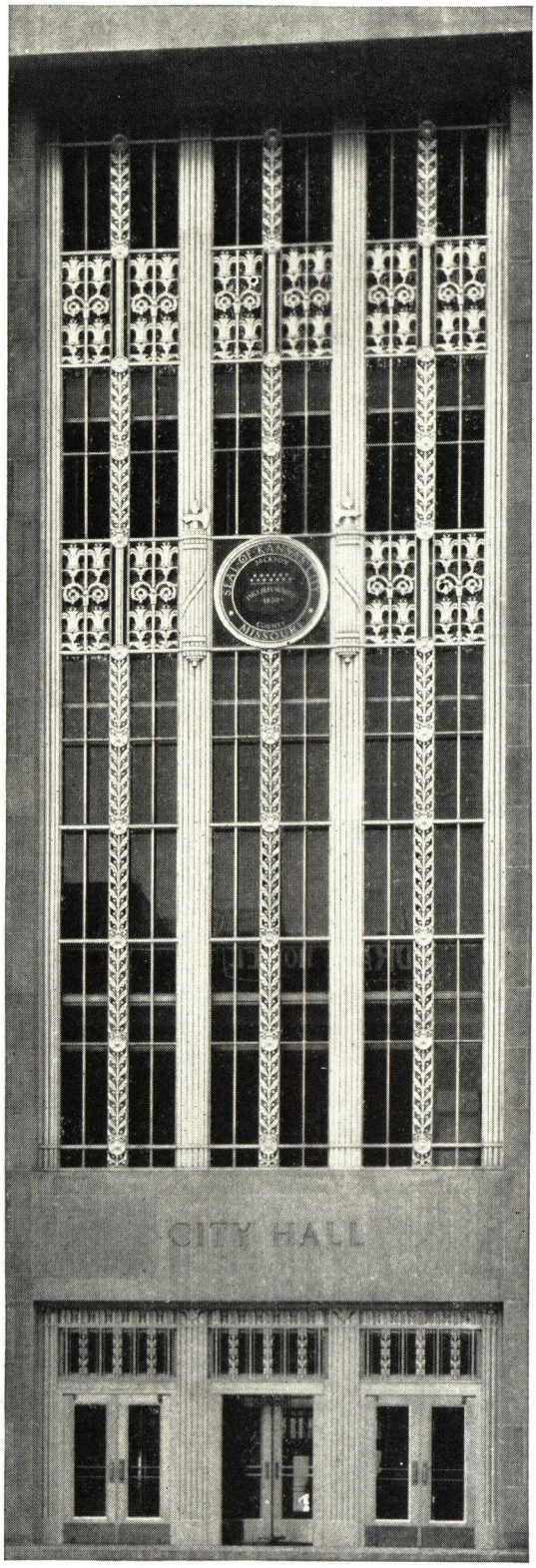
Every step from preparation of shop drawings and designs through final finishing and erection in the field is handled by the one competent organization. Only by such unified control can quality, prompt deliveries and ultimate satisfaction be assured. An initial step toward the realization of this result is the insertion of a clause such as the following in the ornamental metal section of the specification.

> "Ornamental metal (bronze, iron, aluminum) shall be executed by a contractor having complete plant facilities for fabricating and finishing and whose product is exclusively fine metal work. No contract for ornamental metal shall be negotiated without the approval of the architect."

A FEW REFERENCES

The company has installed ornamental metal work in public, commercial and private structures from coast to coast. A list, even though limited to the most important contracts, would be over long for this space.

The following brief mention of a few of the many architects whose commendation the company has received will suggest the quality and scope of its activities. Frederick L. Ackerman, New York; Arthur Brown, San Francisco; Cross & Cross, New York; Fellheimer & Wagner, New York; Graham, Anderson, Probst & White, Chicago; Holabird & Root, Chicago; Jones & Furbringer, Memphis; Maginnis & Walsh, Boston; Mauran, Russell & Crowell, St. Louis; Pierson & Wilson, Washington; Egerton Swartwout, New York; Schenck & Williams, Dayton; Smith, Hinchman & Grylls, Detroit; Voorhees, Gmelin & Walker, New York.



City Hall, Kansas City, Mo.
WIGHT & WIGHT, Architects
Aluminum entrance and window alumilite finish

ESTABLISHED 1898

GARDEN CITY PLATING & MFG. CO., INC.

Corner Ogden Boulevard and South Talman Avenue

CHICAGO, ILLINOIS

NEW YORK OFFICE and WAREHOUSE, 133 Wooster Street

REPRESENTATIVES IN PRINCIPAL CITIES

For our pages on Lighting Equipment and Hardware, see File Index

SPECIAL METAL WORK FOR STORES

Metal Showcase Frames, Display Case Frames, Door and Mirror Frames, Metal Signs and Letters, Reflectors and Lighting GARCY TRADE MARK REG. Fixtures, and all other metal work for store fixture use. *Write for literature. State items in which you are interested.*

Feltman & Curme, Louisville, Ky.
KOENIGSBERG & WEISFELD, Architects

Alphabet No. 1501
Letters 20 and 36 in. high

Alphabet No. 1504
Letters 20 in. high

Metal Letter Signs

Stock alphabets are available for interior or exterior use, in aluminum, brass, bronze or nickel silver. In addition to a line of various styled alphabets which are fully described and illustrated in Bulletin 36-120. Special designed letters to details can be made. Send your specifications.

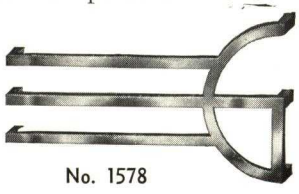
Garcy Bulletin 36-120 (A.I.A. File 27B).

Modern Push Bars

No. 1552

The grab and push bars illustrated are suggestive of the variety of designs in the Garcy line. Our forty years of experience in the field of metal manufacturing enables us to handle special metal work of almost any nature. In addition to the regular line, push bars are made to specifications. Correspondence is invited.

Garcy Bulletin 36-120 (A.I.A. File 27B).



No. 1578

New Store of Block Jewelry Co., Flint, Mich.
Equipped with showcase frames, sliding door hardware, lighting fixtures and other special metal work—all by Garcy

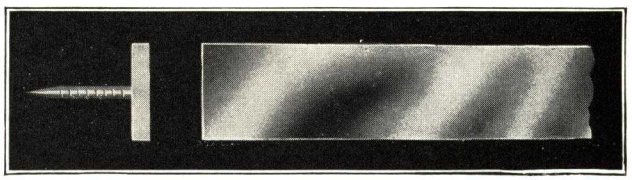
Metal Moulding

Flat, bent or extruded. Also snap-on. A complete line for a variety of architectural treatments is fully illustrated in Garcy Bulletin 37-41 (A.I.A. File 16E2).

Nail-On Flat Moulding

With concealed nails

Nails are embedded in back of strips. Can not be pulled out. Do not show on face. Moulding is held very



rigid. Made of brass, in satin brass, chrome plated and other finishes: 3/8, 1/2, 5/8, 3/4 and 1 in. wide, $\frac{3}{32}$ in. thick.

Moulding made of steel: 1/2, 5/8, 3/4 and 1 in. wide, $\frac{3}{32}$ and 1/8 in. thick.

Moulding made of aluminum: 3/8, 1/2, 5/8, 3/4 and 1 in. wide, 1/8 in. thick.

GENERAL BRONZE CORPORATION

Architectural Metal Work

LONG ISLAND CITY, N. Y.

WESTERN SALES OFFICE: 3849 West Lake Street, CHICAGO, ILL.

FACTORIES: LONG ISLAND CITY, N. Y. and CHICAGO, ILL.

ROMAN BRONZE WORKS (Subsidiary) CORONA, L. I., N. Y.

WINDOWS - REVOLVING DOORS - STATUARY - TABLETS

Art and craftsmanship are combined in Roman Bronze (a subsidiary) statuary. Shown at right is the distinguished Atlas Statue, Lee Lawrie, Sculptor, in front of the International Building in Rockefeller Center, New York.

Products

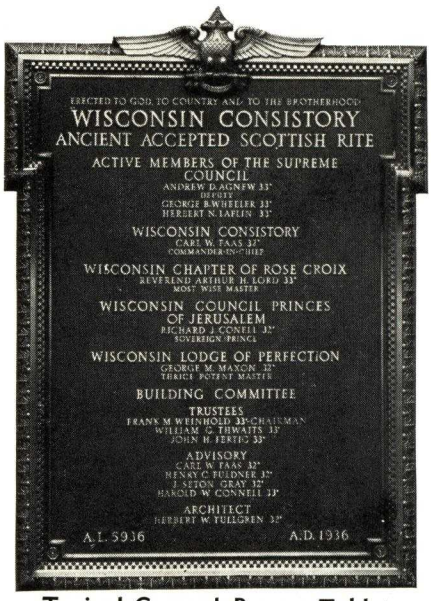
All types of architectural and Ornamental Metal in bronze, aluminum, monel, nickel, silver.

Sculptural Casting in either the lost wax or French sand process.

A partial list of products includes:

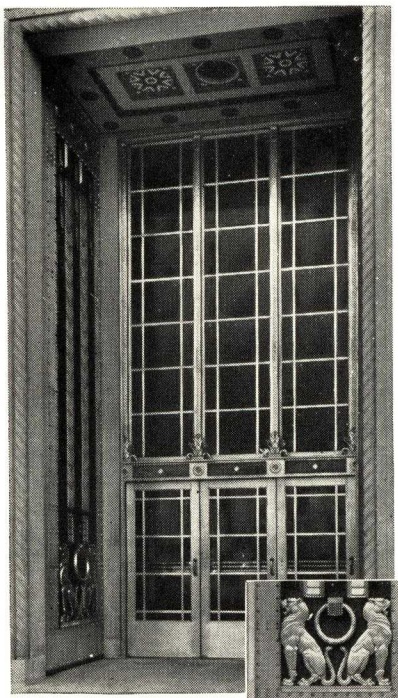
- Balustrades
- Bank Screens
- Check Desks
- Counter Screens
- Directory Boards
- Doors
- Elevator Doors
- Entrances
- Gates
- Grilles
- Lamp Standards
- Marquises
- Mausoleum Doors
- Railings
- Signs
- Spandrels
- Store Fronts
- Tablets
- Revolving Doors

Also Permatite Double Hung and Casement Windows in Bronze and Aluminum.

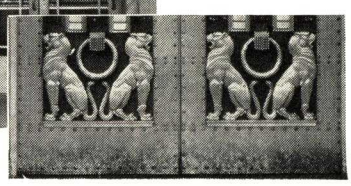


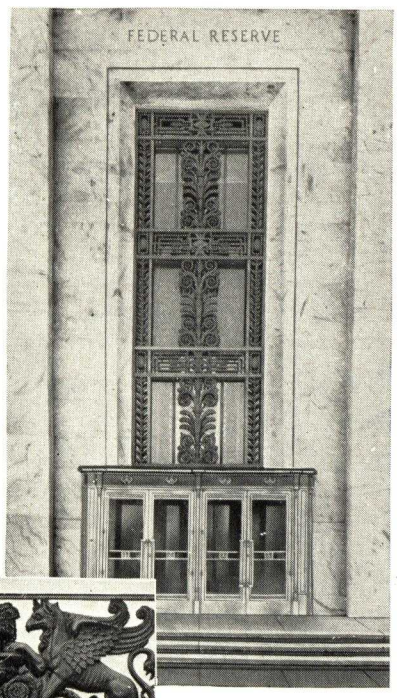
Typical General Bronze Tablet

Recent examples of General Bronze workmanship are to be found in the Department of Justice Building (left) and the Federal Reserve Building (right)—both in Washington.



Zantzinger, Borie & Medary, Architects





Paul Philippe Cret, Architect

GENERAL ALLOYS COMPANY

367-405 West First Street, BOSTON, MASS.

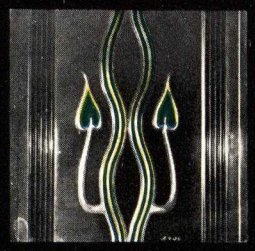
PLANTS BOSTON, MASS. • CHAMPAIGN, ILL. • OFFICES PRINCIPAL CITIES

SUPER STAINLESS STEEL ARCHITECTURAL CASTINGS FOR

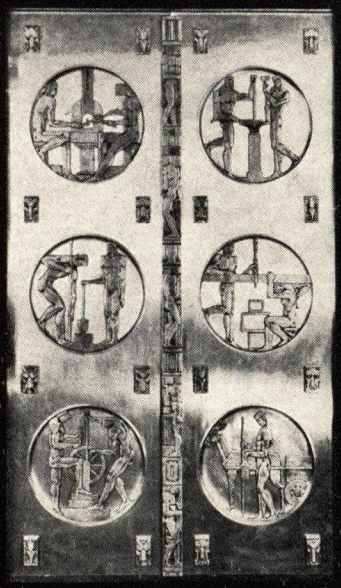
Interior & Exterior Ornaments · Sculptures · Ecclesiastical · Tablets · Plaques · Grilles · Signs · Store Fronts · Tube Rail Fittings etc.

KLOIZENAY

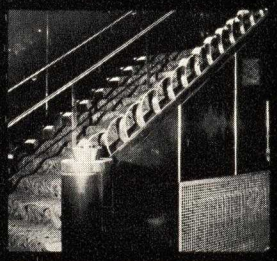
—FUSED GLASS—
—IN COLOR ON—
—LIVING STEEL—
U.S. PATENT NO. 2001731



Spandrel with cast ornament. By Raymond Hood.



Doors designed and executed by Oscar Bach with ETERNEL metal castings.



Stainless Steel stairway, Earl Carroll Theatre, N. Y. George Keister, Architect.

Head from life by I. Noguchi, N. Y.

Sculpture by I. Noguchi.

KLOIZENAY name plates.

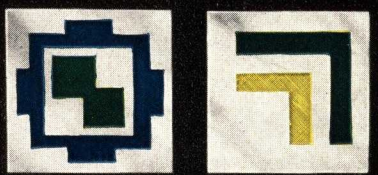
15

Railing by Umberto D'Atri.

THE UPJOHN COMPANY

Upjohn Building, Kalamazoo. Albert Kahn, Architect.

KLOIZENAY sign.



16 17

KLOIZENAY rosettes.

The only metal known to man, other than gold or platinum, which does not foul its own face (by oxidation) is stainless steel. History records no permanent colors except glass and ceramics. Stainless Steel with fused glass in colors combine the two primitives of color and reflected light. Outdoor murals are now possible—cornices do not need heavy third dimension for contrast—*for color is more visible than shadow.*

ETERNEL metal is Super-Stainless Steel—exceeding U. S. Navy specifications—higher in chrome and nickel than rolled "stainless". It is the cast complement to U. S. S. 18-8,—Allegheny Metal—Enduro—Rezistal—etc.

General Alloys Co., oldest and largest exclusive manufacturers of corrosion resistant castings, has pioneered stainless steel in architecture and has the only art and design department in this industry.

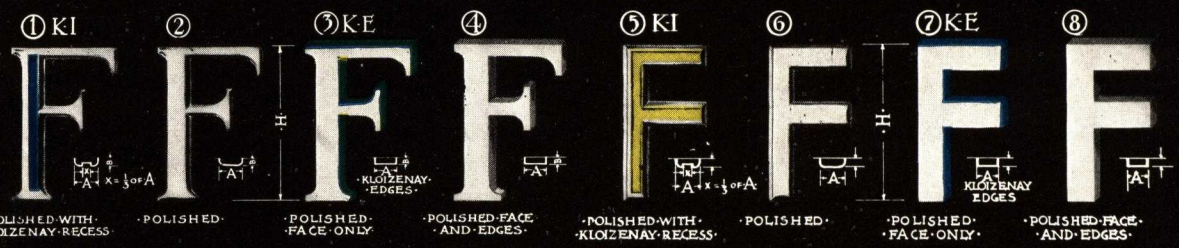
Send for Catalogue in Color

KLOIZENAY plaque, main entrance gate, Century of Progress.

KLOIZENAY tablet.

Insignia and flagstockets KLOIZENAY (Red, white and blue), Boy Scout Building, Pittsburgh.

MODERN TYPE OF LETTERS



STANDARD LETTERS

Various applicable designs.

KLOIZENAY is available in practically all colors and ETERNEL metal is supplied in a variety of finishes from mirror to dark oxide. Backgrounds can be finished in lead, gold, or other metals. ETERNEL metal requires no polishing (washes like glass with Bon Ami), is stronger than steel with the finish of platinum. One hundred per cent solid stainless steel—*not a surface treatment*. Indestructible and everlasting. Stainless steel and platinum are the only "white" metals. All others are "white" only until they turn gray, black, green or brown. An inescapable fact.

While bronze, stone and weathered aluminum are light *absorbing* monotone media depending upon shadows for contrast ETERNEL metal and KLOIZENAY are light *reflecting media*. "One and one-half dimensional" shallow silhouette bas relief, as here illustrated, is the *most effective and economical form*. Cost compares with finest bronze tablet work—but one foot of KLOIZENAY has more *decorative value* than a yard of soft metal. Apply KLOIZENAY ornament on stainless steel sheet, Carrara glass, Vitrolite, Macotta, marble, Bakelite, stone.

Send for Catalogue in Color

THE JOHN HARSCH BRONZE & FOUNDRY CO.

Distinctive Architectural Bronze, Aluminum and Iron Work

12502 Berea Road, CLEVELAND, OHIO

Products

ARCHITECTURAL BRONZE, ALUMINUM, MONEL and IRON WORK in general.

WINDOWS of EXTRUDED ALUMINUM and BRONZE (Casement, Double Hung, Pivoted, and Projecting Types; DOORS (Standard and Special) of Non-ferrous Metal.

ALUMINUM SKYLIGHTS and PARTITIONS; TABLETS, NAME PLATES and LETTERS; THRESHOLDS, SAFETY TREADS and NOSINGS.

Also Bank and Office Cages, Screens and Counters; Display Cases; Marquises; Elevator Cars, Enclosures and Doors; Doors: Casement, Hollow Metal, Mausoleum, Mechanically Operated, Sliding, Folding, etc.; Railings; Spandrels; Castings of aluminum, bronze, brass, nickel, etc.; Store Front Construction; Sundials.

Facilities and Service

Our new modern plant has four acres of ground on railroad siding, and this plant is fully equipped with modern machinery, welding and finishing facilities, operated by skilled craftsmen well trained to execute their task in prompt, efficient, and satisfactory manner. Our Foundry can claim many years' experience in the production of non-ferrous architectural and commercial castings. Our Drafting, Designing, and Estimating Departments are always at your service, without obligation.

Windows

Numerous sash sections specially designed for greater efficiency and better appearance are available to choose from, suitable to most building conditions. New sections to suit and solve peculiar purposes or requirements will be gladly developed should the quantity permit.

Post offices at Cleveland, South Bend, Knoxville, and Nashville; State Capitol, Bismarck, N. D., and the Easterly Sewage Treatment Works, Cleveland, show some of our recent installations.

Doors

We specialize in extruded and tubular welded doors. Full size cuts of our standard sections will be gladly submitted upon request.

Two bronze main entrance doors at the New Archives Building, Washington, D. C., and an aluminum door unit (31 ft. high, 18 ft. 2 in. wide) for the Norris Power House, Tennessee Valley Authority, will attest to our ability to build doors of unusual size and construction.

We recently introduced the "Harsch Balanced Door." This door, due to a special patented operating feature, pivots the door near its center line and at the same time carries it sidewards out of the way of traffic, thereby balancing the wind or air current pressure at all positions during the opening and closing period. This warrants easy operation at the most windy corners and reduces the required checking power to a minimum. (See drawing below for details and specifications.)

Aluminum Skylights

Our skylights are built of solid extruded aluminum sections and, if desired, equipped with the "Harsch Ridge Ventilator" mechanically operated. (Details will be gladly submitted upon request.)

Aluminum Partitions

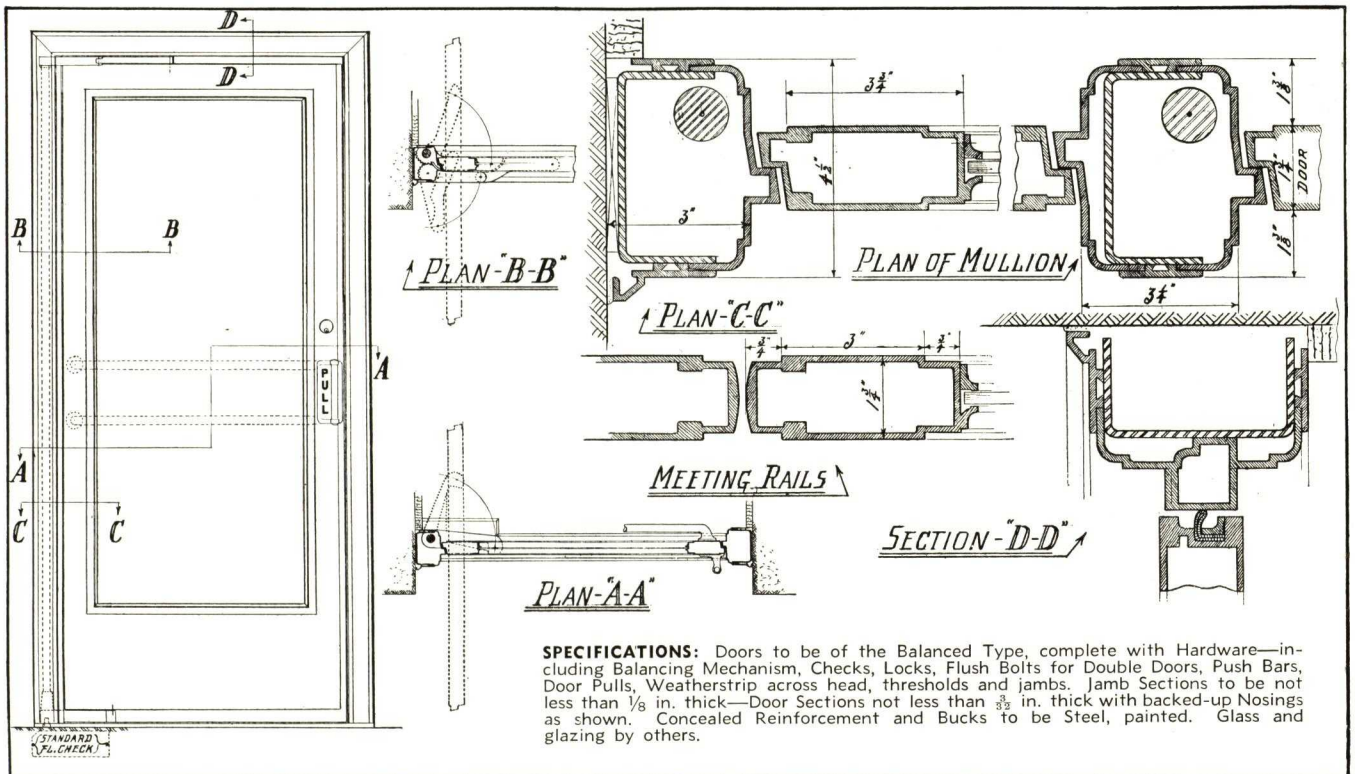
"Harsch Partition" is built of extruded aluminum shapes $\frac{1}{16}$ in. thick, assuring sharp and uniform profiles and permitting the heat treating of sections to arrive at their maximum strength. Details will be gladly submitted upon request.

Tablets, Name Plates and Letters

We carry a varied stock of tablet, plate, and letter patterns. It will save you money if we have a rough sketch or description of what you have in mind. However, should your design be special, ornamented or plain, our modelers and chasers will please you.

Thresholds, Safety Treads and Nosings

A score of extruded threshold and nosing sections are available. Any special section will be produced if the quantity permits. Cast sills can be made to any profile in any quantity. Safety treads, sills, and nosings are cast abrasive type (with fluted or plain wearing surface carborundum grained) of any profile or quantity desired.



SPECIFICATIONS: Doors to be of the Balanced Type, complete with Hardware—including Balancing Mechanism, Checks, Locks, Flush Bolts for Double Doors, Push Bars, Door Pulls, Weatherstrip across head, thresholds and jambs. Jamb Sections to be not less than $\frac{1}{8}$ in. thick—Door Sections not less than $\frac{3}{32}$ in. thick with backed-up Nosings as shown. Concealed Reinforcement and Bucks to be Steel, painted. Glass and glazing by others.

DETAILS AND SPECIFICATIONS OF "HARSCH BALANCED DOOR"

LOGAN CO.

Ornamental Iron and Wire Work

209 North Buchanan Street, LOUISVILLE, KY.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

ORNAMENTAL IRON WORK, including Cast Iron Fronts, Iron Gates, Railings, Steel Stairs, Fire Escapes, Marquises, Grille Work, Gratings.

WIRE WORK, including Guards, Gates, Partitions and Railings.

MODERN CHROME FURNITURE, all purposes.

For Logan Spiral Slide and Tubular Fire Escapes, see File Index.

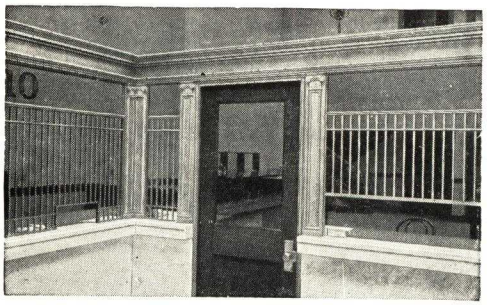
Trade-Mark

Service

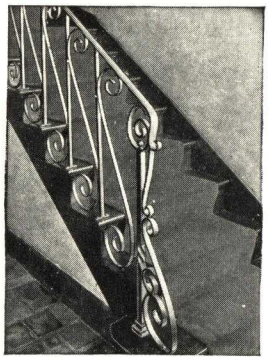
A long-established firm with a modern plant equipped to execute contracts in a prompt, efficient and accurate manner.

Skilled erection crews.

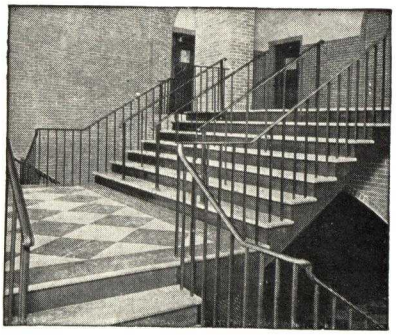
Separate catalogues and bulletins on different items furnished on request. Let us know your requirements and full information will be forwarded to you promptly.



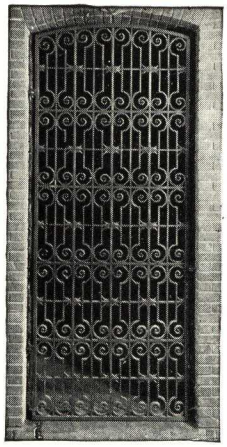
Bank and Office Cage



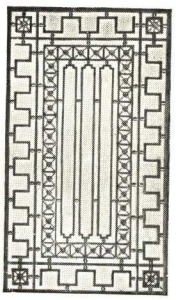
Iron Stair Railing



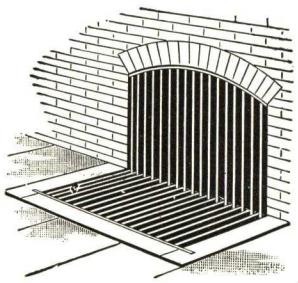
Steel Stairs



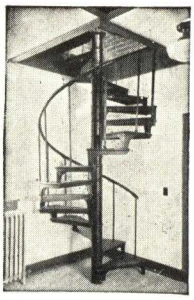
Gate in Archway of School Building



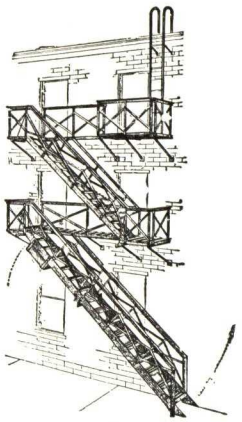
Ornamental Grille



Sidewalk Grating

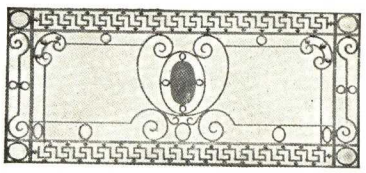


Spiral Stair



Fire Escape

Ornamental Metal Work

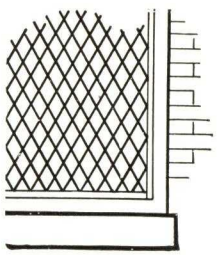


Metal Railing

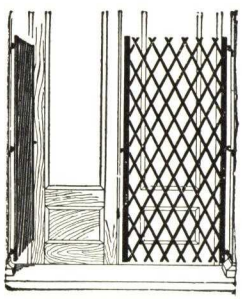
Open Mesh Partition

Modern Chrome Furniture

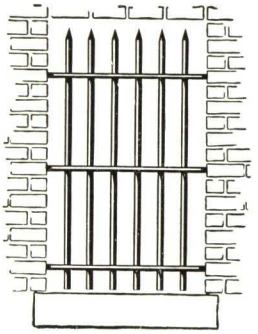
For restaurant, club, hotel, reception room, apparel shop, home



Wire Guard



Folding Gate



Iron Window Guard

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Drawing and specification shown in another section. See File Index.

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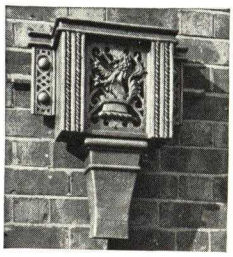

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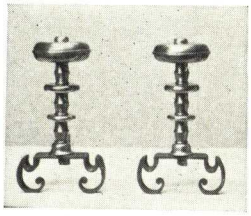

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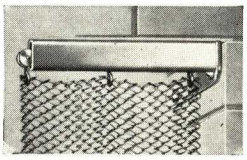

"Flexscreen"

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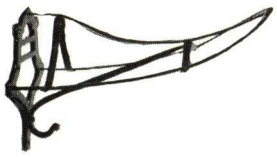

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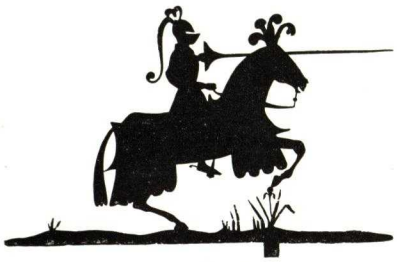

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Brass Bell, Iron Bracket

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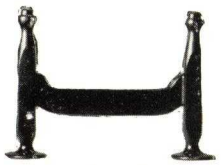

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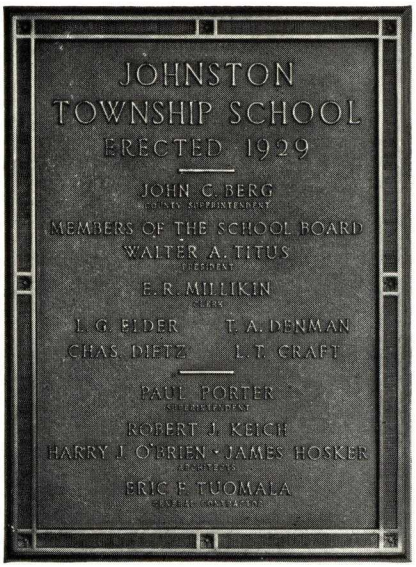
BUILDING TABLETS



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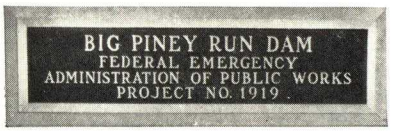

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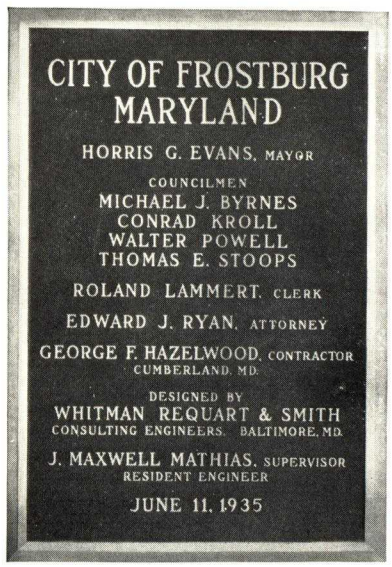

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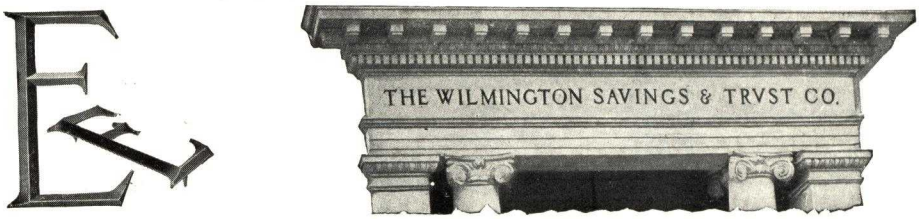
STATUARY BRONZE OVERHEAD LETTERS



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Letters
Marquises
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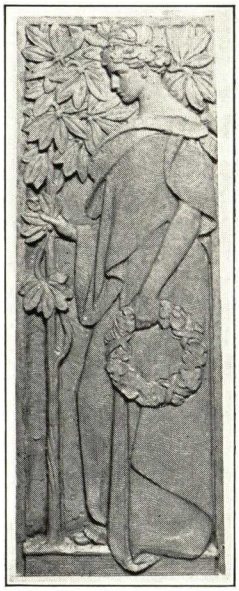
Sanctuary Railings
Statuary
Store Fronts
Tablets
Windows

Bronze Portrait Relief

Bronze Bust Placed at State House, Boston, Mass.

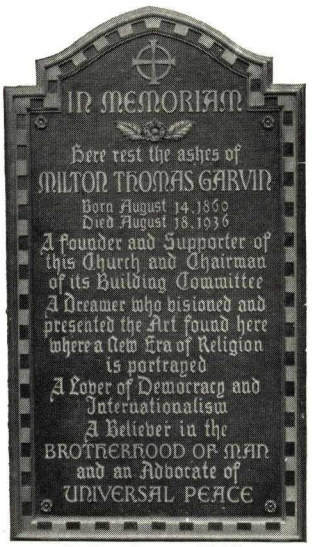
Bronze Altar Gate

Bronze Medallion



Life Size Bronze Relief

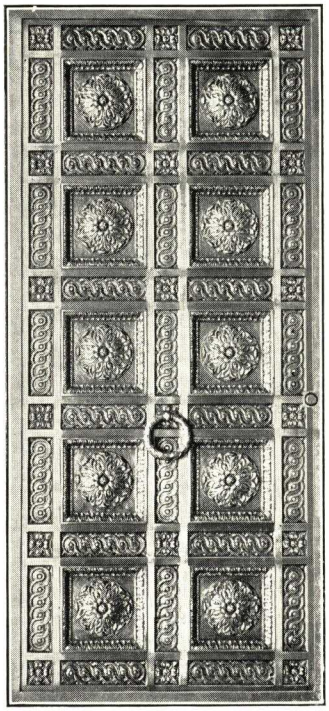
10-Ft. Bronze Reclining Figure, Illinois Civil War Memorial



Gothic Bronze Tablet

Heroic Bronze Figure, World War Memorial

Bronze Altar Furnishings, St. Peter's Church, Dorchester, Mass.
MAGINNIS & WALSH, Architects



11-ft. Bronze Doors, St. Charles Borronceo Seminary, Philadelphia, Pa.
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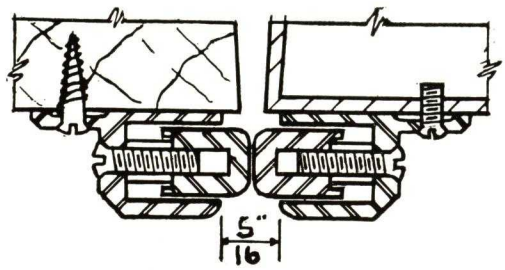
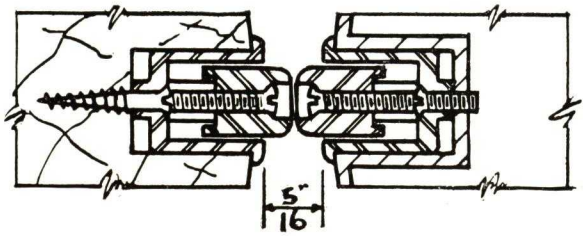
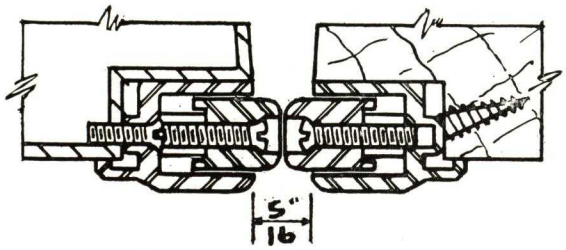
Full details and samples will be furnished upon request. Cuts are full size.



Type A—Surface Astragal
Applied to either wood or hollow metal bevel doors, or as a stop bead or at bottom of door



Type E—Mortice Astragal
Applied on bullnose hollow metal or wood double door, or at bottom of door



Type C—Half Mortice Astragal
Applied on standard bevel hollow metal or wood door or as stop bead

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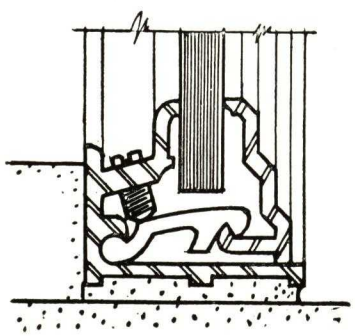

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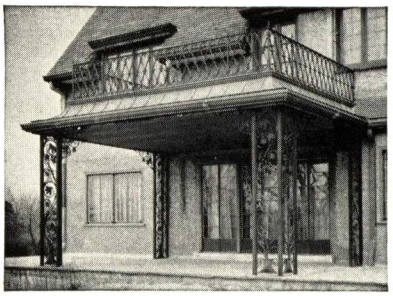
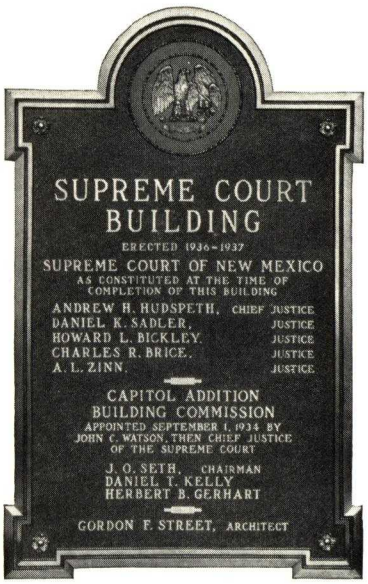
Ball State Teachers' College, Muncie, Ind.
George F. Schreiber, Architect
Public Health Building, Washington, D. C.
U. S. Post Office, San Diego, Calif.
U. S. Post Office, Miami, Fla.
U. S. Post Office, Oak Park, Ill.
U. S. Post Office, Sioux City, Iowa
U. S. Courthouse, Pittsburgh, Pa.
Archives Building, Washington, D. C.
Labor Department and Interstate Commerce Commission Group of Buildings, Washington, D. C.



Wrought and Cast Iron Porch, Chappel Residence, Middletown, Ohio
JOHN HENRI DEEKEN, Architect



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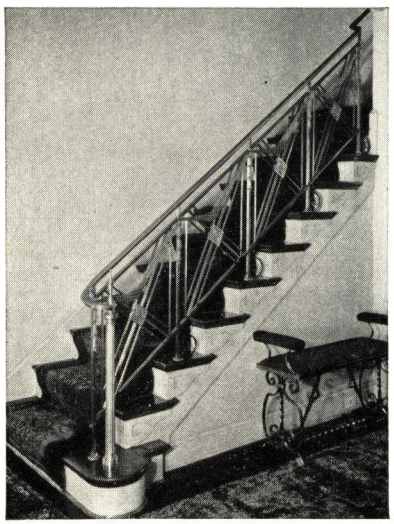

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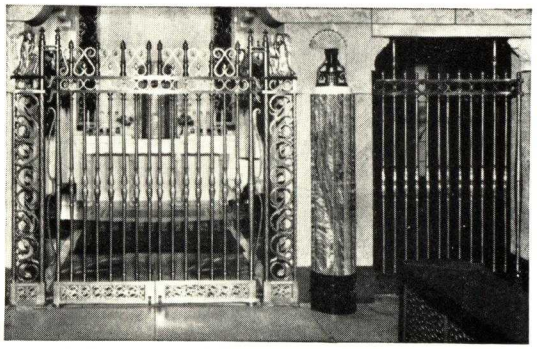
Bronze Fixtures in the U. S. Labor and U. S. Interstate Commerce Buildings, Washington, D. C.



Bronze Gates, Shrine of the Little Flower, Royal Oak, Mich.
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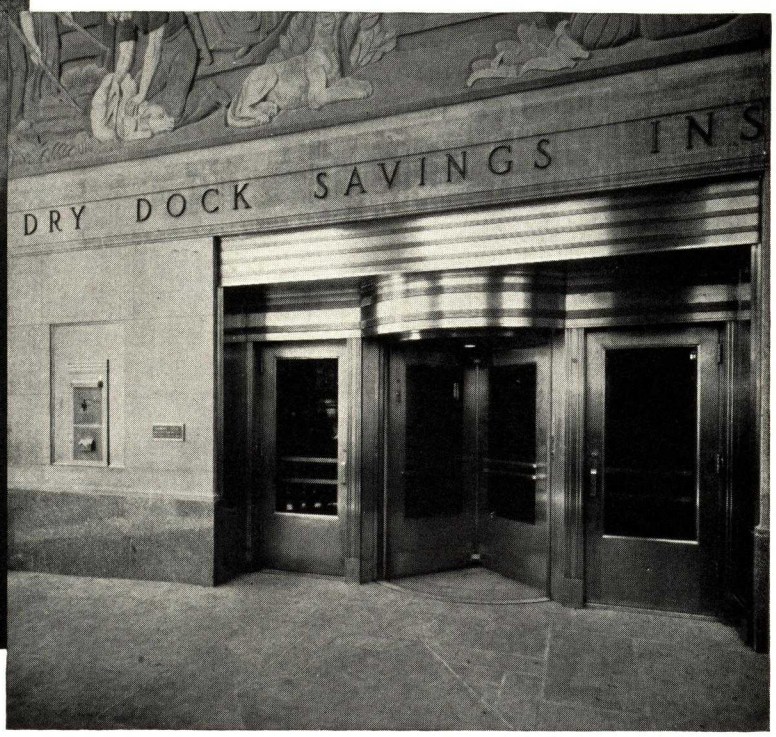
Memorial Tablet, Municipal Building, New York, N. Y.
11 ft. 3 in. long

Vestibule Entrance—Drydock Savings Institution



Entrance to Bank—Drydock Savings Institution
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13
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A few representative installations are shown on these pages.

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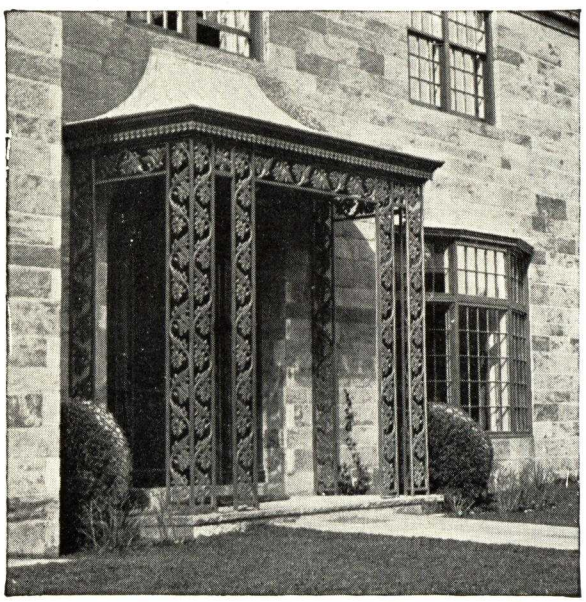
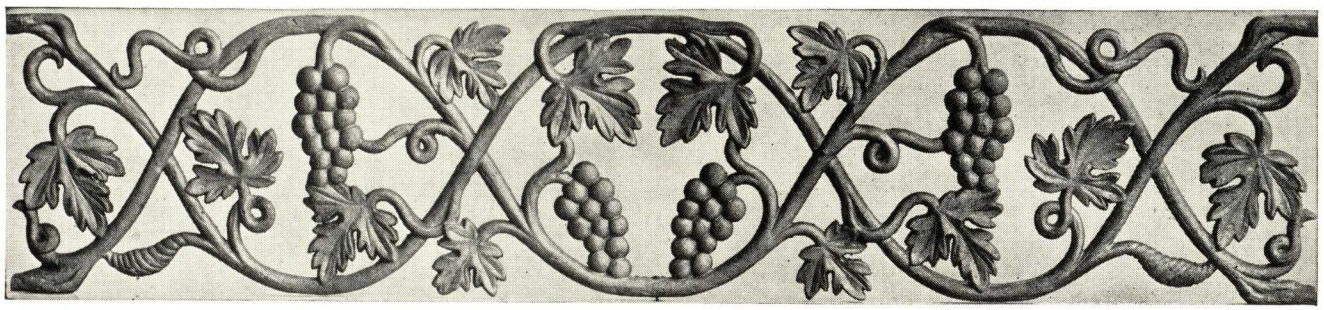
WYETH & KING, Architects

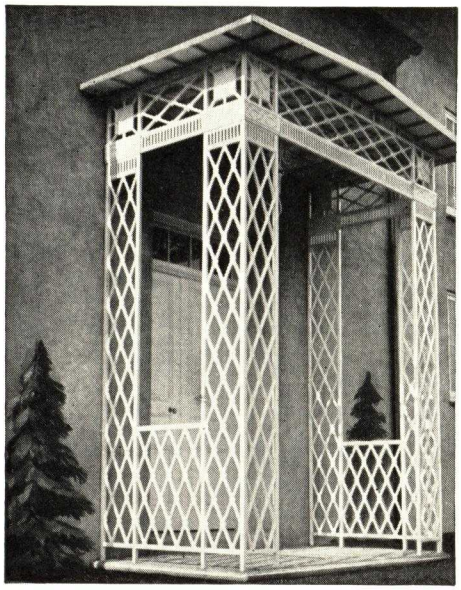
CHARLES F. RABENOLD, Architect



SHEPARD & STEARNS, Architects



Veranda No. 73 (8½ In. Wide by 3 Ft. 4 In. Long)



Willing, Sims & Talbut, Architects

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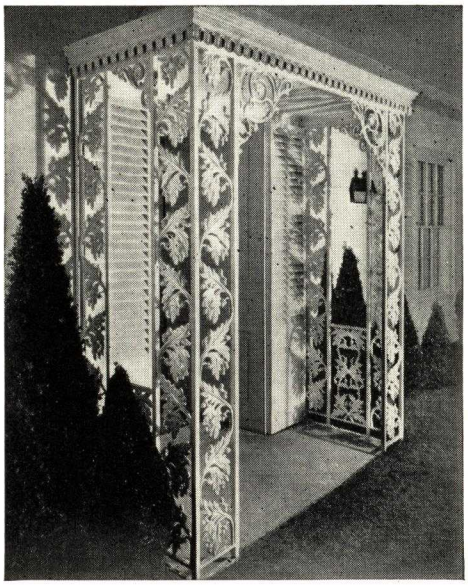
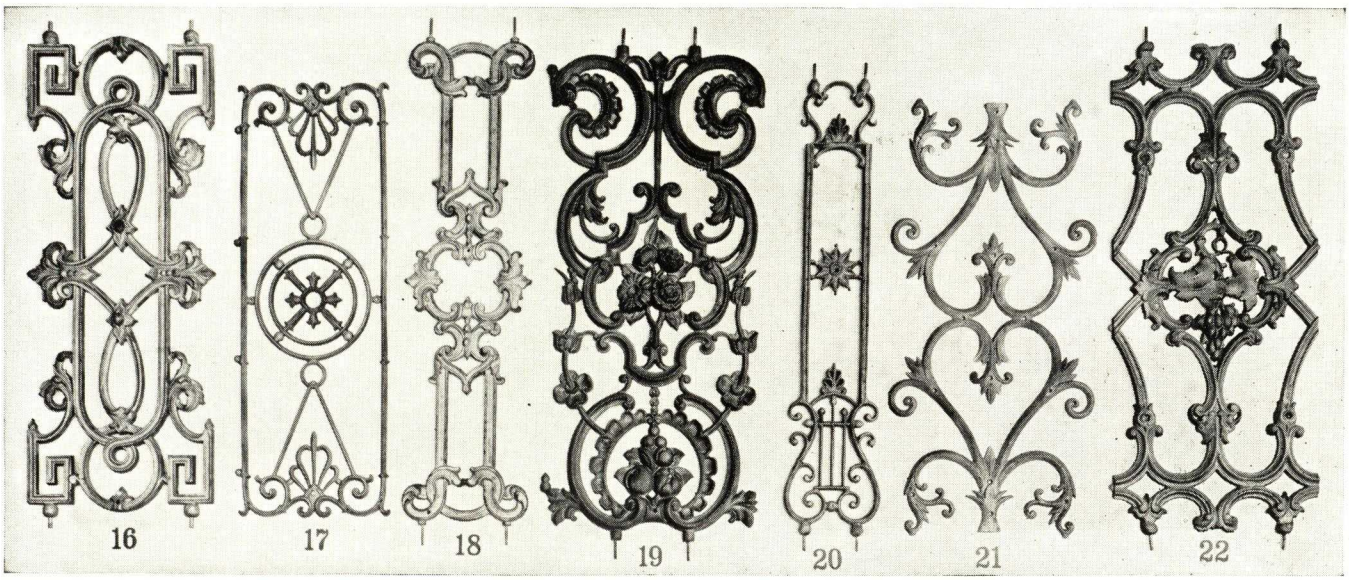


Wallace W. Heath, Architect
Design No. 72 (with No. 74 Brackets)

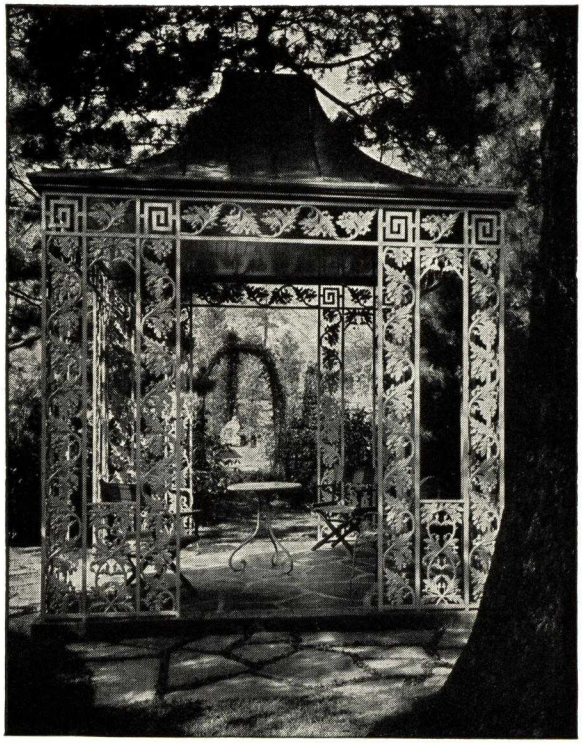


Our booklet contains over 130 different designs of railing panels, a few of which are illustrated above.

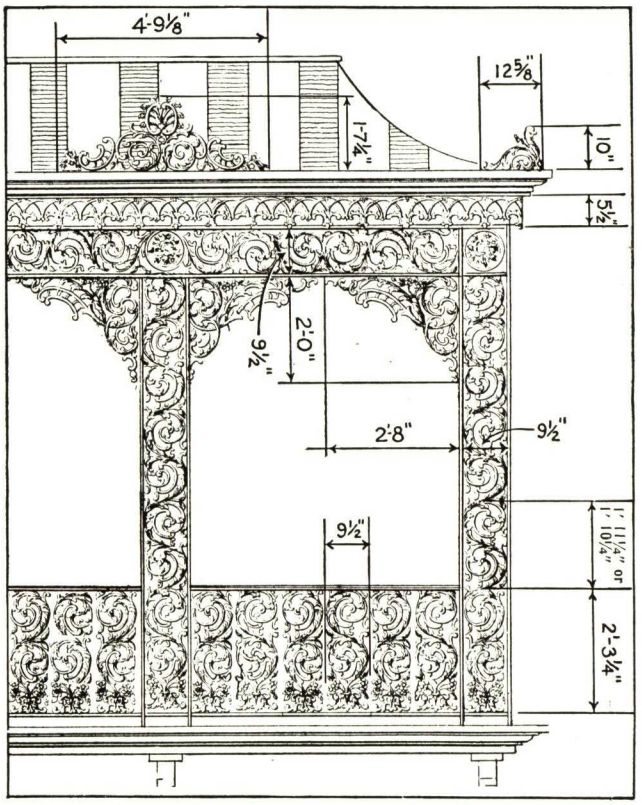
The important dimensions of these designs are given on the right.

Design	Height	Width	Weight	Description
16	2′ 5⅞″	12″	15 lbs.	SBO
17	2′ 2⅞″	9⅞″	10 lbs.	DF
18	2′ 5¾″	8″	9 lbs.	DF
19	2′ 6″	13¾″	13 lbs.	SBO
20	2′ 3¾″	6″	4 lbs.	DF
21	2′ 2⅝″	12¾″	8 lbs.	DF
22	2′ 5⅝″	12⅜″	12 lbs.	SBO

Key—"SBO" Single faced backed out. "DF" Double faced. "SF" Single faced.

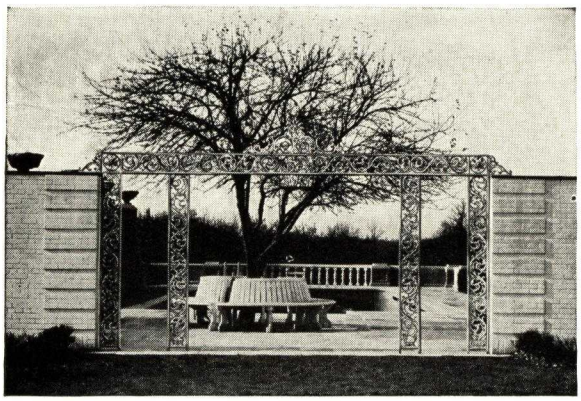


DOUGLAS ORR, Architect

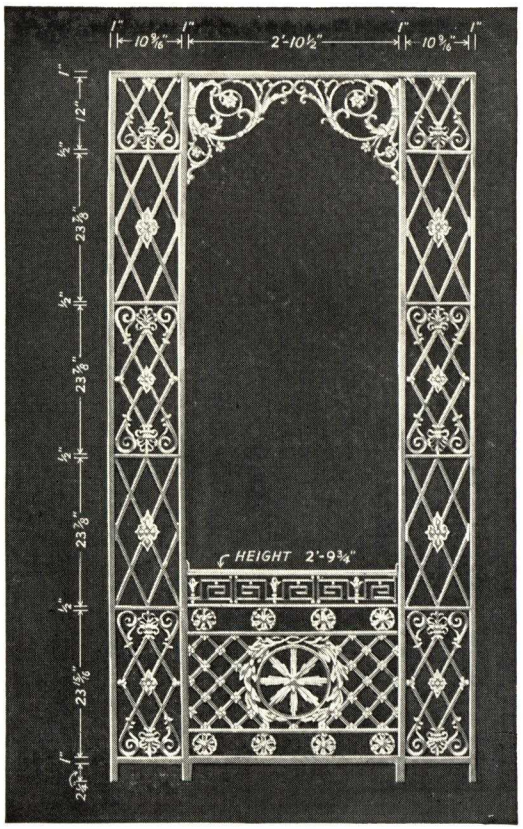


A Typical Cut from our Catalog showing how all Dimensions are given

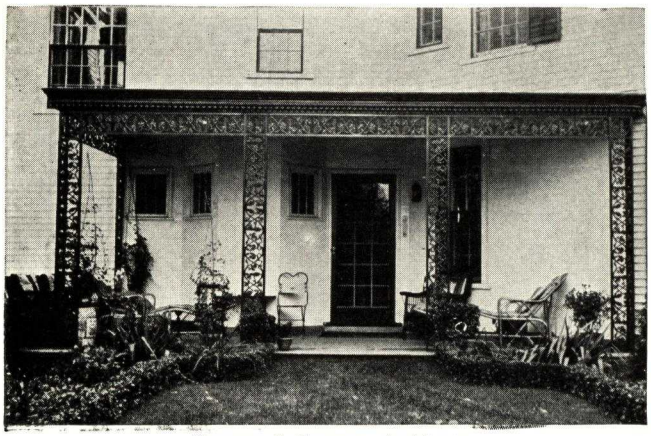
(Design No. 69)



BRANDON SMITH, Architect



Design No. 74



SHEPARD & STEARNS, Architects

SPANJER BROTHERS INC.

ESTABLISHED 1896

1160 Howe Street
CHICAGO, ILLINOIS

267 Mt. Pleasant Avenue
NEWARK, NEW JERSEY

LETTERS CAST AND FABRICATED IN ALL METALS . . . IN ANY DESIGN . . . TO MEET ALL REQUIREMENTS

SPANJER BROTHERS, INC., has been designing and manufacturing raised sign letters since 1896. Then as now, only the best and that which is timely meets their mandatory demands. The firm is owned and managed by the men who founded it. Their high ideals in sign letter production attracted fine craftsmen in wood and metal to their employ. Both owners and co-workers are in step mentally and productively with the modern trend in store front design, and can therefore execute any plan for lettering in any medium required. Specifications of Spanjer Brothers letters insures modernity in design and sound engineering and construction.

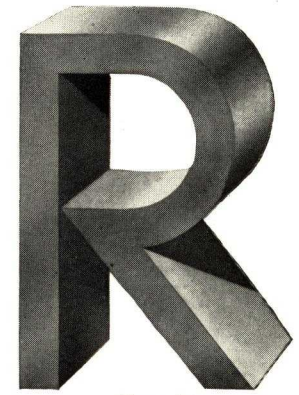
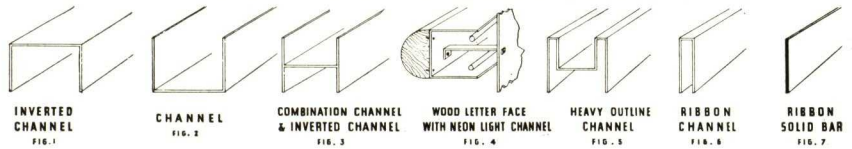


Plate 1

FABRICATED LETTER CONSTRUCTION



BUILT-UP OR FABRICATED LETTERS

The only known welding process whereby aluminum will take on and hold an alumilite finish was developed by Spanjer Brothers and is used exclusively by them. This process is applicable to all fabricated letters.

The cross sections above illustrate some of the many ways in which these letters are fabricated, all of which are adaptable for neon work. Fig. 4 illustrates a new combination of a round raced wood letter attached to a metal channel housing neon or other illumination. This combination of wood and metal economically makes possible a wide variety of facial contours, and with hidden illumination makes a perfect day and night sign. Plate 1 shows a large letter "R" constructed as illustrated in Fig. 1 above.

Fabricated letters are custom-built to meet your most exacting specifications. They can be made from any sheet metal or extruded bar stock, in any size or shape, to meet any requirements.

3985 CASTING PATTERNS IN STOCK

Through the decades of service to the architectural profession and to the sign trade, Spanjer Brothers has accumulated a library of 3985 patterns for cast letters ranging in even inches from 2 to 18 inches in height. This vast stock, in many styles, provides prompt service at economical prices.

Plate 2 illustrates the most generally used styles of cast letters. No. 3 is the back of a cast letter, showing the hollow back and the lugs and screws for attaching. Casting patterns for specially designed letters can quickly be made up in our pattern shop.

WOOD LETTERS FOR OUTDOOR AND INDOOR USE

Wood letters are widely being used in the interior of department stores for department marker signs as well as on displays in the show windows. These letters may be obtained singly, properly spaced and attached to bases, or with tongues for interchangeable use. Wood letters are made in any size or style from stock or special patterns.

METALLIZING—GRILLES—RELIEFS—SCROLLS—BUSTS—BABY SHOES

Spanjer Brothers electrolytic metallizing process has cut the cost of grilles and reliefs from 40% to 75%. This work can be done in any finish. It looks like, and will last as long as the solid or cast metal for interior use. This metallizing is done only at our Chicago plant. Inquiries for samples are invited.

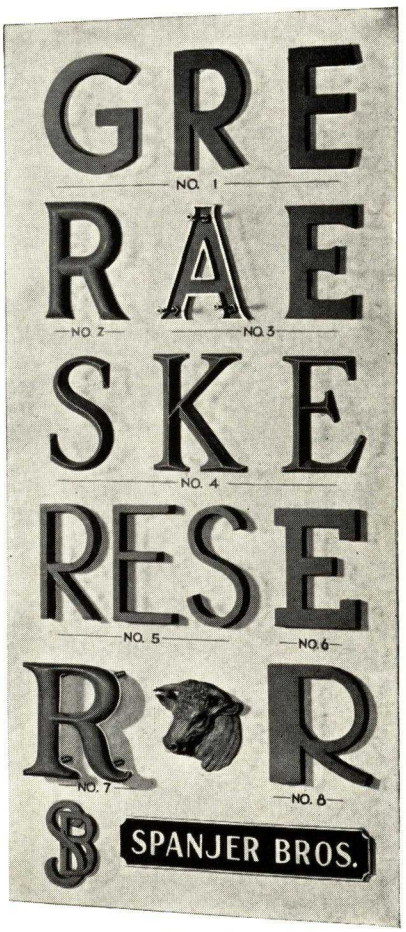


Plate 2

Our complete catalog of metal and wood letters will gladly be sent to architects, designers, contractors and sign men on request.

THE TURNER BRASS WORKS

DEPARTMENT H

Turner Cast Bronze, Brass or Aluminum Signs, Tablets, Name Plates and Ornaments

GENERAL OFFICES AND PLANT

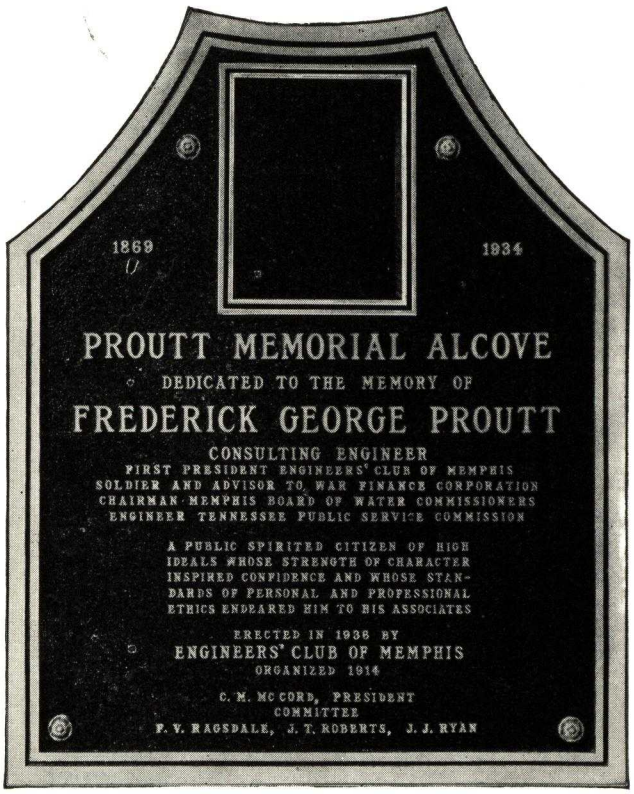
SYCAMORE, ILL.

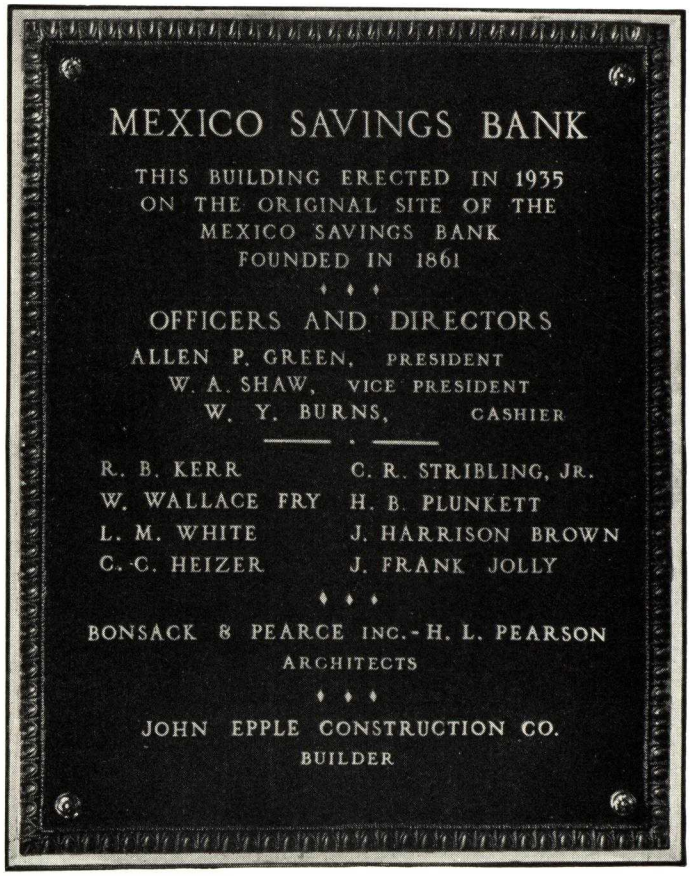
CHICAGO OFFICE: 538 So. Dearborn Street. Telephone: Webster 4131

66 YEARS OF FAITHFUL SERVICE TO OUR CUSTOMERS

Brass, Bronze or Aluminum signs, tablets, name plates and ornamental pieces as manufactured by THE TURNER BRASS WORKS are produced from your sketches, your completed drawings, our artists' suggestions from your specifications or our suggestions using stock patterns.

We are equipped to manufacture the smallest or largest bronze pieces. We have been the dependable source of supply for architects, builders, engineers and artists for sixty-six years.





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Finest workmanship and material. Deliveries when promised. Lowest possible prices. Faithful reproduction of your order.

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Sundials
Grave Markers
Brass Railings
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Send for free catalog of any or all items

THE W. S. TYLER COMPANY

CLEVELAND, OHIO

BRANCHES

NEW YORK
BOSTON

PHILADELPHIA
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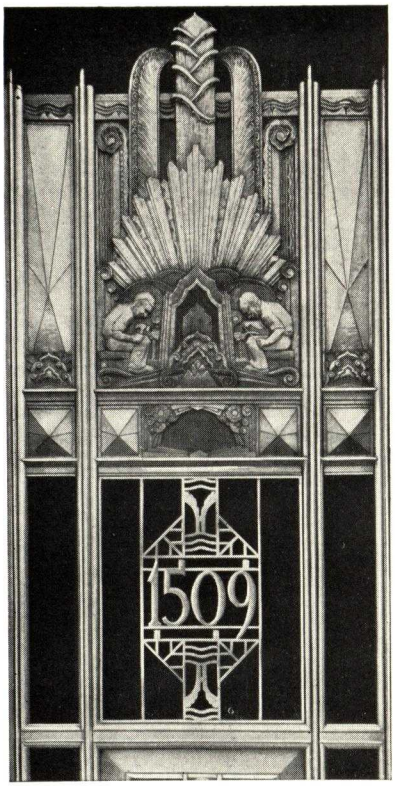
LONDON, ENGLAND
ST. CATHARINES, CANADA

TYLER ARCHITECTURAL METAL WORK

For Complete Tyler Catalog, see File Index

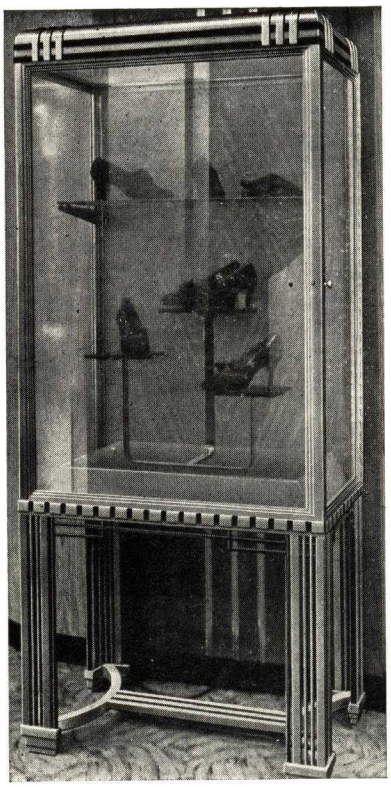


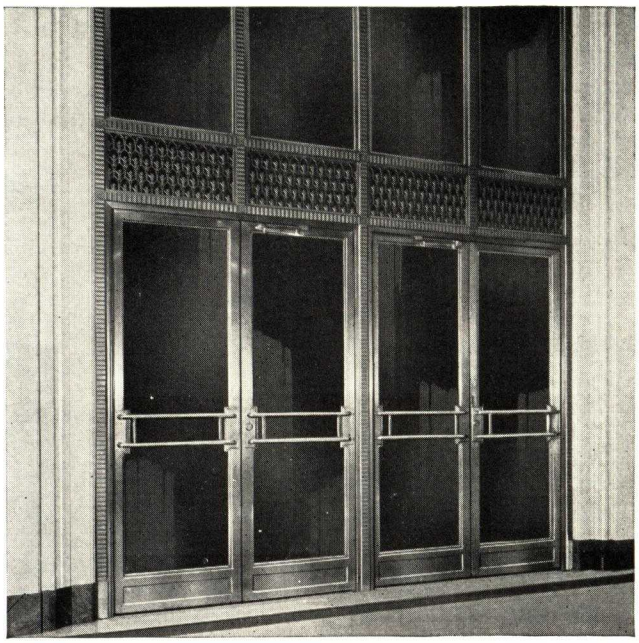
Tyler ornamental work includes every type of architectural interior and exterior metal for office buildings, banks, hospitals, public buildings, schools, apartment houses and administration buildings.

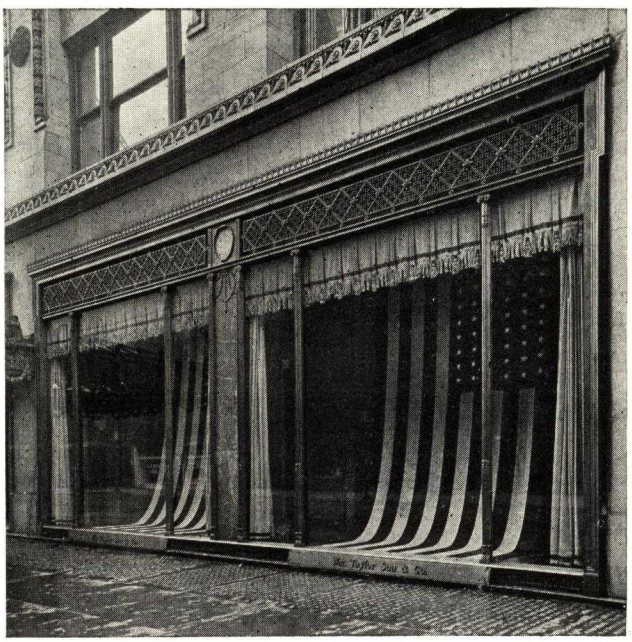
Outstanding buildings throughout the world are equipped with Tyler entrances, store fronts, marquees, display cases, store fixtures, directories, stairways, balconies, grilles, counters, screens, window frames and spandrels.

Tyler also produces bronze tablets and name plates, sculptural bronze plaques, mausoleum doors, gateways, etc.

The experience of Tyler craftsmen in handling all of the modern metals, such as Monel, stainless steel, aluminum and nickel, as well as bronze and iron is your guarantee of an exceptionally satisfactory installation.







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Designers and Manufacturers of Bronze Tablets, Portraits, Letters, Plaques Fully Meeting Architects' Conceptions

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TABLETS and SIGNS in non-ferrous metals to architects' drawings or from designs we furnish.

SCULPTURED PORTRAITS, PLAQUES in faithful execution of all details. INDIVIDUAL LETTERS of many standard patterns or to exact style desired. SCRIPT TRADEMARKS duplicated. Finished Alumilite, Porcelain Enamel Inlay, satin, sand, wire brush, chromium, oxidized. DIRECTIONAL SIGNS, lighted and plain. OFFICE and FLOOR IDENTIFYING SIGNS. EXTERIOR CASES cast and fabricated, for clocks, thermometers, bulletins.

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Produced economically for building industry, with or without hand tooling, as desired. Standard patterns for all general dimensions. Drawings, prints, proofs supplied free.

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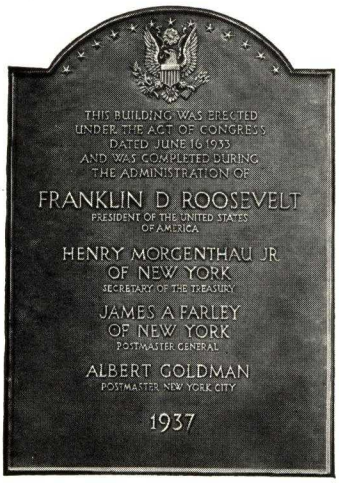
Shop drawings, actual color sketches, blueprints, templates free. Staff artists, sculptors, wood carvers rendering designs in exact detail. Ideal manufacturing facilities, ample equipment, selected skilled personnel. Particular economy using standard patterns. Many sizes offered for writing specifications. Low prices due to large volume in metal contracting field. Management acquainted with architects' and contractors' problems. Comprehensive attention in correspondence. Air mail and telegraphed quotations.



New York Post Office Tablets

Illustrating tablet made from sculptor's mould. Entire plaque is hand modeled. The individual character is gained from the skilled tooling, oxidizing and highlighting given by expert bronze craftsmen. We specialize in designs demanding such bas-relief modeling and wood carving. These features achieve unusual distinction for both artistic and commercial designs.

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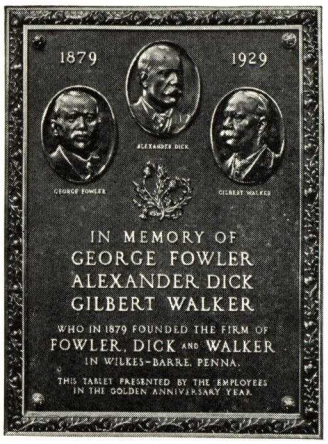
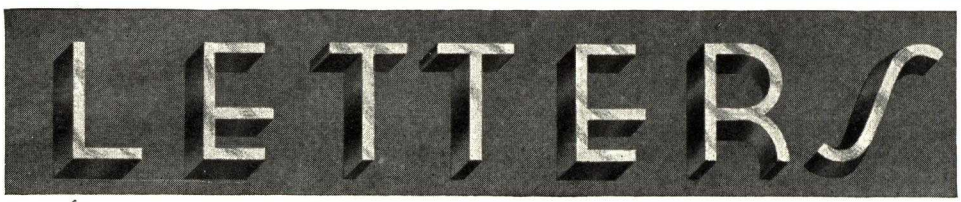
The UNITED STATES BRONZE SIGN COMPANY inlays porcelain enamel colors on bronze letters and plaques. They can be mounted directly on walls or on metal backgrounds. Dignity of cast bronze and permanently bright colors improve attention values of signs. Trademarks can be shown to ideal advantage. Modern script letters aid in making fullest use of this feature.



Bronze Tablets and Portraits

Deeply significant memorials are created by combining a bronze tablet with modeled bas-relief portraits. Photographs guide the sculptor. Clay models submitted for approval. True duplication of features is assured. Illustration shows special leaf border and our graceful classic letters. Other letter styles available.

Bronze
Brass
Copper
Aluminum
Nickel Silver
Porcelain Enamel



Available in a Wide Variety of Styles and Finishes From Stock Patterns or Special Designs

For Building Titles and use as unusual Advertising Displays. Special letters made for modern glass and porcelain enamel store fronts. Identical duplication of trademarks allows architects great liberty in attractive modern design. We originate styles. We also make full size drawings from outlines architects supply. Strong invisible fastenings arranged for field conditions. Full size installation templates are made with each order to assure professional spacing, alignment and convenient erection.

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Manufacturers and Erectors of All Types of Pipe and Bridge Railings

929 Sweitzer Avenue
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For our pages on Klip-Lok Steel Stairs, see File Index

FACILITIES AND SERVICES

We are prepared to quote on all types of railings embodying screw type joints, slip joints, or all welded joints.

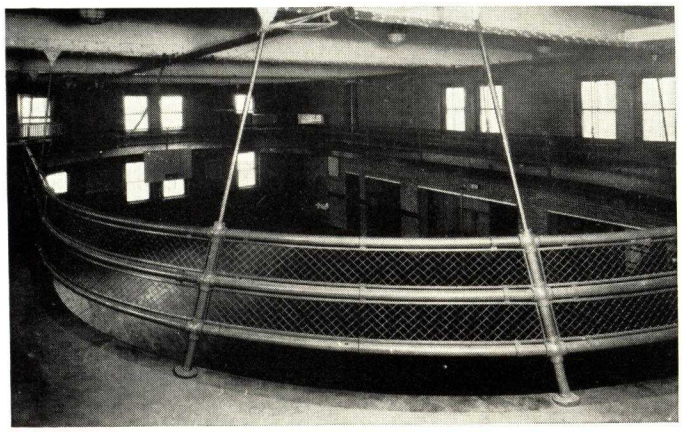
Our large stock of materials enables us to offer prompt shipment on railings made from steel, brass, bronze, aluminum, benedict nickel, or stainless steel.

We specialize in miscellaneous iron and pipe required for flood-control projects, sewage treatment plants, and various types of public utility construction.

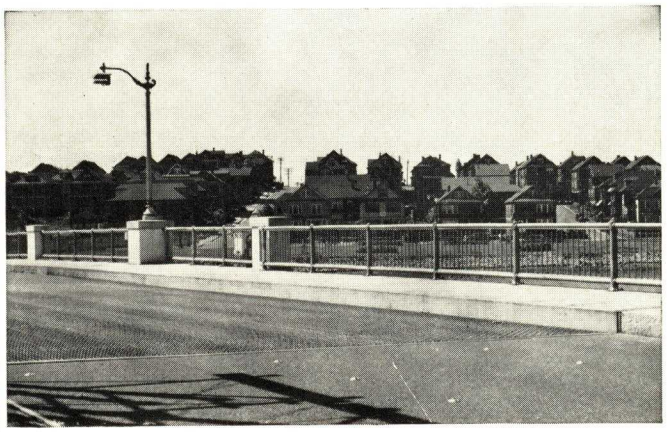
We also manufacture spiral stairs, flag poles, fire escapes, "Klip-Lok" steel stairs, gratings, wire work, grilles, sidewalk doors, and wrought iron railings of all types.

Our erecting organization enables us to erect economically in any section of the country.

We are pleased to offer to owners and architects the benefit of our 32 years' experience in designing and building railings and allied products.



Y. M. C. A. Running Track, Lorain, Ohio



Wellington Bridge Railing, Medford, Mass.

ADDITIONAL PRODUCTS

Flag Poles—We manufacture continuous taper or sectional poles for either ground, roof, or outrigger setting, to our standard specification or to special specifications.

Klip-Lok Steel Stairs—See File Index for our other pages.

Spiral Stairs—Standard patterns for all sizes from 30 to 84-in. diameter. Our own design utilizing checkered plate treads can be manufactured very economically.

Marquise—Made generally to designs prepared by the architect. Furnished in iron, bronze, aluminum, or stainless steel. (We welcome the opportunity to submit designs or work with the architect.)

Ornamental Metal Work—Hand-wrought work in iron, bronze, and monel executed by skillful craftsmen. In attractive finishes for grilles, railings, balustrades, transoms, music rooms, and show windows.

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Fire Escapes—Many States have their standard specifications. All of these are on file and enable us to fabricate regulation requirements. Or we offer our own specifications where desired.

Store Fronts—Of the more permanent, durable, and substantial construction, made of bronze, or aluminum, of cast or extruded shapes. For good design and construction, we offer our experience.

Wire Work—A broad variety of various meshes, wire sizes, and framing adaptable to all kinds and purposes. Office cages, storage spacings, partitions, machinery guards, tree guards, animal cages, outside market enclosures, window and elevator guards of the burglarproof construction at prices that will attract.

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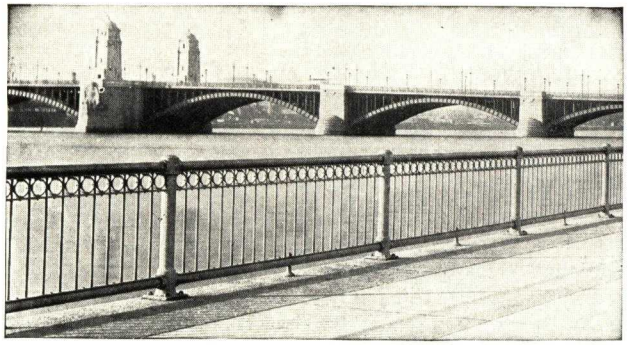
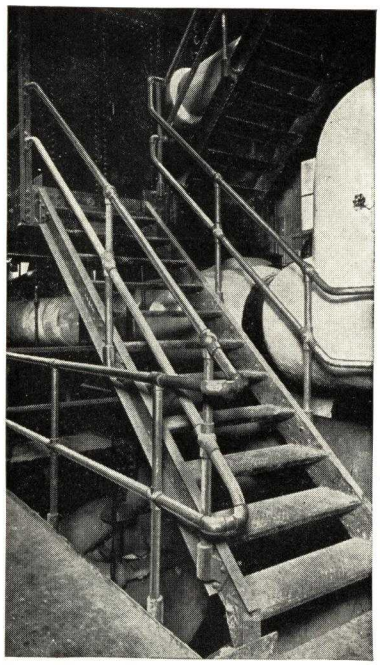
Benwood, WHEELING, W. VA.

VULCAN PIPE AND BRIDGE RAILINGS AND FENCES

Boardwalk Railing with Lamp Posts



Typical Bridge Railing



Pipe Railing in Power House

VULCAN RAIL & CONSTRUCTION COMPANY

Pipe Railings with Fittings or of Welded Construction; Fences and Special Construction

For auditoriums, boardwalks, bridges, elevated structures, grandstands, prisons, sewage treatment works, stadia, stairs, theatres, warehouses, etc.

Special Pipe Work

For fur storage racks, platform shelters, table supports, turnstiles, etc.

Stairs, Ladders, etc., with Railings

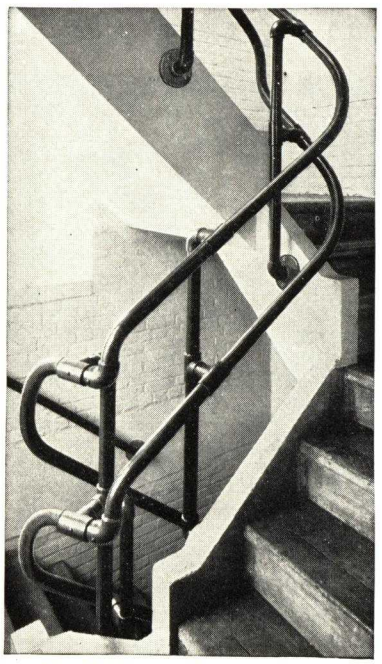
For coal breakers, subways, dams and power plants.

Other Products

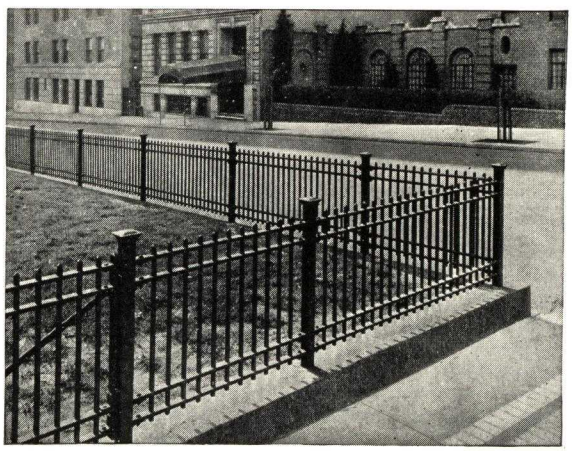
Pipe hand railings (both fitting and welded type), columns, welded poles, pipe structures.

Exclusive manufacturers of: "All-welded All-steel Jointless Post" Pipe Railings simulating in appearance fitting or flush railings with all joints reinforced on interior or exterior. No exposed welds.

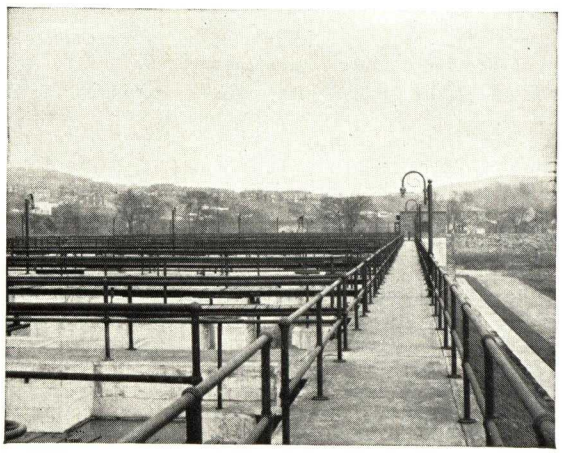
Also Vulcan "All-Steel" Underwriters' Fire Doors for protection of corridors and partition openings in storage warehouses.



Pipe Railing on Concrete Stairs



Picket Fence, Park Avenue, New York, N. Y.



Pipe Railing in Sewage Disposal Plant

PIPE RAILINGS FOR EVERY PURPOSE

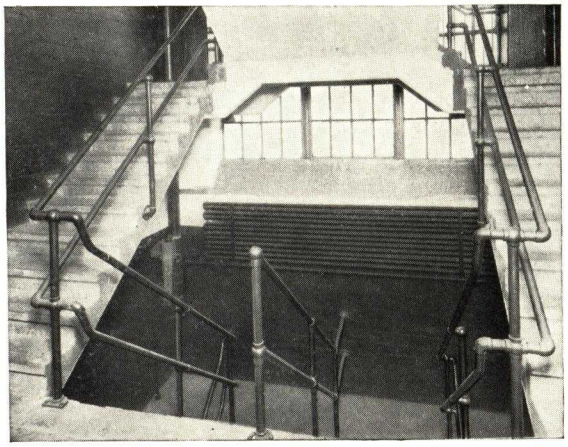
The VULCAN RAIL & CONSTRUCTION COMPANY are specialists in the manufacture of metal railings for every architectural and engineering requirement.

Our standard pipe fitted type railings are constructed of first quality pipe, using Vulcan Standard Malleable Iron Railing Fittings and Vulcan Standard Cast Iron Flanges throughout. The wide variety of fittings, flanges, elbows, etc., which we carry in stock for fabrication, has firmly established our reputation to efficiently fill orders involving many different construction problems.

We also manufacture the modern flush "All-Welded All-Steel Jointless Post" type of Railing (patented and patents pending), which has distinct structural advantages. This railing is also made with "connectors", whereby all joints are reinforced. It is particularly well suited to applications where simplicity of design is desired.

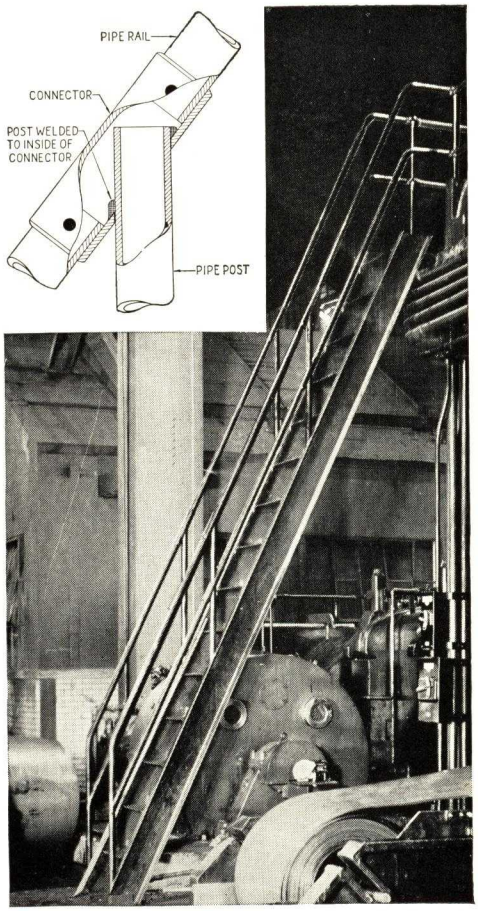
Vulcan Bridge Railings

Our Standard Bridge Railings are constructed of various combinations of pipe, fittings, bars (round and square), flats, channels, angles, etc. They fill all requirements for the present day design of bridge railings, employing pipes or tubing for the rails and posts with a filling of round or square pickets or other structural shapes as the basic principle. They are designed to combine simplicity, good appearance and strength with greater resistance to the action of the elements. Our faithful adherence to this principle in the manufacturing process results in the reduction of maintenance costs to a minimum.

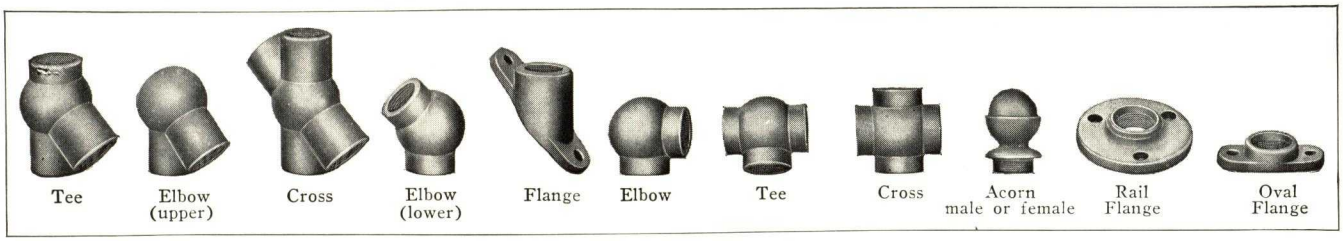


Pipe Rail on Double Concrete Stairs

Vulcan designs vary from the simpler types to the more elaborate; introducing cast iron posts with rings and other shapes into the railing panels. The number of unique combinations made possible by the variety and versatility of these shapes is nearly inexhaustible, and thereby assure the architect of an almost unlimited selectivity.



Installation of "All-Welded All-Steel Railing"
Note detail of method



"Vulcan" Standard Railing Fittings

VULCAN FACILITIES AND SERVICE

Facilities

Our main plant at Maspeth, N. Y. and branch at Wheeling, W. Va., are both fully equipped to manufacture railing products in any required quantities. We maintain a trained force of experienced and skillful workmen and have private sidings on main line railroads. The prompt and efficient execution of all orders is thus assured.

Service

The use of our Engineering Department is freely offered to architects and engineers to advise and aid them in problems involving the use of railing, pipe and fittings, columns, welded poles and all other structural products we manufacture.

Specification Information

Complete information including estimates and preliminary designs for any of the products listed will be promptly supplied on request.

Special note—General estimating is handled at the Maspeth, New York Office. Inquiries regarding estimates should be addressed accordingly.

Information and Literature

Detailed information relative to standard bridge and pipe railing designs, as well as special designs to suit architects' and engineers' requirements, will be submitted on request.

When requesting estimates it is suggested that inquiries be accompanied by blue prints or sketches of requirements showing full dimensions and all possible information on size of pipe, type of fitting, finish, etc. Inquiries for pipe railings should mention the number of posts required and the spacing between posts; also the number of horizontal rails, and the method of anchorage to foundation or support.

Catalogues or Standards Sent on Request.

AMERICAN MAST & SPAR CORPORATION

Manufacturers of Flag Poles, Yacht Masts, Spars, Booms and Derrick Masts

TELEPHONE
Melrose 5-4940, 4941

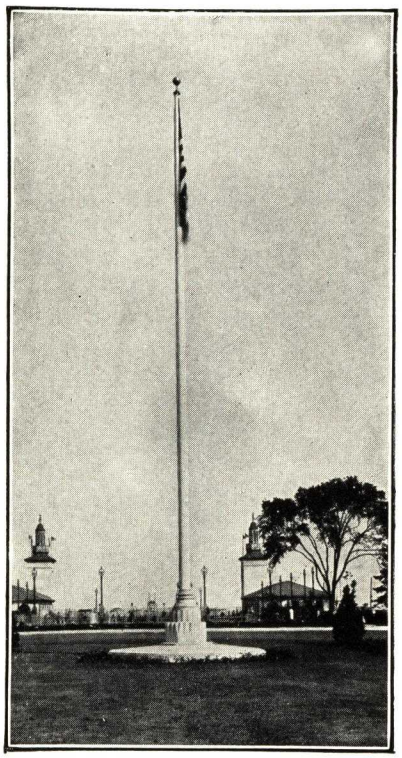
149th Street and East River
NEW YORK, N. Y.

CABLE
"MASTSPAR"

Metal Flag Poles

Made of copper-bearing steel, aluminum, bronze and stainless steel.

Made one-piece continuous taper; one-piece continuous taper with entasis; swaged jointed in several sections; and tilting flag poles.



Tapered Steel Pole

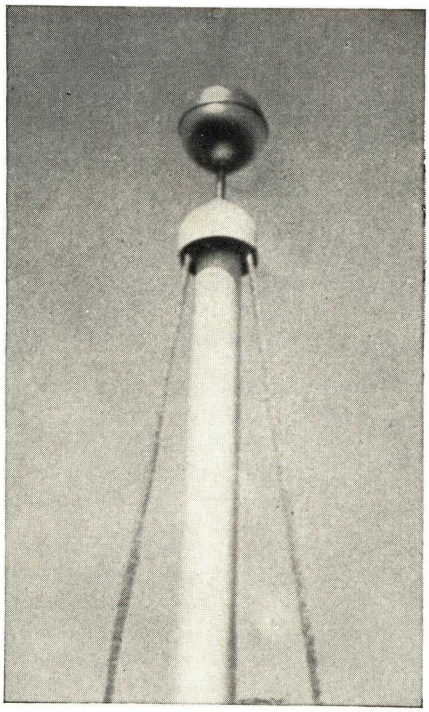
Ground Poles

Our ground poles are made of wood, copper-bearing steel, bronze and stainless steel.

Wood flag poles are made of selected grade yacht spar timber and *machine turned* to true entasis.

Metal flag poles are made according to flag pole manufacturers' standard specifications consisting of swaged sectional joints or continuous taper out of all metals.

Prices on application.



Umbrella Revolving Ball Bearing Truck No. 30

Umbrella Revolving Ball Bearing Truck No. 30

When specified, poles are fitted with our Umbrella Revolving Truck No. 30, illustrated above. This truck, on comparison, shows many superior advantages. It gives the top of the flag pole a dressed appearance. It preserves the life of the pole. In addition, it is ball bearing and rustproof throughout.

Tilting Flag Poles

We manufacture tilting flag poles of the counterbalance type as well as the mechanical tilting type.

Wood Flag Poles

Made of especially selected yacht spar timber, machine turned, sand papered and given three coats of best white lead and oil.

Top Mast Flag Poles

Specially designed for yacht clubs, country clubs, golf clubs, homes, amusement parks and schools. Made in all sizes by shipbuilders who are master craftsmen, out of steel or wood.

All iron fittings galvanized. When we build a pole you can depend on a trim, ship-shape appearance.

Topmast Flag Pole with Yardarm

BUILT LIKE A SHIP MAST

Made of copper-bearing steel or selected *Oregon* fir spar timbers, *machine turned* to true entasis. The Topmast is so made that it can be lowered in stormy seasons and for painting. All iron work is galvanized.

DIMENSIONS OF TOP MAST FLAG POLES

No.	Net length, ft.	Actual length, ft.	Heel diam., in.	Approx. weight, lb.
99	50	55	8	900
100	60	66	10	1500
102	75	82	12	2500
103	100	110	16	5900
104	125	137	20	8000

Designed and built by spar makers. Prices upon application.

We Manufactured and Erected All the Flag Poles on the Rockefeller Center Buildings, New York

ESTABLISHED 1888

HANSELL-ELCOCK COMPANY

Fabricators and Designers Structural Steel and Ornamental Iron
Manufacturers of Gray Iron Castings
Manufacturers and Distributors of the Carr Tilting Flagstaff

GENERAL OFFICE
3153 South California Avenue
CHICAGO, ILL.

TELEPHONE
Crawford 3226

STRUCTURAL STEEL AND ORNAMENTAL IRON

Experience and Facilities

The year 1938 will mark the Fiftieth Anniversary of this organization. For fifty consecutive years this company has kept stride with the ever-changing construction methods, and as a result thereof has developed a plant to meet the present day demands. We can well boast of our past achievements and point with pride to our contribution to the monuments of the construction industry. Our facilities are comprehensive and also unique in that we have a combination of Structural Steel, Ornamental Iron, Miscellaneous Iron and Gray Iron Foundry.

The wide variety of structures listed below suggest the magnitude and range of service Hansell-Elcock Company is equipped to render.

Structural Steel Work

Steel Frame Buildings, Public Buildings, Office, Mill, Factory, Hotels and Apartment Houses; Auditoriums, Grand Stands, Freight Depots and Power Plants.

Ornamental Iron

Hansell-Elcock Company Ornamental Iron Work includes every type of Architectural Exterior and Interior Metal for Public Buildings, Office Buildings, Hospitals, Banks, Schools and Apartment Houses. We are equipped to manufacture to order such items as store fronts, directories, stairways, railings, grilles, counters, window frames, spandrels and wire work.

Foundry

We own and operate one of the largest gray iron, semi-steel and alloy casting foundries in the Middle West, specializing in the manufacture of machinery castings. Our Metallurgical Department is always in readiness to render service and fill the requirements of buyers demanding castings made to their own specifications.

THE CARR TILTING FLAGSTAFF

Carr Flagstaff in Horizontal Position
Center of weight is constant whether pole is in vertical or horizontal position

The Carr Flagstaff is designed to overcome the disadvantages of the rigid, fixed pole. It has proved its outstanding advantages over all other types by increasing sales since 1914. Its simplicity of design, ease of operation and maintenance and its sturdy and well engineered construction has established its use by leading architects all over the United States.

CONSTRUCTION

Base—Supporting structure is of cast iron, which is recognized as better able to withstand the elements than ordinary structural shapes.

Socket

Pole socket is made of cast iron with steel trunnions cast in position with counterweights also made of cast iron.

Locking Bar

Locking bar and key are of heavy steel.

Pole

The pole is made up of suitable lengths of steel tubing with lap joints welded.

Pole Trimmings

Pole trimmings consist of seamless copper ball covered with gold leaf; truck with two bronze pulleys; brass nipple for connecting ball to truck; cleat, and halyard of good quality with snap hooks.

Workmanship

All workmanship is of the highest character. Castings are clean and free of defects.

Painting

All steel and cast iron sections are given one shop coat of paint.

SUGGESTED SIZES FOR FLAGSTAFF

No. 0—20 ft.—For buildings 1 to 3 stories high.
No. 1—25 ft.—For buildings up to 10 stories high.
No. 2—32½ ft.—For buildings up to 16 stories high.
No. 3—40 ft.—For buildings up to 24 stories high and higher.

(Other sizes may be had as desired.)

ESTABLISHED 1909

BABCOCK-DAVIS CORPORATION

Manufacturers of Steel Flag Poles—Sectional or Continuous Taper

474 Dorchester Avenue

BOSTON, MASS.

For our pages on Mechanical and Electrical Specialties and Scuttles, see File Index

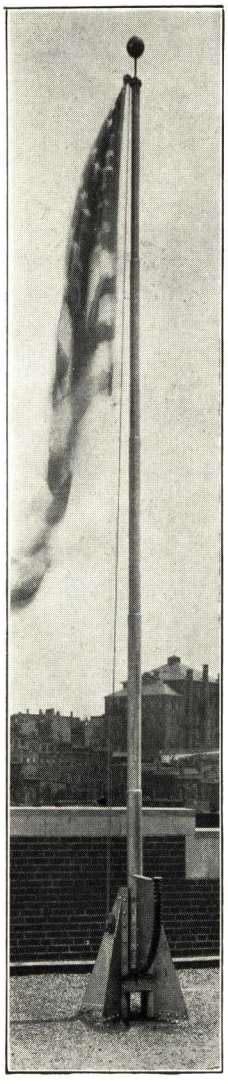
CONSTRUCTION AND ADVANTAGES OF BABCOCK-DAVIS EASY ACCESS POLE

U. S. Patent No. 1665535, April 10, 1928

Principle of the Easy Access Pole Design

It is designed to overcome the expense and difficulty often experienced in replacing fouled and broken halyards as well as making it easy to erect and paint. Every flag pole should be inspected once a year. With the Easy Access Pole, no steeplejack is required, as one man can raise or lower the pole in a few minutes.

A ratchet wrench is used to operate a worm gear, which turns against the geared edge of a quadrant secured to the bottom of the pole. The pole is raised or lowered or securely held in any position, making it possible to incline pole over parapet.



25-ft. B-D Pole, H. P. Hood Co. Building, Charlestown, Mass.

Economy of Erection and Upkeep

The saving in erection will offset the slight additional cost of the Easy Access Pole over that of the plainest type of pole.

It is readily installed on all types of frame or fireproof roof construction and on grade foundations. For grade installation, a monumental aluminum or bronze base can be supplied to cover the operating mechanism.

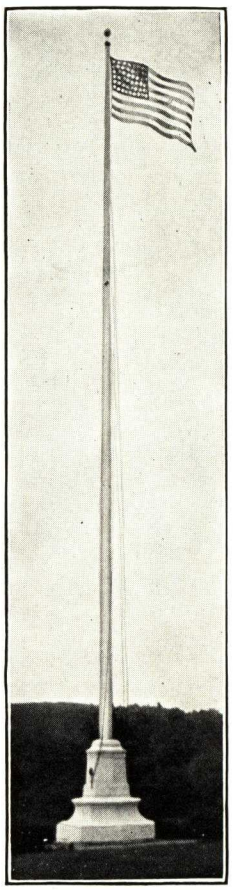
Patented Easy Access Base Construction

One of the principal features of the base is that base plate and web plates are integral and installed as one. By this method no special requirements for long braces or extra flashings are required. The comparatively small and inconspicuous base is set on an island above the roof as shown in the details on the following pages.

The base also contains the worm which operates the gears of the quadrant on the bottom of pole.

The heavily galvanized base plate is drilled to receive anchor bolts. It is set in plastic cement and bolted to roof construction, then roofing material is carried over it, thoroughly flashing the base.

The island type of construction is the most advanced method of setting flag poles. There has never been a leaky roof where any of our bases have been installed.



B-D Continuous Tapered Flag Pole at Veterans Hospital, Rutland Heights

88 ft. 0 in. overall, 15 in. diameter at base and 5 in. diameter at tip, equipped with bonnet type halyard top and 12 in. gold leafed copper ball

Poles Sectional or Continuous Taper

Standard poles are sectional, graduated to give a graceful taper. Continuous taper poles can also be supplied if specified.

Poles are constructed from copper-bearing steel tubing or steel pipe. Sections are shrunk and welded together. Field joints are readily made, upper pieces resting on heavy supports and aligned by setscrews, then caulked or welded in the field. Poles are open at the bottom and vented through top. All poles are given one coat of red lead and two coats of aluminum paint before shipment.

The Invisible Halyard Connector

Our invisible connector makes a *continuous* halyard that can be disconnected to renew and will always take strain of the weight of halyard off flag. With this connector, there is no opportunity to lose the halyard while removing the flag.

Specifications

Furnish and erect Babcock-Davis Easy Access Pole ....ft. high (if canted, specify degree of angle), equipped with (6, 8 or 10-in.) 22-karat gold leafed copper ball, ball bearing swivel top, continuous braided cord halyards, with invisible connector, halyard cleat, and operating ratchet wrench as manufactured by BABCOCK-DAVIS CORPORATION, 474 Dorchester Avenue, Boston, Mass.

All poles shall be given one coat of red lead and two coats of aluminum paint before shipment.

Note: For roof installation specify forming of island as shown in details to take base and building-in of anchor bolts. If on ground specify foundations and height carried above surface of ground and bolts located according to shop drawings supplied by us.

STANDARD SIZES AND EQUIPMENT OF EASY ACCESS POLES

The standard sizes of the Easy Access Poles are illustrated below. Sizes 20, 25, 30, 35, 40 and 50 ft. are carried in stock, other lengths are made to order and shipped on short notice.

The poles and bases are finished with one coat of red lead and two coats of aluminum paint. The base plate is heavily galvanized. The entire pole can be supplied galvanized. Also made of aluminum or bronze.

Raised Position

Illustrations show standard base with pole in raised and lowered positions and the removable ratchet wrench.

Patented April 10, 1928. No. 1665535

Standard Equipment

All Easy Access Poles are equipped with 22-karat gold leafed copper ball, in 6, 8 or 10-in. size, B-D ball bearing swivel top, continuous braided cord halyards with invisible connector (this prevents undue strain on flag), cleat, flag snaps, and ratchet wrench for raising or lowering the pole. Weather vanes can be supplied at an extra charge.

Monumental Bases

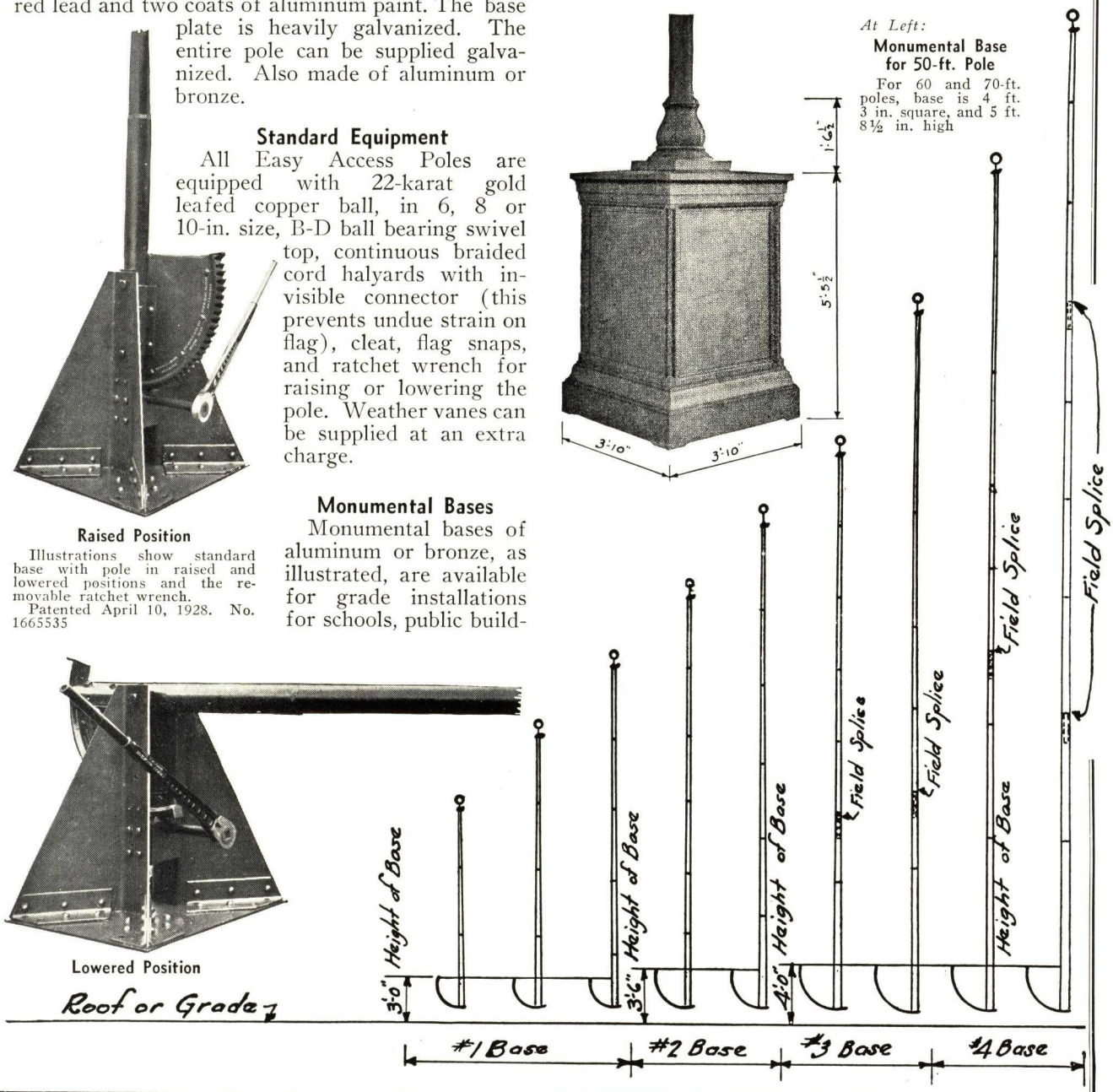
Monumental bases of aluminum or bronze, as illustrated, are available for grade installations for schools, public buildings, parks and estates when so desired. Pole and base mechanism are enclosed by the ornamental base which is easily removed when necessary to lower pole. Any tablet or inscription can be attached as desired.

At Left:

Monumental Base for 50-ft. Pole

For 60 and 70-ft. poles, base is 4 ft. 3 in. square, and 5 ft. 8½ in. high

Lowered Position

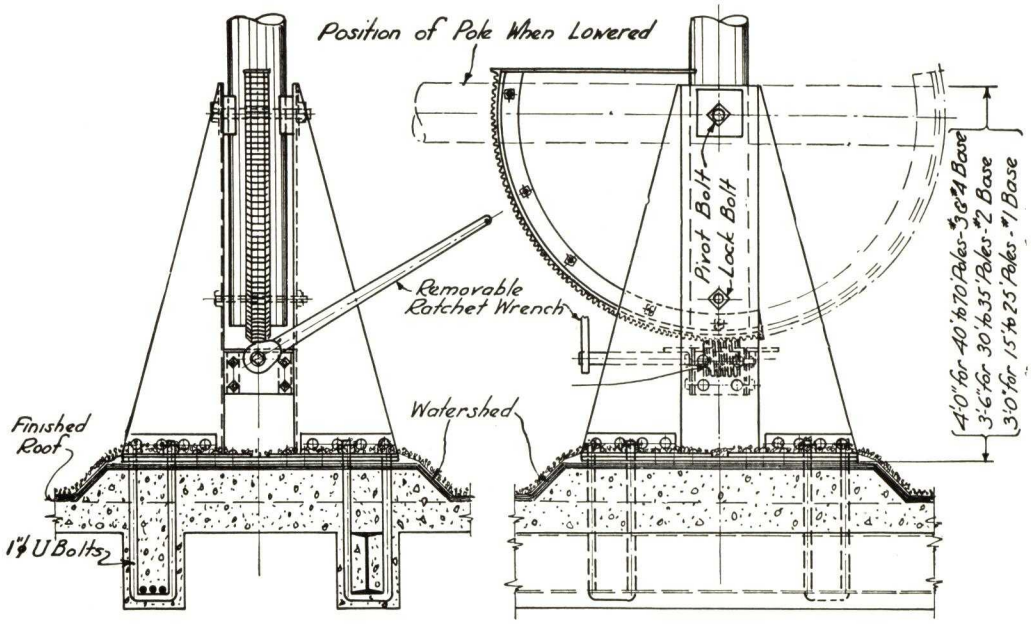


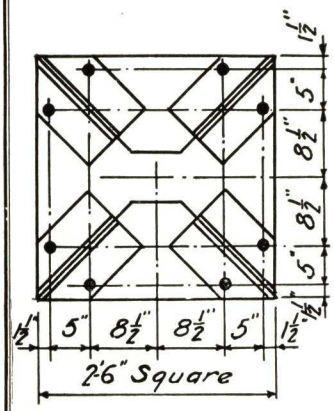
Height Above Roof or Grade	15'	20'	25'	30'	35'	40'	50'	60'	70'
Outside Dia. of Top Section	2⅜"	2⅜"	2⅜"	2⅜"	2⅜"	2⅞"	2⅞"	2⅞"	2⅜"
Outside Dia. of Bottom Section	3½"	4"	4½"	5"	5"	6⅝"	6⅝"	7⅝"	7⅝"
Dia. of Gold Leafed Copper Ball	6"	6"	6"	6"	6"	8"	8"	10"	10"
Weight of Pole	100	160	210	305	335	650	775	1225	1425
Weight of Base & Quadrant	350	350	350	475	475	775	775	1250	1250
Total Shipping Weight	450	510	560	780	810	1425	1550	2475	2675
Number of Shipping Sections of Pole	One	One	One	One	One	2	2	2	3

The above table gives dimensions and weights for standard sizes of poles, bases and fittings.

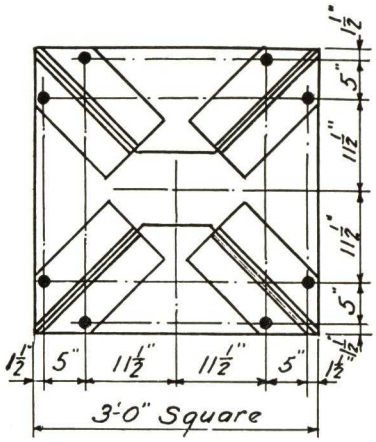
BABCOCK-DAVIS CORPORATION

STANDARD ROOF ANCHORAGE

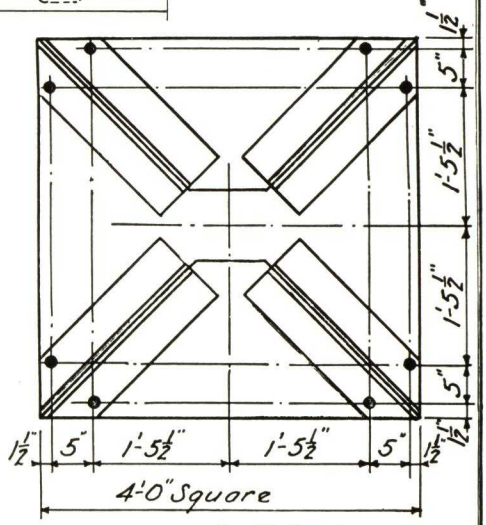




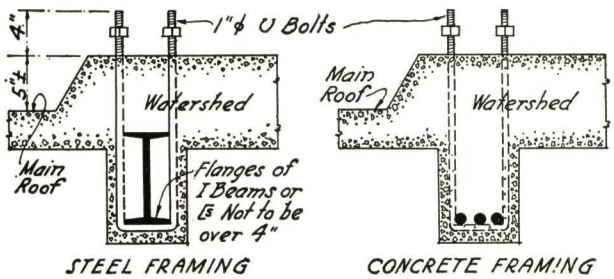
NOS. 1 AND 2 BASE FOR 15 TO 35-FT. POLES

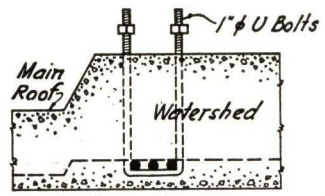


NO. 3 BASE FOR 40 TO 50-FT. POLES

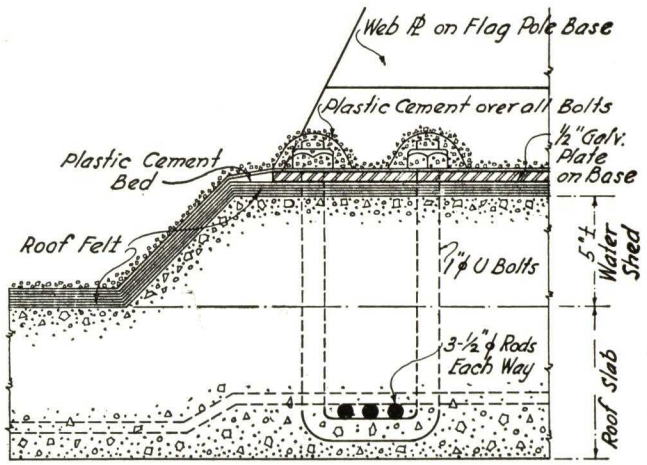


NO. 4 BASE FOR 60 TO 70-FT. POLES





DETAILS SHOWING SPACING OF BOLTS FOR BOLTING TO ROOF



1½-IN. SCALE DETAILS SHOWING METHOD OF SECURING ANCHOR BOLTS TO CONCRETE ROOF CONSTRUCTION

B-D BALL BEARING, NON-FOULING REVOLVING HALYARD TOP

Patent Applied For

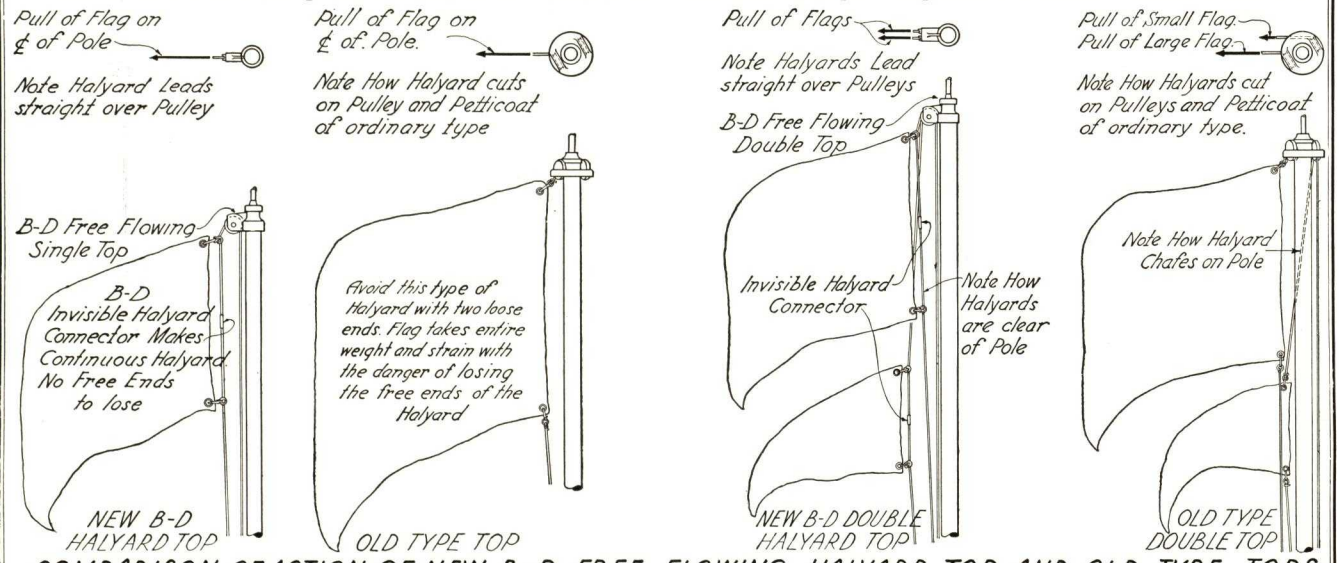
In selecting a flag pole, one very important point to consider is securing of halyard top which will always allow the flag to fly free and will not chafe or cut the halyards. The reasons why are clearly illustrated in the drawings below.

The new B-D Ball-bearing Halyard Top does not cut or chafe the halyards and allows the flag or flags to fly without fouling. It differs from the ordinary double halyard cap in principle in that the pulleys are on one side only, instead of opposite sides. For this reason the double halyards are always pulling together, straight over the pulleys of the B-D Cap, instead of across the edge of the pulley and petticoat of the ordinary type cap, thereby preventing chafing the halyard, especially if one flag is larger than the other. This chafing also occurs when only one flag is used on the ordinary type double halyard top.

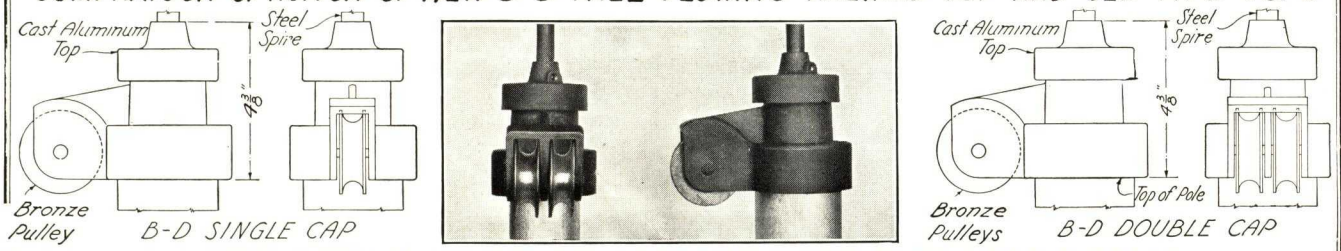
The special ball bearing construction is so sensitive it responds to the slightest shift of the breeze. The flag is always carried clear into the wind and cannot foul, no matter how strong or suddenly the wind shifts.

General Construction—Top either for single or double halyards is of two-bearing, free flying type. Bearings are made to rigid specifications, as compiled by U. S. Navy Department, governing all the control pulley bearings used for aeronautical purposes. There are 28 balls, ¼-in. diameter in each top, encased so that rain or dirt cannot reach them.

Tops are made of aluminum with a cold rolled steel spire to take finial, which is a 20-oz. spun copper ball covered with 22 karat gold leaf, waterproof sized and soldered to a seamless brass tube. This spire will also accommodate any special design, such as eagles, vanes, etc., instead of the usual ball. The bronze halyard sheaves are roller bearing on a stainless steel pin. Top will be made of bronze if so specified.



COMPARISON OF ACTION OF NEW B-D FREE FLOWING HALYARD TOP AND OLD TYPE TOPS



A FEW INSTALLATIONS OF BABCOCK-DAVIS EASY ACCESS POLES

ALABAMA: Toolen High School, Mobile
S. H. Kress Co., Montgomery

ARIZONA: Lowell School, Lowell

ARKANSAS: Park Hotel, Hot Springs

COLORADO: S. H. Kress Co., Colorado Springs
S. H. Kress Co., Pueblo

CONNECTICUT: First National Stores, Hartford
State Trade School, Hartford
State Armory, New Haven
Green Acres Farm, North Madison
The Edgar C. Stiles School, West Haven

DISTRICT OF COLUMBIA: Department of Interior Building
Woodward Lothrop Building, Washington
Cleveland-Emerson Telephone Building
Star Building, Washington
School, St. Augustine's Group, Washington

FLORIDA: S. H. Kress Co., Tampa

ILLINOIS: U. S. Post Office, Chicago
John Deere School, East Moline

KANSAS: Swift & Co., Kansas City
S. H. Kress Co., Wichita

KENTUCKY: Southern Bell Telephone Building, Louisville
Louisville Baseball Grounds, Louisville

LOUISIANA: American Bank Building, New Orleans

MAINE: Hancock County Courthouse, Ellsworth

MASSACHUSETTS: Boston City Hospital, Boston
Public Service Building, Boston
Edison Office Building, Boston
District Court Building, Springfield
St. Patrick's School, Stoneham

MICHIGAN: City National Bank Building, Lansing
Board of Water & Light Building, Lansing
Saranac High School, Saranac

NEBRASKA: Administration Building, Soldiers and Sailors Home, Grand Island
James Webb Store, Grand Island

NEW HAMPSHIRE: Armory, Dover

NEW JERSEY: Asbury Park Theatre, Asbury Park
L. F. Hersh Building, Elizabeth
First National Bank, Plainfield

NEW YORK: West Albany School, Albany
Clizbe Avenue Grade School, Amsterdam
Senior High School, Amsterdam
Auburn Senior High School, Auburn
Buffalo-Ammonia Company, Brooklyn
Abraham & Straus Dept. Store, Brooklyn
First National Bank, Lindenhurst, L. I.
First National Bank, Mamaroneck
Montauk Yacht Club, Montauk, L. I.
U. S. Courthouse, Buffalo

NO. DAKOTA: Leland Parker Hotel, Minot

OHIO: U. S. Post Office, Cleveland
Ohio Bell Telephone Co., Dayton
Norfolk & Western Railway, Portsmouth
First National Bank, Salem
Monroe Township School, Continental

PENNSYLVANIA: Municipal Building, Coraopolis
Forest Oil Building, Bradford
St. Francis Hospital, Pittsburgh

RHODE ISLAND: R. I. Hospital Trust Co., Woonsocket

SO. CAROLINA: S. H. Kress Co., Spartanburg

SO. DAKOTA: City Hall, Sioux Falls

TENNESSEE: S. H. Kress Co., Elizabethton

TEXAS: High School, Brownsville
Negro Y. M. C. A., Dallas
Dreyfuss & Sons Store, Dallas
Montgomery Ward, Fort Worth
S. H. Kress Co., Laredo
San Angelo Junior College, San Angelo

UTAH: Bingham High School, Copperton

VIRGINIA: Brooks Transfer Co., Richmond
St. Joseph's Orphanage, Richmond
Norfolk & Western Railway, Roanoke

WASHINGTON: Larson Building, Yakima

WEST VIRGINIA: Chesapeake & Potomac Telephone Building, Charleston
Harrison County Courthouse, Clarksburg

JOHN E. LINGO & SON, INC.

Flagpoles in Copper Bearing Seamless Steel, Stainless Steel, Bronze, Nickel Silver and Aluminum

TELEPHONE
Camden 487

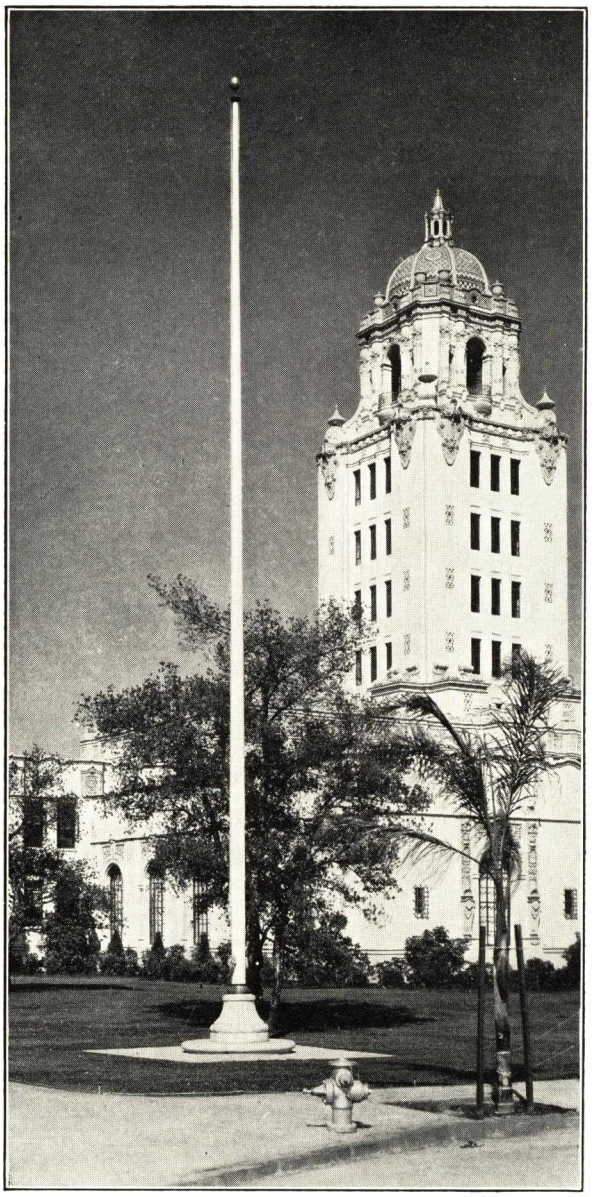
28th Street and Buren Avenue
CAMDEN, N. J.

ESTABLISHED 1897

TWO DISTINCT TYPES OF STEEL FLAGPOLES

Continuous Straight Tapered Flagpoles

Continuous Straight Tapered Flagpoles have a smooth uninterrupted exterior surface throughout without visible joints and offsets, and resemble a finished wooden flagpole in appearance. These poles taper conically and are produced in steel only. They have practically all the characteristics of the original entasis tapered poles and yet sell in a lower price range. Continuous Straight Tapered Steel Flagpoles are standardized for ground setting or roof setting and carried in stock, assuring prompt shipments. For further information please refer to pages 2 and 3.



50 Feet Above Grade, Continuous Straight Tapered Heavy Type Steel Flagpole, City Hall, Beverly Hills, Calif.

Swaged Sectional Flagpoles

Swaged Sectional Flagpoles are now fabricated in sections of copper bearing seamless steel pipe with swaged, telescoped and shrunk joints without the use of bolts, rivets, pins, screw couplings or lead calking. They are standardized for ground and roof settings in lengths from 15 to 125 ft. These poles are carried in stock and shipped in knock-down sections with field joints. The erector merely pushes or telescopes the knock-down sections together at the erection site and after the pole is erected the field joints are made airtight and watertight by calking steel to steel with an ordinary hammer and calking chisel. For further information please refer to page 4.

Other Types

We also manufacture Continuous Entasis Tapered Copper Bearing Steel, Stainless Steel, Bronze, Nickel Silver and Aluminum Flagpoles, standardized in various heights and diameters especially suitable for monuments, memorials and buildings of exceptional architectural value; and also standardized for window or outrigger settings. General catalog and pamphlets covering our complete line gladly furnished on application.

Experience and Service

For forty years flagpoles have been the exclusive specialty of this company and we believe we are responsible for most of the modern developments and refinements in this particular line.

We want architects to take advantage of the wealth of knowledge we have acquired by this long specialized experience. It is always a pleasure, therefore, to co-operate with you on problems involving the use of flagpoles and welcome opportunities to offer suggestions and prepare details with specifications, together with estimates of cost positively free of charge or obligation. Send us a rough sketch or idea of your contemplated flagpole requirements, before finally specifying, and we will promptly assist you in designing the best suited and yet most economical flagpole installation.

CONTINUOUS STRAIGHT TAPERED STEEL FLAGPOLES

We offer to the architects and all flagpole users this latest and most modern development in steel flagpole construction. In the past, the only identified types of steel flagpoles were those of either the swaged sectional or continuous entasis tapered constructions. The swaged sectional poles, fabricated in sections of steel pipe, although structurally sound, did not have the same pleasing contour as a wooden pole, due to the visible joints. The original continuous entasis tapered poles, made by expensive handwork, with a smooth uninterrupted exterior surface throughout, resulted in a metal pole with the appearance of a wooden pole, but the cost of hand production often prohibited their purchase. We realized the necessity of developing a continuous tapered steel pole at a much lower cost and finally in 1931, after exhaustive experimental work, we perfected the new Continuous Straight Tapered Steel Flagpoles which have practically all the characteristics of the original entasis tapered poles and yet sell in a lower price range.

Architects quickly recognized the outstanding features of these new poles and hundreds of installations have been made. Continuous Straight Tapered Steel Flagpoles are ideal as replacements of wooden flagpoles, for not only is the appearance the same but the steel pole affords lightning protection, unlimited life and dependability not found in a wooden flagpole.

Continuous Straight Tapered Steel Flagpoles are produced of high grade open hearth steel; have a smooth uninterrupted exterior surface throughout without visible joints and offsets, and resemble a finished wooden flagpole in appearance. They are suitable for ground setting or roof setting under any condition where a swaged sectional flagpole would be used.

These poles taper conically and are made of steel only. The wall thickness is from ¼ to ⅜-in. depending upon the butt diameter of the flagpoles as shown in the table of dimensions following.

To all railroad shipping points in Official Classification and Trans-continental Classification these poles up to 65 ft. in length are shipped in one piece, without field joints, or if over 65 ft. in length they are shipped in two pieces with one machined fit field joint. To all railroad shipping points in other Classifications the poles 36 ft. and over are shipped in two pieces with one machined fit field joint.

After the two sections are pushed together at the erection site it is necessary to weld a small circumferential bead at the joint and then file or grind the bead smooth, giving the pole an unbroken exterior surface throughout without visible joints and offsets.

Continuous Straight Tapered Steel Flagpoles are standardized for ground setting or roof setting, as shown in the tables of dimensions following, and are carried in stock, assuring prompt shipments.

Specification "G"—Continuous Straight Tapered Steel Flagpoles for Ground Setting

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J., and build concrete foundation in accordance with their standard details. Flagpole to be ground set [Heavy] [Extra Heavy] type with .... feet exposed height above ground by .... feet total length with a butt diameter of .... inches tapering conically to a top diameter of .... inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—The flagpole shall be constructed of open hearth steel of diameters, wall thickness, etc., as standardized by JOHN E. LINGO & SON, INC. for this type flagpole. The flagpole shall have a smooth uninterrupted exterior surface throughout, without visible joints or offsets.

Note: If over-all length of pole does not exceed 65 ft. for shipment to railroad points in Official Classification and Trans-continental Classification or is under 36 ft. for shipment to railroad points in other Classifications include the following: Flagpole to be shipped in one piece without field joints.

Note: If over-all length of pole exceeds 65 ft. for shipment to railroad points in Official Classification and Trans-continental Classification or is 36 ft. and over for shipment to railroad points in other Classifications include the following: Flagpole to be shipped from factory in two pieces with one machined fit field joint as designed by pole manufacturer. Pole erector must push the two sections together at the site, weld the small circumferential bead at the joint after assembly and grind or file the bead perfectly smooth.

Ball—The ball shall be of size recommended by JOHN E. LINGO & SON, INC., for this type flagpole and shall be constructed of 20-oz. copper, covered with Hastings XX gold leaf over three coats of galvanum and one coat of waterproof size. Ball to be mounted on a ¾-in. seamless brass tube and slipped over a ⅝-in. diameter galvanized rod attached to truck.

Truck—(To be used on flagpoles with top diameter up to 3½ in. only.) The truck is to be a "Lingo" standard ball bearing revolving truck, with cast iron body galvanized, revolving on manganese bronze spindle, with top and bottom ball races, with twenty-six ¼-in. diameter bronze balls each. Truck to be fitted with two 2⅜-in. diameter bronze roller bushed sheaves for ⅜-in. diameter bronze pins.

Alternate for Truck—(To be used on flagpoles with top diameters of 4 in. or over.) The truck is to be a "Lingo" extra heavy ball bearing revolving truck, with bronze body, revolving on manganese bronze spindle, with bottom ball race with thirty ¼-in. manganese bronze balls. Truck to be fitted with two 4-in. diameter bronze sheaves with bronze roller bushings and ½-in. monel metal pins.

Halyards—Provide two sets of ⅜-in. U. S. standard manila bolt rope halyards with bronze swivel snaps for securing to flag.

Cleats—Provide two 9-in. cast iron galvanized cleats tapped to flagpole with two $\frac{5}{16}$-in. galvanized flat head stove bolts.

Ground Protector—Provide a copper bearing steel ground protector, 18 in. long, extending 12 in. above and 6 in. below the grade and to be shrunk to the pole, calked on the upper edge and electric-welded on the lower edge to the flagpole.

DIMENSIONS, CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR GROUND SETTING

Exposed height, ft.	Foundation depth, ft.	Total length, ft.	Diameter, in.			Shipping weight, lb.	Wall thickness, in.
			Butt	Top	Ball		
Heavy							
20	3	23	5	3½	5	285	¼
25	3½	28½	6	3½	6	400	¼
30	3½	33½	6⅝	3½	6	605	5/16x¼
40	4	44	7⅝	3½	8	925	5/16x¼
50	5	55	8⅝	3½	8	1275	5/16x¼
60	6	66	10¾	3½	10	1750	⅜x¼
70	7	77	11¾	3½	10	2200	⅜x¼
75	7½	82½	12¾	4	12	2575	⅜x¼
80	8	88	14	4	12	2950	⅜x¼
90	9	99	15	4	14	3550	⅜x¼
100	10	110	16	4	14	4475	⅜x¼
Extra Heavy							
35	4	39	7⅝	3½	8	810	5/16x¼
40	4	44	8⅝	4	8	980	5/16x¼
45	4½	49½	9⅝	4½	8	1250	5/16x¼
50	5	55	10¾	5	10	1600	⅜x¼
60	6	66	11¾	5½	10	2150	⅜x¼
65	6½	71½	12¾	5½	12	2560	⅜x¼
70	7	77	14	5½	12	2900	⅜x¼
75	7½	82½	15	5½	14	3450	⅜x¼
80	8	88	16	5½	14	3875	⅜x¼
90	9	99	18	6½	14	5585	⅜x¼
100	10	110	20	6½	14	6285	⅜x¼

Specification "H"—Continuous Straight Tapered Flagpoles for Roof Setting, Anchored to Roof with Braces

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with .... feet exposed height above roof level with .... inches butt diameter tapering conically to a top diameter of .... inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "G.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Flash Collar—Provide bronze flash collar, place on the flagpole at the height indicated and calk metal to metal after roof flashing has been installed by the roofing contractor.

Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [steel] [wood] construction as indicated on drawing No. B-5-A of JOHN E. LINGO & SON, INC.

Braces—Provide [tubular turnbuckle] [adjustable telescope] braces of proper number, length and sizes as detailed on drawing No. B-5-A of JOHN E. LINGO & SON, INC., and complete with brace collar and brace anchors. Braces to be made of copper bearing tubular steel. Brace collar to be calked to flagpole after erection at the proper height to rigidly support the flagpole. All the necessary drilling of [steel] [wood] beams (or placing of anchors in concrete) to be located in accordance with detail drawings to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

Specification "J"—Continuous Straight Tapered Flagpoles for Roof Setting, without Braces and Penetrating Roof to Loft Floor

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with .... feet exposed height above roof plus a distance of .... feet to loft floor; flagpole butt diameter .... inches tapering conically to a top diameter of .... inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "G.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

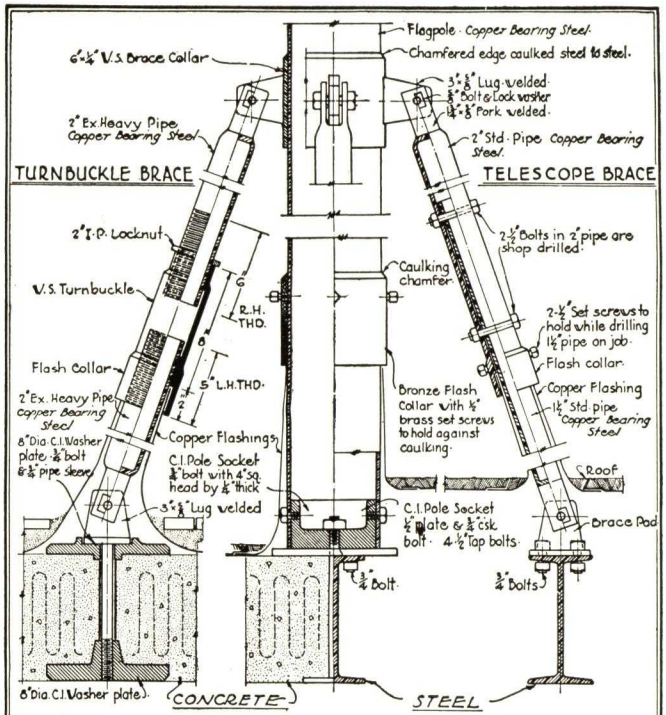
Flash Collar—(See paragraph under Specification "H.")

Roof Tube (if concrete slab) or **Guide Flange** (if steel or wood roof)—Provide [roof tube] [guide flange] of proper size to suit flagpole butt diameter; to be fastened to roof construction and calked metal to metal before roof flashing has been installed by the roofing contractor.

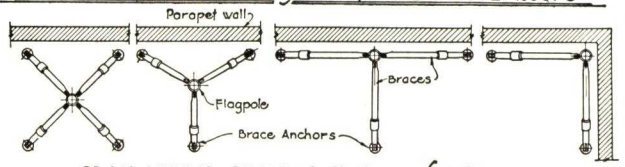
Pole Socket and Plate—(See paragraph under Specification "H.")

DIMENSIONS, CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR ROOF SETTING

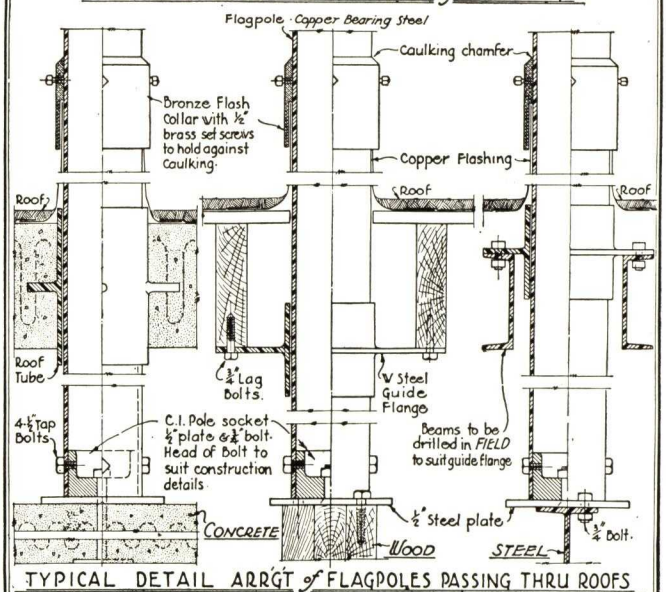
Exposed height, ft.	Diameter, in.		Shipping weight, lb.	Wall thickness, in.
	Butt	Top		
Heavy				
20	5	3½	240	¼
25	6	3½	350	¼
30	6⅝	3½	540	5/16 x ¼
40	7⅝	3½	825	5/16 x ¼
50	8⅝	3½	1130	5/16 x ¼
60	10¾	3½	1500	⅜ x ¼
70	11¾	3½	1880	⅜ x ¼
75	12¾	4	2200	⅜ x ¼
80	14	4	2510	⅜ x ¼
90	15	4	3025	⅜ x ¼
100	16	4	3850	⅜ x ¼
Extra Heavy				
35	7⅝	3½	705	5/16 x ¼
40	8⅝	4	865	5/16 x ¼
45	9⅝	4½	1090	5/16 x ¼
50	10¾	5	1390	⅜ x ¼
60	11¾	5½	1865	⅜ x ¼
65	12¾	5½	2235	⅜ x ¼
70	14	5½	2515	⅜ x ¼
75	15	5½	3000	⅜ x ¼
80	16	5½	3370	⅜ x ¼
90	18	6½	4950	⅜ x ¼
100	20	6½	5500	⅜ x ¼



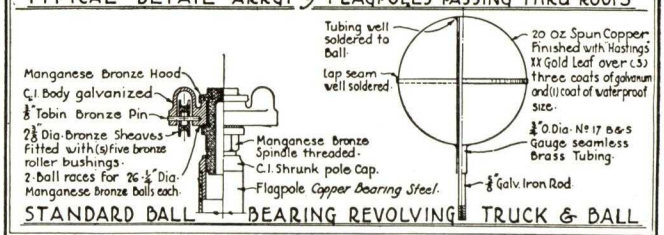
TYPICAL DETAIL ARR'GT of FLAGPOLES ABOVE ROOFS



PLAN VIEWS SHOWING TYPES of BRACING



TYPICAL DETAIL ARR'GT of FLAGPOLES PASSING THRU ROOFS

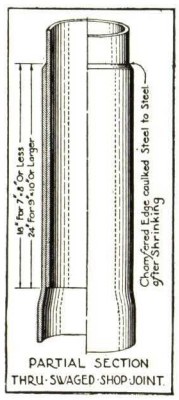


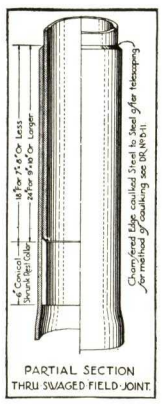
STANDARD BALL BEARING REVOLVING TRUCK & BALL

DRAWING No B5-A.	JOHN E. LINGO & SON, INC. CAMDEN, NEW JERSEY.	SCALE 1" = 1 FOOT

SWAGED SECTIONAL FLAGPOLES

These poles are now fabricated by joining consecutive diminishing diameters of new mill run of full weight standard, copper bearing seamless steel tested pipe with joints either of the *shop* type (hydraulic bell die-swaged, telescoped and shrunk) or of the *field* type (hydraulic bell die-swaged and self-aligning), constructed without bolts, pins, rivets, screw couplings or lead calking and designed to withstand wind stresses up to 90 miles per hour with a conservative bending resistance. They are shipped in one or more knocked down sections and assembled on the ground by means of the field joints. Each section is made to suit car lengths which allows transportation at a minimum rate (for less than carload lots) and each section may contain two or more pieces to produce the proper reduction. At the erection site the flagpole erector merely pushes or telescopes the sections together and after erection makes the field joints airtight and watertight by calking metal to metal with only an ordinary hammer and calking chisel. Inexperienced men may, in a minimum length of time, accomplish the erection of these flagpoles.





SWAGED SECTIONAL FLAGPOLES FOR GROUND SETTING

Exposed height, ft.	Foundation depth, ft.	Total length, ft.	Diameter, in. Butt	Top	Ball	Ship. wgt., lb.	Sections Number	Number k. d.
Light Pattern								
17	3	20	3½	2⅜	5	145	3	1
25	3½	28½	4	2⅜	5	242	4	2
33	4	37	4½	2⅜	6	360	5	2
41	4½	45½	5	2⅜	6	502	6	3
49½	4½	54	5 9/16	2⅜	6	653	7	3
57½	5	62½	6⅝	2⅜	8	850	8	4
65½	6	71½	7⅝	2⅜	8	1100	9	4
73	6	79	7⅝	2⅜	8	1310	9	5
80	7	87	8⅝	2⅜	8	1625	10	5
90	8	98	9⅝	2⅜	10	2100	11	6
100	8	108	10¾	2⅜	10	2600	12	6
Heavy Pattern								
20	3	23	4	2⅞	5	218	3	1
25	3½	28½	4½	2⅞	5	314	4	2
30	3½	33½	5	2⅞	6	405	5	2
40	4	44	5 9/16	2⅞	6	593	6	3
50	5	55	6⅝	2⅞	8	800	7	3
60	6	66	7⅝	2⅞	8	1200	8	4
70	7	77	8⅝	2⅞	8	1600	9	4
75	7½	82½	9⅝	2⅞	10	1960	10	5
80	8	88	10¾	2⅞	10	2410	11	5
90	9	99	11¾	2⅞	10	2840	12	6
100	10	110	12¾	2⅞	12	3600	13	6
125	12	137	14	2⅞	14	5414	14	7
Extra Heavy Pattern								
25	3½	28½	5	2⅞	6	380	5	2
30	3½	33½	5 9/16	2⅞	6	498	6	2
35	4	39	6⅝	3½	8	716	6	2
40	5	45	7⅝	3½	8	960	7	3
47	6	53	8⅝	3½	8	1212	8	3
55	6	61	9⅝	3½	8	1661	9	4
62	7	69	10¾	3½	10	1950	10	4
70	7	77	11¾	4	10	2612	10	5
77	8	85	12¾	4	12	3183	11	5
85	8	93	14	4	12	4260	12	6
90	10	100	15	4	14	4932	13	6
100	10	110	16	4	14	5870	14	7

Specification "A"—Swaged Sectional Flagpoles for Ground Setting

Furnish and erect a hydraulic bell die-swaged sectional copper bearing seamless steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J., and build concrete foundation in accordance with their standard details. Flagpole to be ground set [Light] [Heavy] [Extra Heavy] pattern with ..... feet exposed height above ground by ..... feet total length with ..... inches butt diameter. After erection, apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—Flagpole to be fabricated in sections of new standard full weight copper bearing seamless steel pipe of diameters, thicknesses, lengths and joints as detailed by JOHN E. LINGO & SON, INC., for this type pole. Shop joints to be hydraulic bell die-swaged, shrunk and calked steel to steel. Field joints to be calked steel to steel, airtight and watertight to prevent interior corrosion and deterioration. All joints to be constructed without the use of bolts, pins, rivets, screw couplings or lead calking.

Ball—(See paragraph under Specification "G.")
Truck—(See paragraph under Specification "G.")
Alternate for Truck—(For extra heavy pattern poles with 4-in. top diameter.) (See paragraph under Specification "G.")
Cleats—(See paragraph under Specification "G").
Ground Protector—(See paragraph under Specification "G").

SWAGED SECTIONAL FLAGPOLES FOR ROOF SETTING

Exposed height, ft.	Diameter, in. Butt	Top	Ball*	Shipping weight, lb.	Sections Number	Number k. d.
Heavy Type						
20	4	2⅞		159	3	1
25	4½	2⅞		245	4	2
30	5	2⅞		325	5	2
40	5 9/16	2⅞		500	6	3
50	6⅝	2⅞		680	7	3
60	7⅝	2⅞		990	8	4
70	8⅝	2⅞		1375	9	4
75	9⅝	2⅞		1620	9	5
80	10¾	2⅞		1750	10	5
90	11¾	2⅞		2500	11	6
100	12¾	2⅞		3000	12	6
Extra Heavy Type						
20	5	2⅞		244	5	1
25	5 9/16	2⅞		341	6	2
30	6⅝	3½		500	6	2
35	7⅝	3½		668	7	2
43	8⅝	3½		953	8	3
51	9⅝	3½		1392	9	4
59	10¾	3½		1796	10	4
67	11¾	4		2465	10	5
75	12¾	4		2970	11	5

*To suit height of building.

Specification "B"—Swaged Sectional Flagpoles for Roof Setting, Anchored to Roof with Braces

Furnish and erect a hydraulic bell die-swaged sectional copper bearing seamless steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with ..... feet exposed height above roof level with ..... inches butt diameter. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "A.")
Ball—(See paragraph under Specification "G.")
Truck—(See paragraph under Specification "G.")
Alternate for Truck—(For extra heavy type poles with 4-in. top diameter.) (See paragraph under Specification "G.")
Halyards—(See paragraph under Specification "G.")
Cleats—(See paragraph under Specification "G.")
Flash Collar—Provide bronze flash collar, place on the flagpole at the height indicated and calk metal to metal after roof flashing has been installed by the Roofing Contractor.
Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to concrete [wood] [steel] construction as indicated on drawing No. B5A of JOHN E. LINGO & SON, INC.
Braces—Provide suitable number of [turnbuckle] [telescope] braces to be of sufficient length and of sizes as detailed on drawing No. B5A of JOHN E. LINGO & SON, INC., and complete with brace collar and suitable brace anchors. Braces to be made of copper bearing tubular steel. Brace collar to be calked to flagpole after erection at the proper height to rigidly support the pole. All the necessary drilling of [steel] [wood] beams (or placing of anchors in concrete) to be located in accordance with detail drawings to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

Specification "C"—Swaged Sectional Flagpoles for Roof Setting, without Braces and Penetrating Roof to Loft Floor

Furnish and erect a hydraulic bell die-swaged sectional copper bearing seamless steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with ..... feet above roof plus a distance of ..... feet to loft floor; flagpole butt diameter to be ..... inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "A.")
Ball—(See paragraph under Specification "G.")
Truck—(See paragraph under Specification "G.")
Alternate for Truck—(For extra heavy type poles with 4-in. top diameter.) (See paragraph under Specification "G.")
Halyards—(See paragraph under Specification "G.")
Cleats—(See paragraph under Specification "G.")
Roof Tube (if concrete slab) or Guide Flange (if steel or wood roof)—To be provided of proper size to suit flagpole butt diameter; to be fastened to roof construction and calked steel to steel before roof flashing has been installed by the roofing contractor.
Flash Collar—(See paragraph under Specification "B.")
Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [steel] [wood] construction as indicated on drawing No. B5A of JOHN E. LINGO & SON, INC. Detail drawings are to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

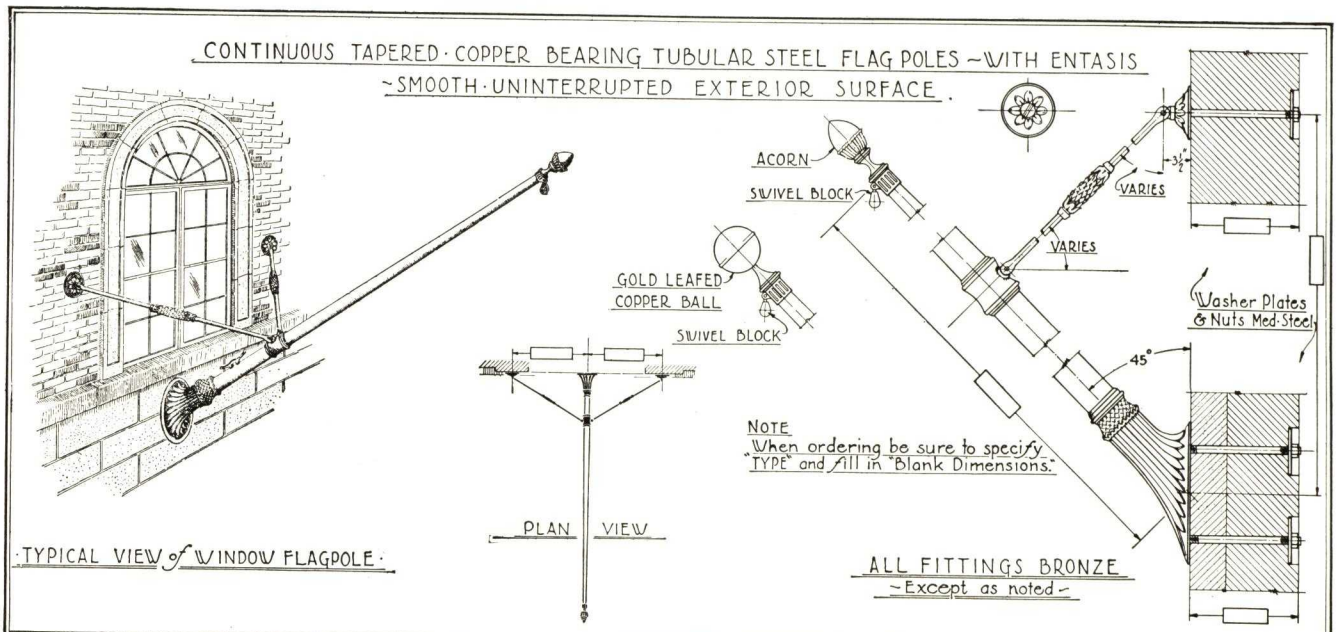
CONTINUOUS ENTASIS TAPERED OUTRIGGER FLAGPOLES

Extended from Face of Building at Fixed Angle of 45 Degrees

Outrigger or window flagpoles are suitable for bank buildings, office buildings, etc. where it is desirable to fly the flag at lower levels than a flagpole located on the roof.

For beauty and dignity we recommend the standard arrangement shown on drawing No. B-12 below. Poles of this arrangement are projected from the face of the building only at an angle of 45 degrees from the vertical and the poles have a smooth uninterrupted exterior surface throughout without visible joints and offsets. They are tapered with entasis and resemble a finished wooden flagpole in appearance.

These flagpoles are regularly produced in either bronze or copper bearing steel with bronze fittings in either case. B-12 flagpoles are also produced in bronze chromium plated, nickel silver and aluminum with the fittings of like metals.



TYPE	LIGHT						HEAVY						EXTRA·HEAVY						DRAWING NUMBER
LENGTH in FEET	16	18	20	22	25	30	16	18	20	22	25	30	16	18	20	22	25	30	B-12
DIAMETER at TOP	1½"	1½"	1½"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2½"	
DIAMETER at BUTT	2⅞"	2⅞"	2⅞"	3½"	4½"	4½"	3½"	3½"	3½"	4"	4½"	5"	4"	4"	4"	4½"	5"	5 9/16"	

Specifications for Continuous Entasis Tapered Outrigger Flagpoles Extended from Face of Building at Fixed Angle of 45 Degrees

Furnish and install a continuous entasis tapered [bronze] [copper bearing steel] [bronze chromium plated] [nickel silver] [aluminum] outrigger flagpole on the face of the building, where shown on plans, projected at an angle of 45 degrees from the vertical, all to be in strict accordance with drawing No. B-12 of JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be [Light] [Heavy] [Extra Heavy] type, ... feet long, with .... inches outside butt diameter, tapering with Venetian entasis to .... inches outside top diameter.

Flagpole shall be of continuous entasis tapered construction, with smooth uninterrupted exterior surface throughout without visible joints and offsets and shall be shipped from factory in one piece without field joints. All fittings shall be [bronze] [bronze chromium plated] [nickel silver] [aluminum], except the halyards and shall consist of one standard acorn top *(Alternate: 5-in. gold leafed copper ball)*, one pole cap with swivel block, one set of Silver Lake A No. 10 cotton braided halyards with swivel snaps, one standard base with anchor bolts, washer plates and nuts, one set of braces with ornamental couplers, brace collar, rosettes, etc. all in accordance with drawing No. B-12 of JOHN E. LINGO & SON, INC., Camden, N. J.

Other Types of Outrigger Flagpoles

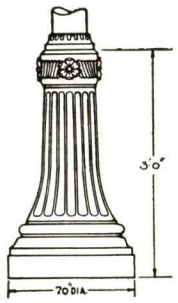
No. B-14—Similar to No. B-12 above without ornamental base. Poles of this type are provided with special hinged arrangement at butt permitting extension of pole from face of building at any definite angle desired. The poles may be righted for repainting or repairs at a minimum cost. Details and specifications gladly furnished on application.

No. B-15—Poles are 7 to 12 ft. long, supported without braces and furnished with standard ornamental bronze base. Bronze base is available in two different designs. Details and specifications gladly furnished on application.

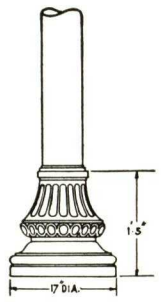
Other Products

Steel Lightning Protection Poles especially designed for private residences, country estates, etc. Poles serve as combination lightning protector, flagpole, wind direction indicator, etc. System is similar to that used by the U. S. Navy Department for lightning protection at ammunition depots and eliminates the necessity of lightning rods on buildings. Complete details on application.

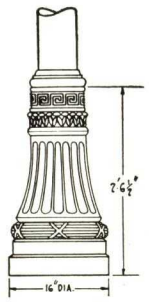
Steel Tubular Radio Poles, Masts, Vertical Radiators, etc. either guyed or free standing, for radio transmitting stations.



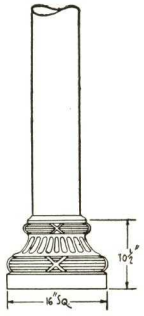
Design No. 2105
4 to 5 in.



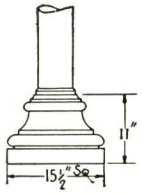
Design No. 2107
5 to 6⅝ in.



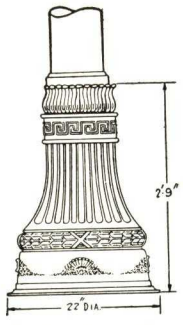
Design No. 2104
5 to 6⅝ in.



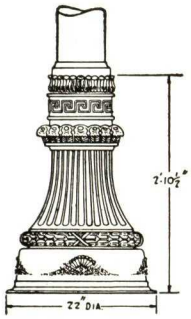
Design No. 2108
5 9/16 to 7⅝ in.



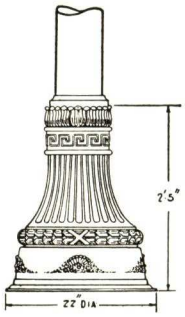
Design No. 1970
5 to 5 9/16 in.



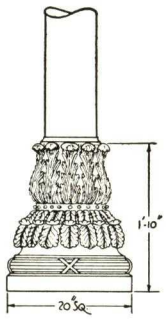
Design No. 2101
6⅝ to 8⅝ in.



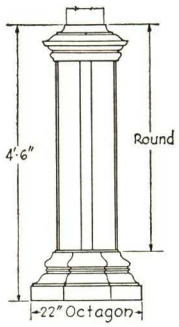
Design No. 2103
5 9/16 to 7⅝ in.



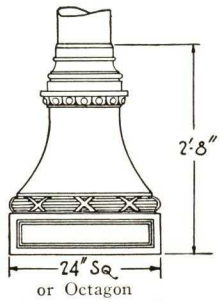
Design No. 2102
5 9/16 to 7⅝ in.



Design No. 2109
6⅝ to 8⅝ in.

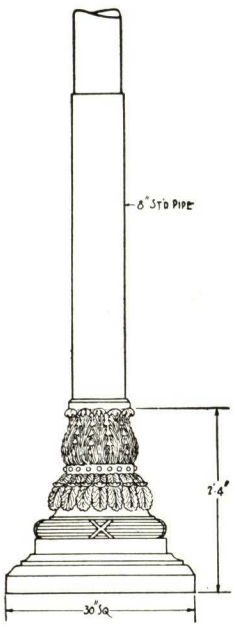


Design No. 1922
7⅝ to 9⅝ in.

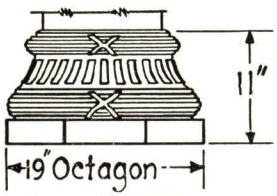


Design No. 1902
7⅝ to 9⅝ in.

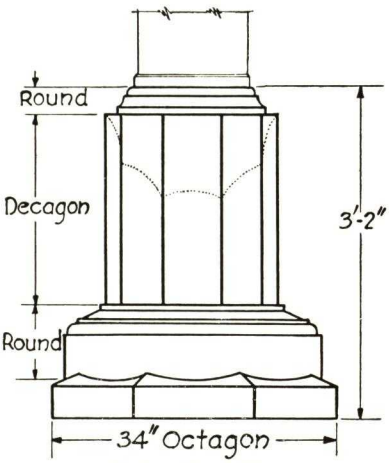
We carry in stock this complete line of ornamental cast iron flagpole bases, painted or galvanized. A ring collar is cast separate and furnished with the base to make a proper "joint" between the flagpole and the collar for hot lead calking. Each base fits certain flagpoles only the butt diameters of which are shown under each base. Before finally specifying one of these bases for a certain flagpole be sure to ascertain whether the butt diameter of the flagpole will fit the base selected.



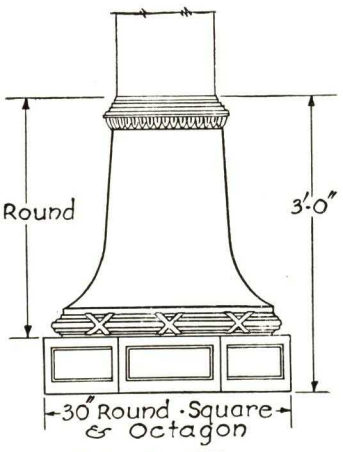
Design No. 2110
7⅝ to 8⅝ in.



Design No. 1928
9⅝ to 11¾ in.



Design No. 1934
10¾ to 14 in.



Design No. 1999
10¾ to 16 in.

NO SCALE	JOHN E. LINGO & SON, INC. FLAGPOLES IN COPPER BEARING STEEL, BRONZE AND ALUMINUM CAMDEN, N. J.	DRAWING NO. B-6

THE POLE AND TUBE WORKS, INC.

(Incorporated 1918 to Succeed Pole Department of John Simmons Co., Originators of Tubular Flag Poles)

TELEPHONE
Bigelow 3-8154

230 Pacific Street
NEWARK, N. J.

Products

METALLIC FLAG POLES in Steel, Bronze and Aluminum; ORNAMENTAL PEDESTALS; COMPLETE POLE TRIMMINGS; COMPLETE SETTING APPURTENANCES.

Our record of 30 years' specialization includes the tallest free standing metal flag pole in the world, the first taper pole, the first non-corrodible metal pole, the first hinged "Outrigger" pole and the first of every improvement in metal flag pole construction.

Service

Typical installation plates and erection details for any flag pole project; monumental effects, roof poles, outrigger and ground set type. Catalogue on request.

Types

"T"—Copper alloy steel pipe with telescopic, swaged and shrunk joints.

STANDARD FOR ROOF OR GROUND SETTING			LIGHT PATTERN FOR GROUND SETTING ONLY			
Visible hgt., ft.	Diameter, in.		Visible hgt., ft.	Over-all lgth., ft.	Diameter, in.	
	Butt	Tip			Butt	Tip
20	4	2 3/8	17	20	3 1/2	2 3/8
25	4 1/2	2 3/8	25	28 1/2	4	2 3/8
30	5	2 7/8	33	37	4 1/2	2 3/8
40	5 9/16	2 7/8	41	45 1/2	5	2 3/8
50	6 5/8	2 7/8	49 1/2	54	5	2 3/8
60	7 5/8	2 7/8	57 1/2	62 1/2	6 5/8	2 3/8
70	8 5/8	2 7/8	65 1/2	71 1/2	7 5/8	2 3/8
75	9 5/8	2 7/8	73	79	7 5/8	2 3/8
80	10 3/4	2 7/8	80	87	8 5/8	2 3/8
90	11 3/4	2 7/8	90	98	9 5/8	2 3/8
100	12 3/4	2 7/8	100	108	10 3/4	2 3/8

Additional "butt" length should be provided for bracing to roof or embedment in concrete foundation if ground set—usually about 10% of height.

The "over-all" length of these Light Pattern poles cannot be changed without undue increase in cost.

"C"—"Conetaper" in steel. Smooth, uninterrupted exterior surface—a low cost product of superior appearance and service. The taper is 1 in. in 7 ft.; produced by special machinery and unchangeable.

HEAVY TYPE			EXTRA HEAVY TYPE		
Visible hgt., ft.	Diameter, in.		Visible hgt., ft.	Diameter, in.	
	Butt	Tip		Butt	Tip
20	5	3 1/2	35	7 5/8	3 1/2
25	6	3 1/2	40	8 5/8	4
30	6 5/8	3 1/2	45	9 5/8	4 1/2
40	7 5/8	3 1/2	50	10 3/4	5
50	8 5/8	3 1/2	60	11 3/4	5 1/2
60	10 3/4	3 1/2	65	12 3/4	5 1/2
70	11 3/4	3 1/2	70	14	5 1/2
75	12 3/4	4	75	15	5 1/2
80	14	4	80	16	5 1/2
90	15	4	90	18	6 1/2
100	16	4	100	20	6 1/2

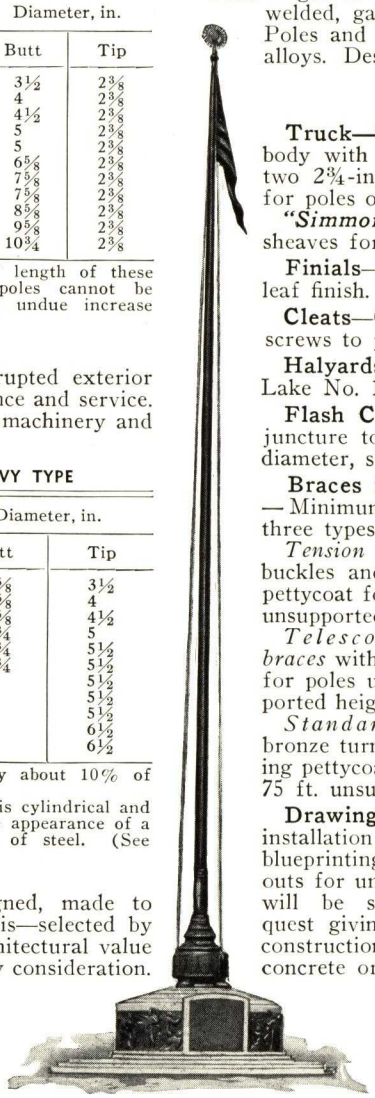
Provide additional "butt" length for setting; usually about 10% of height.

Approximately one-third of the height of above poles is cylindrical and thence tapered, truly conically, to the tip, combining the appearance of a perfectly dressed wood pole with all the superiority of steel. (See note "N".)

"E"—"Entasis" poles are individually designed, made to order and are a replica of the Venetian entasis—selected by many architects for projects of outstanding architectural value and monumental character with cost a secondary consideration. (See Note "N.")

Note "N"—Metals

Non-corrodible poles in bronze, aluminum or nickel alloy tubing, either conetaper or with entasis up to about 20 ft. long. For greater length we advise steel poles *jacketed* with such alloys, insulated against galvanic action and welded into a homogeneous jacket over the steel pole. Such jacketed poles are far safer, stronger and cheaper than only alloy construction. Owing to limitations in production we solicit inquiries giving sizes and preferred metal for quotations and design prior to specifying.



Bronze Taper Pole, 100 Feet above Pedestal, Union Square, New York, N. Y.
CHAS. B. MEYERS, Architect
ANTHONY DE FRANCISCI, Sculptor

Window or Outrigger Poles

Both hinged at butt or with permanent 45° sockets; also in welded, galvanized iron or other than 45° inclination. Poles and fittings in steel, bronze, aluminum or nickel alloys. Descriptive circulars on request.

Pole Trimmings

Truck—*"Poletube" Truck*—Galvanized or bronze body with ¼-in. bronze bearing balls to kingpin and two 2¾-in. bronze sheaves on bronze roller bearings for poles of 3½-in. tip diameter or smaller.

"Simmons" Truck—Same as above but with 4-in. sheaves for poles 4-in. tip diameter or larger.

Finials—"Ball" or "Vane" finials of copper, gold leaf finish.

Cleats—Galvanized or brass 9-in.; two 5/16-in. cap screws to pole.

Halyards—U. S. manila bolt rope ⅜ in. or Silver Lake No. 10A.

Flash Collar—For permanent weathertight, flexible juncture to roof waterproofing—bronze up to 10¾-in. diameter, steel up to 20-in.

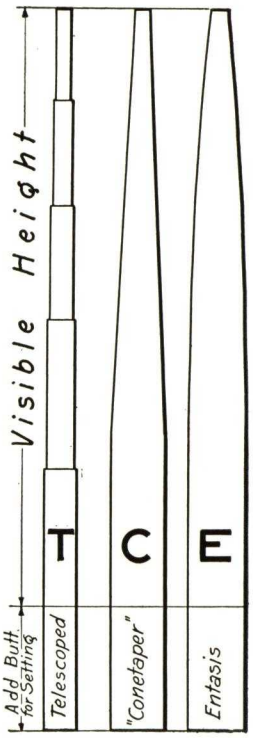
Braces for Roof Setting—Minimum two at 90° in three types:

Tension braces with turnbuckles and integral flashing pettycoat for poles up to 25 ft. unsupported height.

Telescoped adjustable braces with flashing pettycoat for poles up to 50 ft. unsupported height.

Standard tubular with bronze turnbuckles and flashing pettycoats for poles up to 75 ft. unsupported height.

Drawings, etc.—Typical installation drawings (for blueprinting) and special layouts for unusual construction will be submitted on request giving details of roof construction—structural steel, concrete or wood.



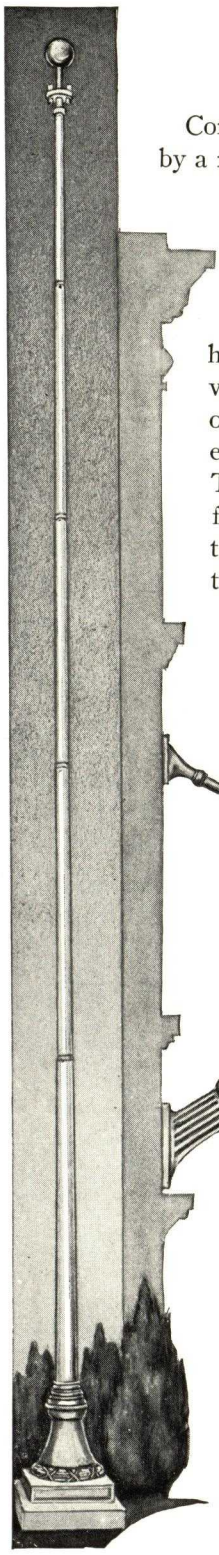
Bases or Pedestals

Large assortment of patterns for stock types. Illustrated circular on request.

TRAFFIC & STREET SIGN COMPANY

Flagpoles Made of Steel, Copper Bearing Steel, Stainless Steel, Bronze and Aluminum

88 Foundry Street
NEWARK, N. J.



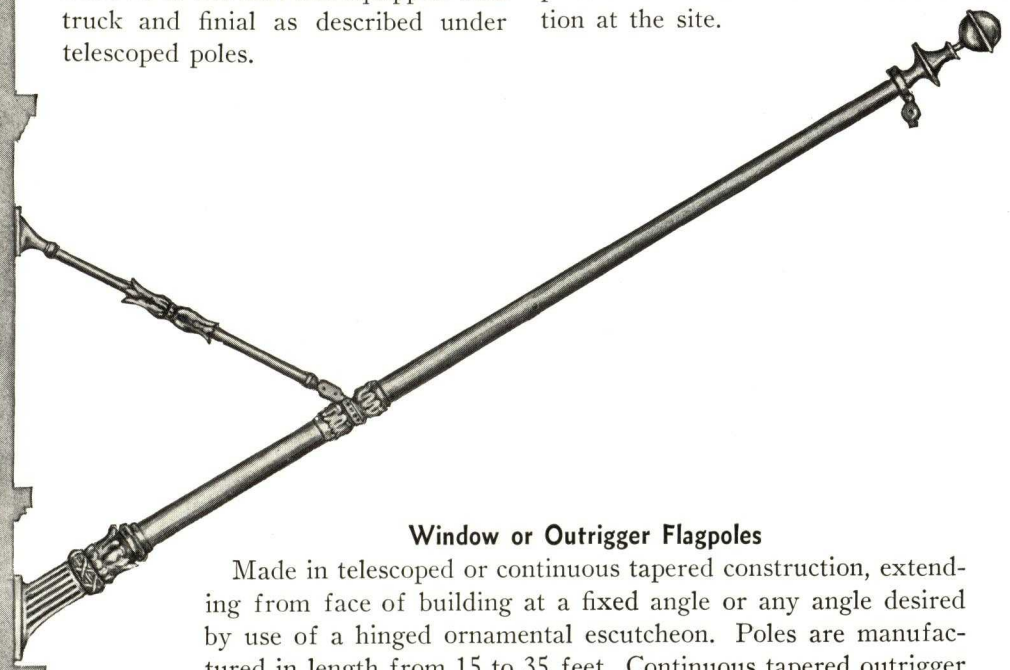
Continuous Tapered Flagpoles

Continuous tapered flagpoles are made by a new process, giving pole an increased strength. Material used in construction of these poles is steel, copper bearing steel, stainless steel, bronze or aluminum. Continuous tapered flagpoles are used where the poles have to be of exceptional architectural value. These flagpoles are made to order and conically tapered or with entasis as specified by the architect. The poles are furnished in lengths from 20 to 125 feet and equipped with truck and finial as described under telescoped poles.

Telescoped Sectional Flagpoles

These poles are produced with shrunk, welded watertight joints, neatly graduated. Stock length from 15 to 130 feet. All joints are constructed without the use of lead calking, bolts or rivets. Poles furnished with bronze ball bearing revolving trucks, galvanized cast iron or bronze body, bronze spindle, bronze sheaves, with bronze roller bearings and finished with 23K gold leaf ball made of 20-ounce copper.

Telescoped poles are shipped in one piece or in sections 22 to 36 feet for erection at the site.



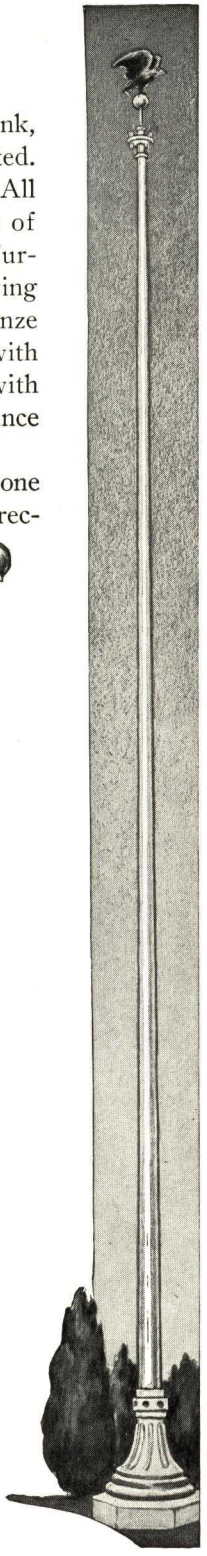
Window or Outrigger Flagpoles

Made in telescoped or continuous tapered construction, extending from face of building at a fixed angle or any angle desired by use of a hinged ornamental escutcheon. Poles are manufactured in length from 15 to 35 feet. Continuous tapered outrigger poles are made of steel, copper bearing steel, stainless steel, galvanized steel, bronze or aluminum. These poles are furnished complete with bronze pulley, block, cleat, halyard, spear head, ball or any other ornamental finial.

Tilting Flagpoles

Manufactured in four sizes:

No. 0—20 feet high.
No. 1—25 feet high.
No. 2—32½ feet high.
No. 3—40 feet high.



BILCO MANUFACTURING COMPANY

Manufacturers of All-Steel Bulkheads for Residences
Also Sidewalk Doors

164 Hallock Avenue, NEW HAVEN, CONN.

BILCO BULKHEADS FOR RESIDENCES

These bulkheads, manufactured throughout of 12 gauge copper steel, are designed to last as long as the building itself. They are neat in appearance; corrosion, termite and burglar proof; cannot warp out of shape and will function perfectly almost indefinitely.

They are shipped knocked down in five parts with the necessary assembly bolts and can be assembled and built into place in less than one hour when provision is made to receive them.

They are given a shop coat of gray paint when shipped but may be painted any color desired.

Types and Sizes

Bilco Bulkheads are made in three types, designed for use with either masonry or frame construction. Each type is made in three stock sizes.

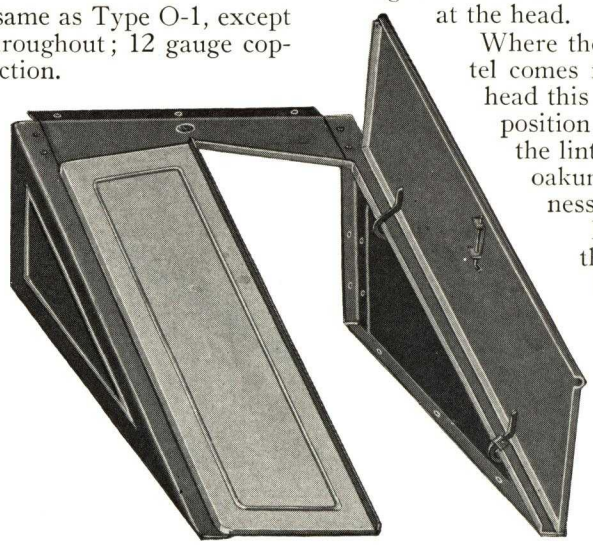
Type O-1—Of 12 gauge copper steel and has paneled doors and sides.

Type O-3—Essentially the same as Type O-1, except it is of smooth construction throughout; 12 gauge copper steel is used in its construction.

Type O-2—Similar in construction to the other two types, except that doors are 10 gauge diamond pattern plate. This construction gives underfoot security and is intended for use where unusually rough usage will be encountered.

Sizes—Each of these types is made in 3 sizes as shown by the accompanying table and diagram.

In addition to the stock sizes shown, bulkheads may be had in special sizes when so specified.



Type O-1 Bulkhead

Hardware

Bulkheads are regularly equipped with 2 hinges to each door, a sliding bolt for locking the doors from inside and a lift-handle.

Hinges are of ½ x ¾-in. bar iron secured to the underside of the doors and are inaccessible from the outside when doors are closed and bolted. Lower hinge on each door is equipped with an automatic safety catch so that when either or both doors are fully opened, they are automatically held in that position until the hinge device is tripped by hand or foot. It is of very simple construction and prevents the doors being blown or knocked shut.

A substantial bolt securely locks the doors from inside.

Installation of Bilco Bulkheads

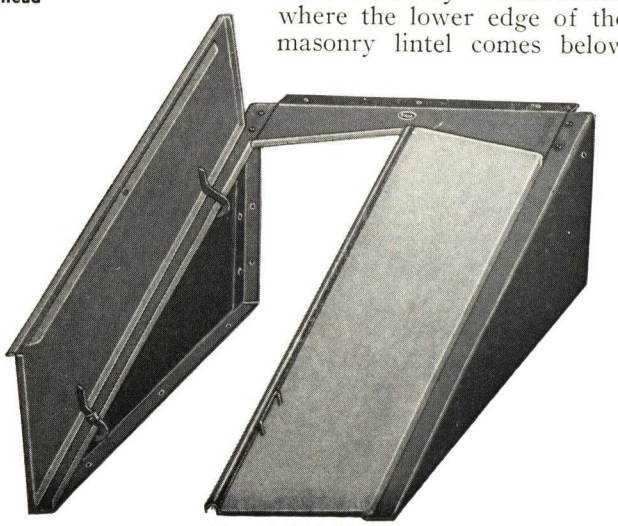
These bulkheads are made for use with masonry or frame construction, and the construction is similar throughout with the exception of the projecting flange at the head.

Where the lower edge of the masonry lintel comes flush with the head of the bulkhead this flange is supplied in a horizontal position for bolting to the underside of the lintel; the joint is then caulked with oakum and plastic for weathertightness.

In frame construction or where the lower edge of the masonry lintel comes below the head of the bulkhead the flange is supplied in a vertical position. In frame construction the flange is secured to the sheathing and the siding; shingles or stucco carried down over it. With this installation, the bulkhead frame is put in place during the progress of construction.

In masonry construction where the lower edge of the masonry lintel comes below

Type O-2 Bulkhead



Type O-3 Bulkhead

the head of the bulkhead, the bulkhead is shipped with the vertical flange turned down. After setting in place the joint between the masonry and steel is then caulked as previously described.

The dimension diagram herewith shows the location of all anchor bolts. These bolts may be set in place by the mason during construction to receive the bulkhead when all rough work is completed. At the time of installation the flanges at the bottom and ends of side members should be embedded firmly in a cushion of roofing cement or Vulcatex, to insure weathertightness.

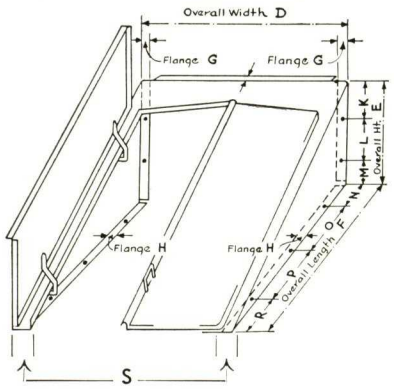
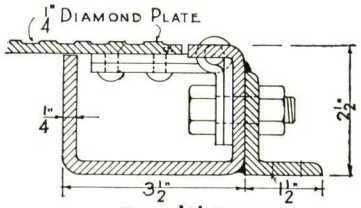


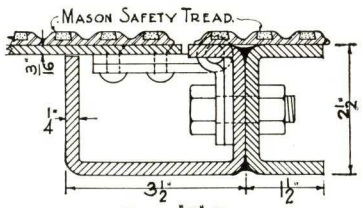
TABLE OF DIMENSIONS, WEIGHTS, ETC.

Dimensions	Type O-1 Size A	Type O-1 Size B	Type O-1 Size C	Type O-2 Size A	Type O-2 Size B	Type O-2 Size C	Type O-3 Size A	Type O-3 Size B	Type O-3 Size C
D	3′ 11″	4′ 3″	4′ 7″	3′ 11″	4′ 3″	4′ 7″	3′ 11″	4′ 3″	4′ 7″
E	2′ 0½″	1′ 10″	1′ 7½″	2′ 0½″	1′ 10″	1′ 7½″	2′ 0½″	1′ 10″	1′ 7½″
F	4′ 10″	5′ 4″	6′ 0″	4′ 10″	5′ 4″	6′ 0″	4′ 10″	5′ 4″	6′ 0″
G	1½″	1½″	1½″	1½″	1½″	1½″	1½″	1½″	1½″
H	1½″	1½″	1½″	1½″	1½″	1½″	1½″	1½″	1½″
K	4″	4″	4″	4″	4″	4″	4″	4″	4″
L	1′ 4″	1′ 2″	1′ 0″	1′ 4″	1′ 2″	1′ 0″	1′ 4″	1′ 2″	1′ 0″
M	4″	4″	3½″	4″	4″	3½″	4″	4″	3½″
N	6″	6″	6″	6″	6″	6″	6″	6″	6″
O	1′ 10″	2′ 1″	2′ 4″	1′ 10″	2′ 1″	2′ 4″	1′ 10″	2′ 1″	2′ 4″
P	1′ 10″	2′ 1″	2′ 4″	1′ 10″	2′ 1″	2′ 4″	1′ 10″	2′ 1″	2′ 4″
R	8″	8″	10″	8″	8″	10″	8″	8″	10″
S	3½″	3½″	3½″	3½″	3½″	3½″	3½″	3½″	3½″
Price	$40.00	$42.00	$44.50	$34.00	$35.00	$36.50	$30.00	$32.00	$34.00
Shipping weight, lbs.	180	200	225	180	200	225	180	200	225

BILCO PATENT SIDEWALK DOORS



TYPE "A" FRAME.



TYPE "B" FRAME.

Bilco Sidewalk Doors embody the finest quality materials and workmanship. They are made in two models. Standard Model for use where maximum loading will not exceed 100 lbs. per sq. ft. and the span is 6 ft. or less and the Heavy Duty Model for loads of over 100 lbs. per sq. ft. and spans of over 6 ft. For Heavy Duty Doors the standard frame is specially reinforced with ½-in. square cross ties welded in and spaced so as to suit the required loading. The Standard Model is made in three standard sizes. The Heavy Duty Model is not made to standard dimensions but is furnished to meet customers' special requirements. Standard as well as Heavy Duty Models can be supplied with diamond pattern plate surfacing or Mason safety tread surface.

All models are guaranteed absolutely watertight.

All models are equipped with Bilco, non-breakable, rolled brass hinges, rugged bolt for locking from inside and chain to hold doors in upright position when open.

An excellent grade cover for sidewalk elevators of any size.

TYPE A—STOCK SIZES

Type	Clear opening Width	Clear opening Length	Shipping wt., lbs.	Price
A-1	2′ 10″	3′ 4″	230	$46.00
A-2	3′ 4″	3′ 10″	255	48.50
A-3	3′ 10″	3′ 10″	280	52.00

Type A doors made to special sizes; clear openings from 9 to 60 sq. ft. using standard door frame.

TYPE B—STOCK SIZES

Type	Clear opening Width	Clear opening Length	Shipping wt., lbs.	Price
B-1	2′ 10″	3′ 4″	265	$65.00
B-2	3′ 4″	3′ 10″	290	70.00
B-3	3′ 10″	3′ 10″	320	75.00

Type B doors made in special sizes; clear openings from 9 to 60 sq. ft. using standard or heavy duty door frame.

Type A Sidewalk Door

Type B Sidewalk Door

THE CANTON FOUNDRY & MACHINE CO.

DIVISION OF THE HILL CLUTCH MACHINE & FOUNDRY CO.

Manufacturers of Building Specialties

6400 Breakwater Avenue, CLEVELAND, OHIO

NEW YORK OFFICE: Room 401, 401 Broadway—Telephone, CAnal 6-2065

PRODUCTS

BUILDING SPECIALTIES, which include:
Sidewalk Doors; Coalhole Covers; Sidewalk Ventilators; Area Gratings; Illuminating Iron Sidewalk Plates; Sidewalk Gutter Boxes; Conductor Connections; Conductor Boots; Ash Pit Doors; Stack Doors; Coal Chutes (Foundation); Coal Doors; Wheel Guards; Valve Covers; Drain Covers; Water Meter Covers; Lamphole Covers; Catchbasin Covers; Manhole Covers; Street Drain Boxes; Street Castings and Automobile Turntables.

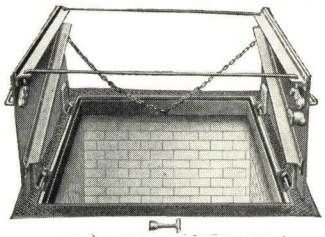
WATERPROOF SIDEWALK DOORS

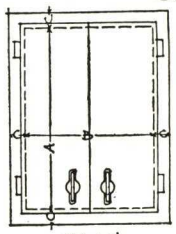
Construction

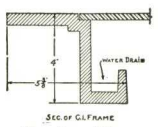
Our doors are constructed with a heavy cast iron frame cast in one piece, which will last indefinitely, because cast iron has a very great resistance to corrosion. Frame has a large water drain cast entirely around the inside and is provided with a drain through the center where the doors meet. The leaves are ¼-in. checkered steel plate reinforced with angles and provided with heavy removable cast iron hinges having bronze hinge pins.

CLEAR OPENING SIZES
All dimensions in inches

A	B	A	B	A	B
Double Leaf					
30	42	48	36	60	60
30	48	48	48	66	36
36	36	54	48	66	48
36	48	57	57	72	36
40	48	60	36	72	48
44	44	60	48	72	60
Single Leaf					
20	18	24	24	30	30
24	18	30	24	36	30







Section Thru C.I. Frame

Specifications

Double Leaf Doors—Furnish and install, flush type, Double Steel Leaf Sidewalk Doors, of the clear opening size as shown on the plans, and as manufactured by THE CANTON FOUNDRY & MACHINE CO., Cleveland, Ohio.

Doors to be constructed with a heavy cast iron frame, cast in one piece, with a 1¼x1-in. water drain, cast around the inside of frame, this drain to be provided with two ¾-in. pipe taps for attaching pipe drains to sewer or sump.

Checkered steel door leaves to be ¼ in. thick, reinforced with 3x2x¼-in. angles, and provided with a 2x$\frac{3}{16}$-in. channel drain through center where doors meet.

Door leaves to be provided with heavy removable cast iron hinges with bronze hinge pins.

Doors to lock and unlock from inside only, by means of sliding bolt type lock, and provided with stay rod and chains to hold the same in open position.

Single Leaf Doors—Furnish and install, flush type, Single Leaf Steel Sidewalk Doors of the clear opening size as shown on the plans and as manufactured by THE CANTON FOUNDRY & MACHINE CO., Cleveland, Ohio.

Doors to be constructed with a heavy cast iron frame, cast in one piece, with a 1¼x1-in. water drain around the inside of frame, this drain to be provided with two ¾-in. pipe taps for attaching pipe drains to sewer or sump.

Checkered steel door leaf to be ¼ in. thick, provided with heavy removable cast iron hinges with bronze hinge pins and sectors for holding door open, and locking same when closed.

UNIVERSAL CAST IRON LEADER BOOTS AND AUTOMOBILE TURNTABLES

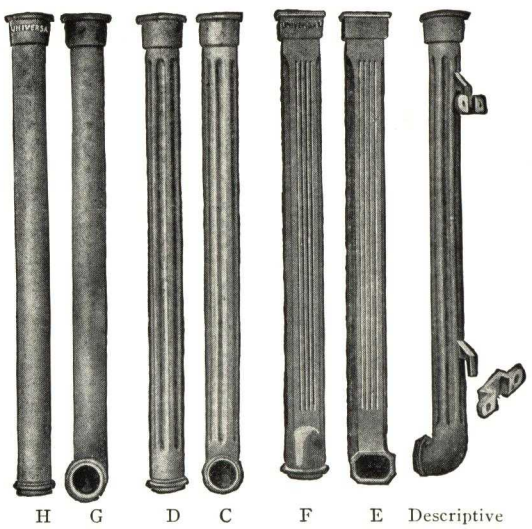
The use of cast iron boots eliminates any possible chance of having an unsightly, rusted out down-spout. They cannot become broken or displaced, and when installed have a very neat appearance and are an added attraction to the finished building.

Construction and Finish—"Universal" Leader Boots and Connections are constructed of cast iron. The castings are sand-blasted and all fins are carefully removed. They are easily installed, being provided with lugs for attaching them to wall brackets. They are designed to correspond with plain round, round corrugated and square corrugated copper or galvanized iron conductor pipe.

SIZES

Style	Size, in.	Style	Size, in.
C, D, H, G	3	F, E	2¾ x 3½
	4		3¼ x 4½
	5		4¼ x 5½
	6		5¼ x 6½

Standard stock sizes are 4 ft. 6 in. over all. Can furnish any length desired, also special sizes. Styles H, D and F are used with underground soil pipe or tile drains. Styles G, C and E discharge water on sidewalk or driveway.



H G D C F E Descriptive

Specifications—Furnish and install for all downspout connections "Universal" Cast Iron Leader Boots or Connections manufactured by THE CANTON FOUNDRY & MACHINE CO., Cleveland, Ohio, of the style, size and length as shown on the plans. Same to be provided with lugs and 1½-in. wall brackets for attaching to building.

Automobile Turntables

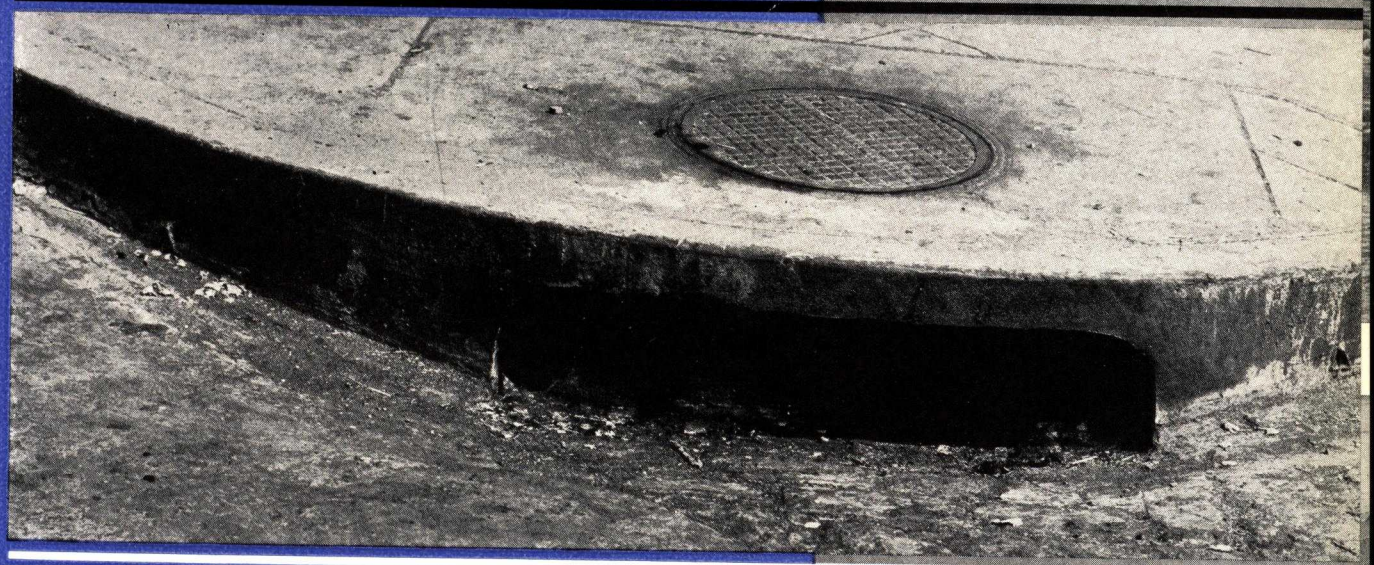
Made in two styles; one without pit which may be placed anywhere on a solid base; the other placed over a pit which is furnished with or without a washrack extension which may be connected to the drain to take away water used in washing cars.

Made for passenger cars in diameters from 14 to 16 ft. and for trucks and busses up to 30 ft. Capacities range from 3 to 15 tons. Furnished for manual or electric operation. Complete directions for erecting are furnished with each order. Any careful mechanic can install them.

ARMORED CONCRETE *and* STANDARD CONSTRUCTION CASTINGS

NOVEMBER, 1937

CATALOG NO. 109



THE CONSTRUCTION CASTINGS CORPORATION
THE ARMORED CONCRETE CORPORATION
FLOCKHART FOUNDRY COMPANY
NEWARK, N. J.

SECTION ONE

ARMORED CONCRETE

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DOORWAY GUARDS 8
DROP CURB 7
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SIDEWALK 6
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TRENCH FRAMES AND COVERS 10
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HYDRANT AND VALVE BOXES 22
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THE CONSTRUCTION CASTINGS CORPORATION

THE ARMORED CONCRETE CORPORATION

FLOCKHART FOUNDRY COMPANY

84 POLK STREET NEWARK, N. J. PHONES: MARKET 3-0740
RECTOR 2-7590

ARMORED CONCRETE

A Revolutionary Type of Construction Against the Destructive Factors of IMPACT • ABRASION • CORROSION

FOR USE IN CONSTRUCTING

Curbs	Wheel Guards	Doorways
Driveways	Loading Platforms	Column Guards
Edges of Pavement	Railway Platforms	Wainscoting
Traffic Markers	Surbases	Trench Frames

ARMORED CONCRETE is concrete with the exposed vertical surfaces armored with gray cast iron. This armor is bonded to the concrete in such a manner that no part of it can vibrate in the slightest degree. Consequently there can be no fracture of the iron. Since cast iron is substantially incompressible the force of an impact is so widely distributed that the concrete is undamaged. The resistance of the cast iron element to abrasion and corrosion is evident. The coefficients of expansion of cast iron and concrete are for all practical purposes identical so that the armored concrete is unaffected by variations of temperature.

WHY CAST IRON IS USED

Concrete cannot withstand abrasion or impact without surface damage. Steel shapes have been long used in an effort to protect concrete from impact and abrasion, but because steel is flexible it transmits impacts directly into the concrete, thereby breaking down the concrete.

Cast iron is markedly superior to steel from the standpoint of abrasion, corrosion and facility of shaping. Its single fault has been that it failed under impact. This difficulty is entirely eliminated by the Armored Concrete system of construction which makes cast iron the perfect armoring material.

ARMORED CONCRETE HAS BEEN ADEQUATELY TESTED

In 1924 initial Armored Concrete installations were made at selected points in Metropolitan New York where they would be subjected to the most severe conditions of impact and abrasion. Locations were purposively selected which would subject the construction to the most grueling punishment. Not one failure occured.

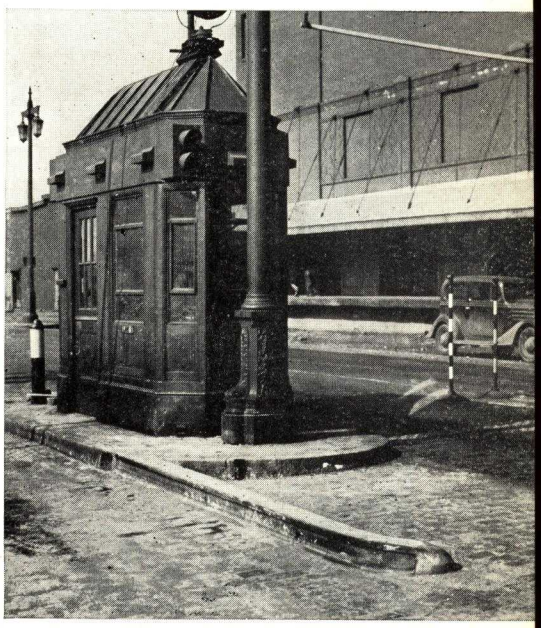
Since then hundreds of Armored Concrete installations have been made, in cases where other types of construction have failed, and they have withstood in all instances the double test of time and performance.

AVAILABILITY

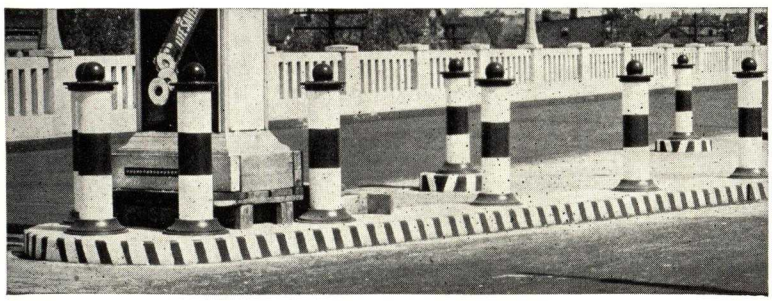
On the following pages are described the more common types of Armored Concrete construction. Because cast iron can be cast into the most complex shapes, Armored Concrete can be adapted to many situations not described there. The Engineering Department of the Armored Concrete Corporation is prepared to make detailed recommendations covering all phases and application of its products. Estimates will be prepared without obligation.

The composite cast iron and concrete structure are both protected by U. S. letters patent No. 1789829.

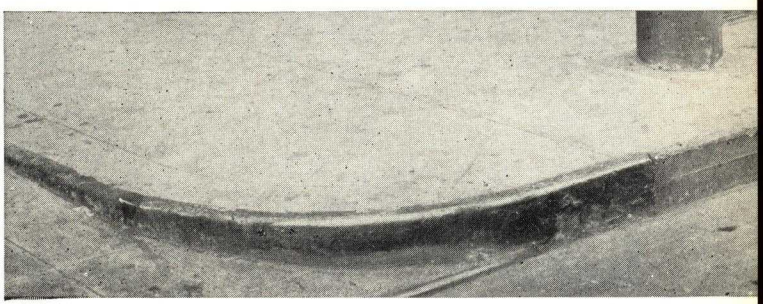
Cast Iron Components before Cove Was Poured, Pennsylvania Railroad Station, Newark, N. J.



Armored Concrete Curb at Toll Booth, New Jersey Approach of Holland Tunnel, N. Y. C.

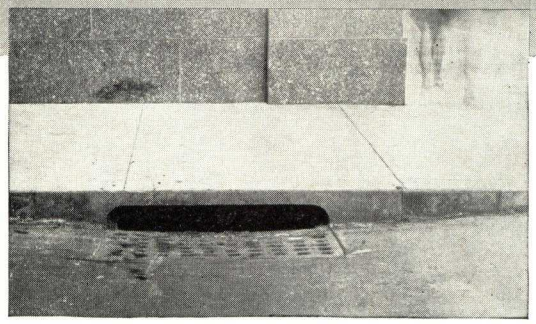


Armored Concrete Traffic Island at Jersey City Approach to Holland Tunnel, N. Y. C.



Armored Concrete Drop Curb at L. Bamberger and Co., Newark, N. J.

13/52



Armored Concrete Curb Inlet, L. Bamberger & Co., Newark, N. J.

CHARACTERISTICS OF ARMORED CONCRETE

1. IMPACT RESISTANCE—Armored Concrete is the only commercially known structure that resists impacts perfectly.

2. ABRASION RESISTANCE—All surfaces subject to abrasion are protected by the cast iron component. The performance of cast iron under abrasion is evident.

3. CORROSION RESISTANCE—The corrosion of cast iron as used in Armored Concrete is negligible.

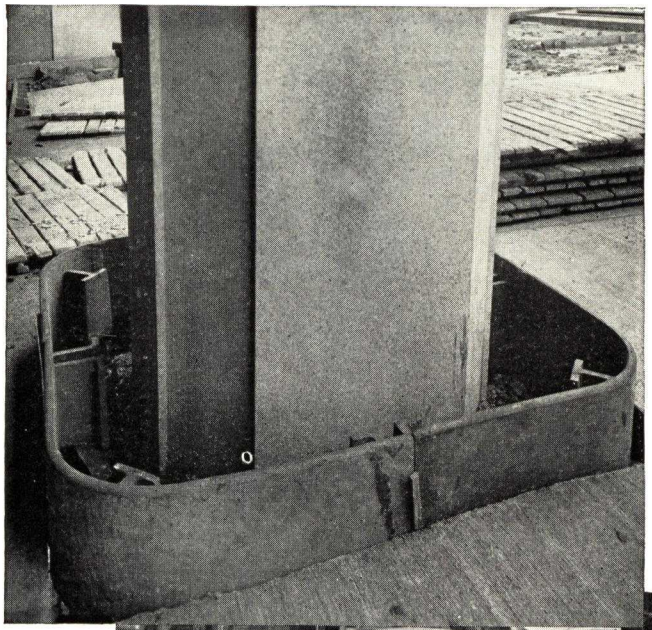
4. VARIATION OF TEMPERATURE—The coefficients of expansion of cast iron and concrete are so very slightly different that Armored Concrete is not damaged by temperature variations.

5. FIRE RESISTANCE—The cast iron prevents Armored Concrete from being damaged by fire.

6. ELIMINATION OF FORMS—When Armored Concrete is used much form work is eliminated. This greatly simplifies construction and reduces costs.

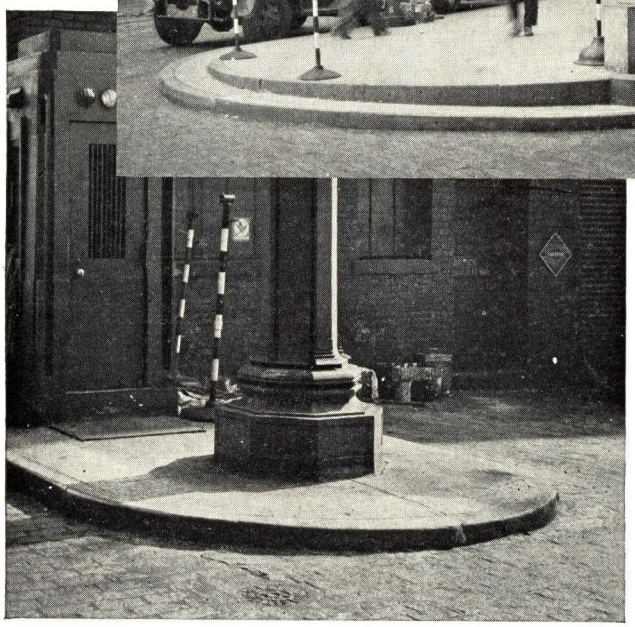
7. MAINTENANCE—With Armored Concrete maintenance costs are nil.

8. APPEARANCE—Armored Concrete is exceptionally pleasing in appearance, the cast iron component being hardly detectable. The cast iron looks like gun metal.



(Upper) Cast Iron Components before Pouring Concrete, Pennsylvania Railroad Station, Newark, N. J.

(Lower) Armored Concrete Curb at Exit of Holland Tunnel, N. Y. C.

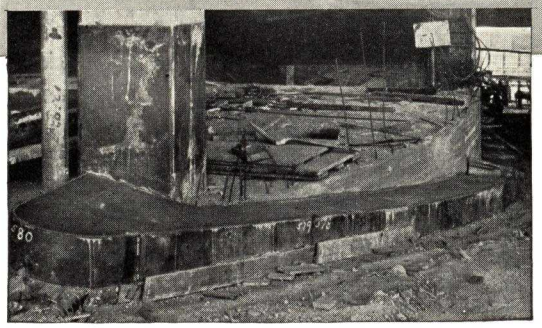


Armored Concrete Curb at Jersey City Entrance of Holland Tunnel, N. Y. C.

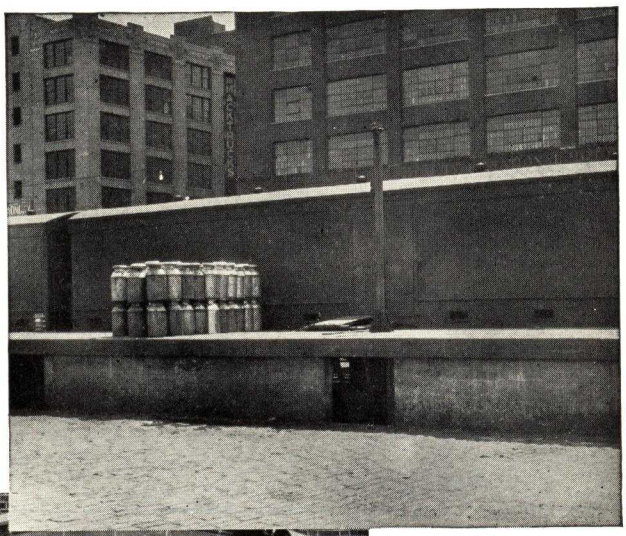
Armored Concrete Curb at U. S. Military Academy, West Point, N. Y.

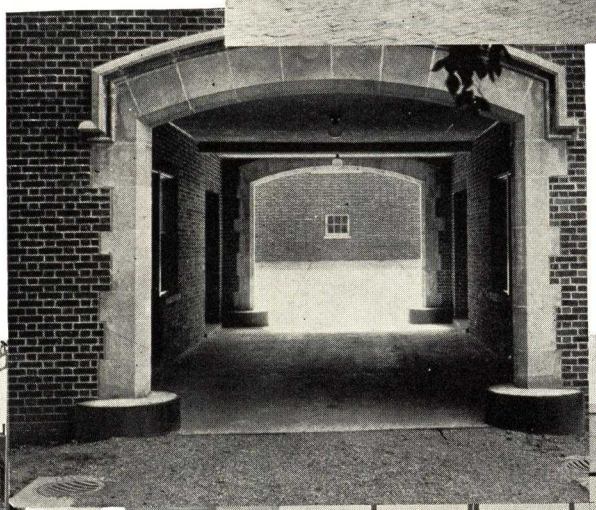
SOME REPRESENTATIVE INSTALLATIONS

Port of New York Authority	Holland Tunnel Approach
Port of New York Authority	Inland Terminal
U. S. Government	U. S. Military Academy
Pennsylvania R. R. Co.	Newark Station
N. Y. Central R. R. Co.	St. John's Park Terminal
N. Y. Central R. R. Co.	Grand Central Terminal
New York Dock Dept.	Piers 88—90—92
Pennsylvania R. R. Co.	Pier F
Western Electric Co.	Industrial Plant
General Electric Co.	Industrial Plant
Sheffield Farms Co.	Milk Depots
Borden's Farm Product Co., Inc.	Milk Depots
Prudential Insurance Co.	Office Building
L. Bamberger & Co.	Department Store
Daniel Reeves	Warehouse
City of Mt. Vernon, N. Y.	4000 ft. of Curb
Knickerbocker Ice Co.	Industrial Plant
City of Newark, N. J.	Several Hundred Corners
Continental Can Co., Inc.	Industrial Plants
City of Chicago	Safety Islands
Tri-Borough Bridge, N. Y. C.	Safety Islands
Henry Hudson Parkway, N. Y. C.	Toll Booth Islands
Baltimore and Ohio R. R. Co.	Passenger Station Platform
Panama Canal	Loading Platforms
Port of New York Authority	Lincoln Tunnel Approach



Armored Concrete Curb at Inland Terminal Number 1, Port of New York Authority, N. Y. C.

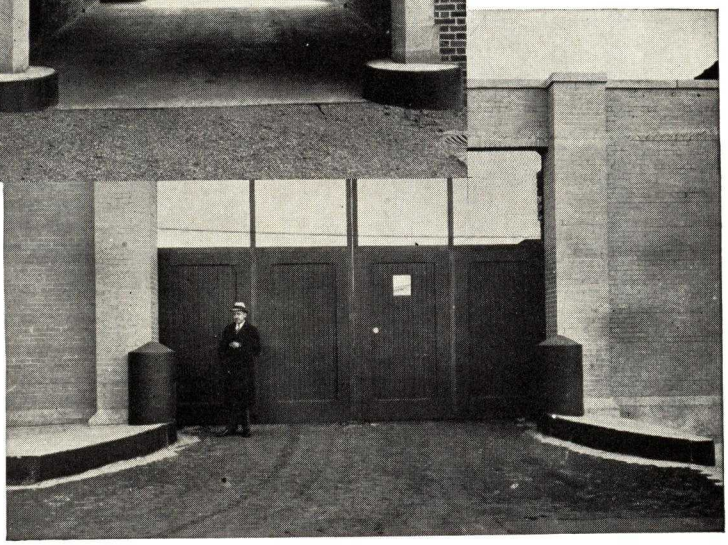




(Above) Loading Platform, New York Central Railroad, New York City

(Right) Wheel Guards at Tuscan School, Maplewood, N. J.

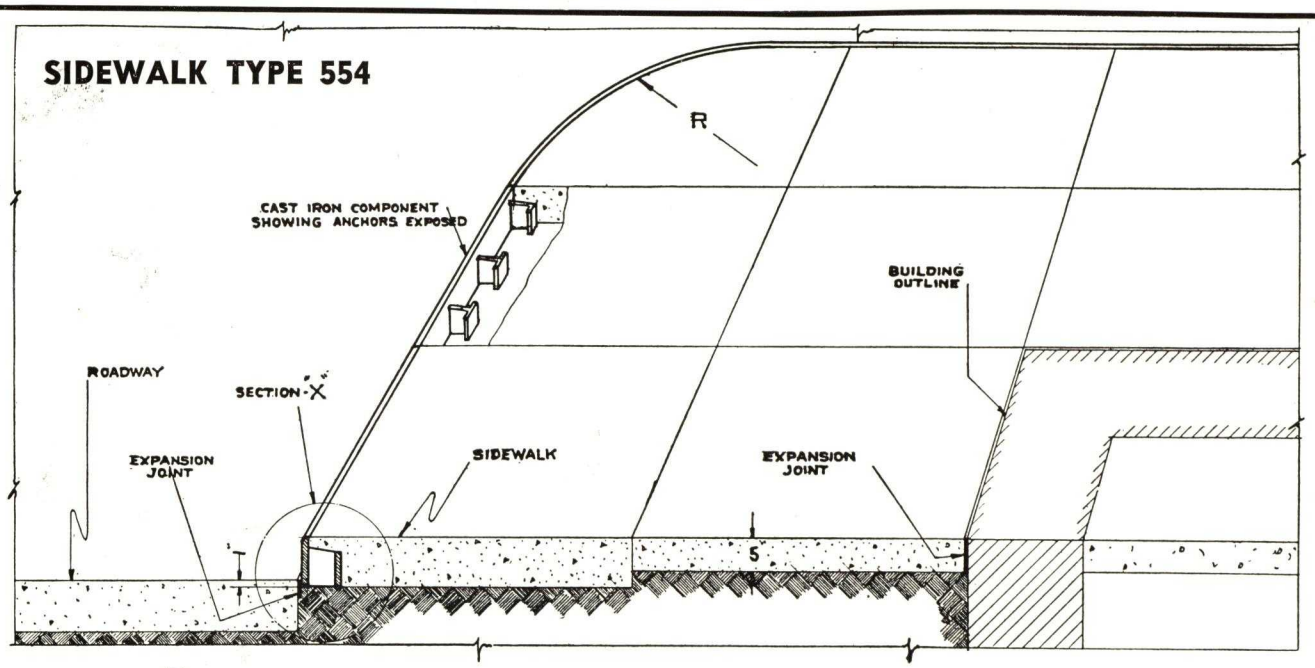
Armored Concrete Monolithic Sidewalk and Curb, Mt. Vernon, N. Y.

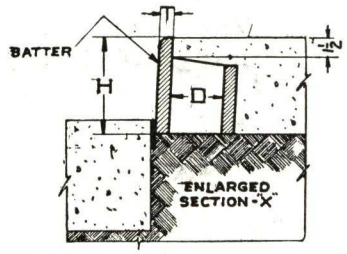


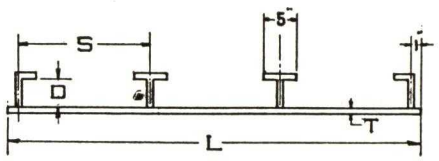
Armored Concrete Doorway Guard, Borden's Farm Products Co., Long Island City, N. Y.

ARMORED CONCRETE SIDEWALK AND CURB

SIDEWALK TYPE 554





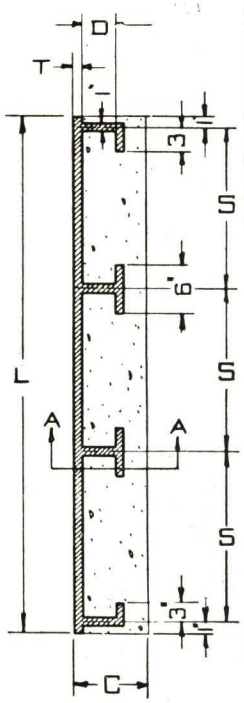


DETAIL OF CAST IRON COMPONENT

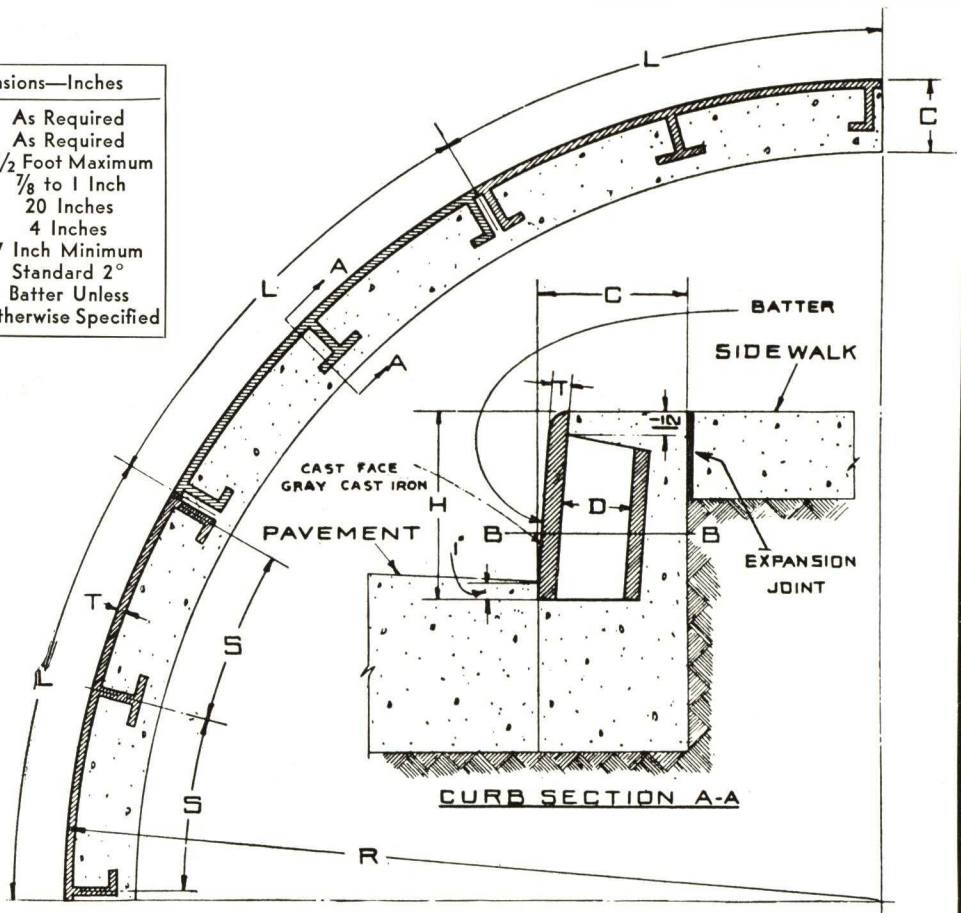
Dimensions—Inches		Dimensions—Inches	
H	As Required	R	As Required
L	6½ Feet Maximum		Standard 2°
T	¾ to ⅞ Inches		Batter Unless
S	18 Inches Maximum		Otherwise
D	4 Inches		Specified

CURB TYPE 520

Dimensions—Inches	
R	As Required
H	As Required
L	6½ Foot Maximum
T	⅞ to 1 Inch
S	20 Inches
D	4 Inches
C	7 Inch Minimum
	Standard 2°
	Batter Unless
	Otherwise Specified

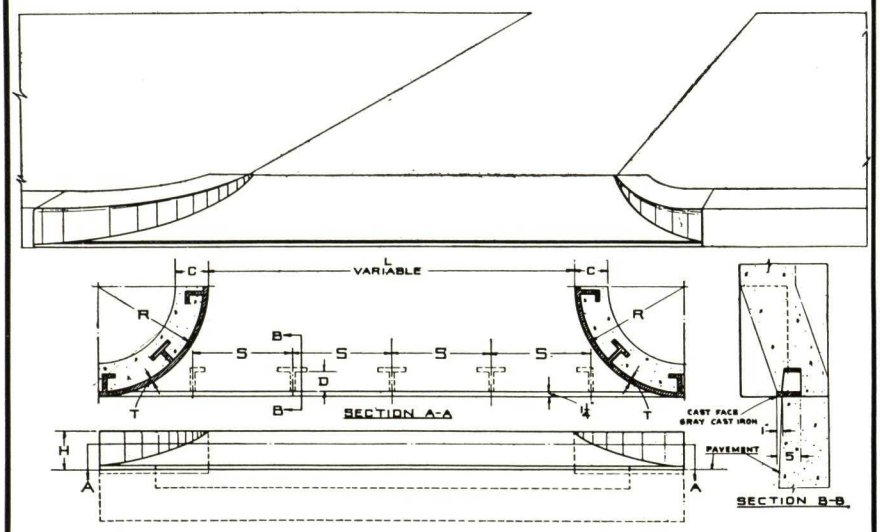


SECTION B-B



CURB SECTION A-A

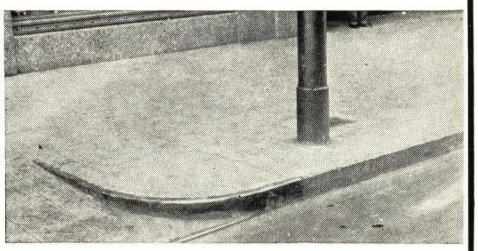
ARMORED CONCRETE DROP CURB LOADING PLATFORM

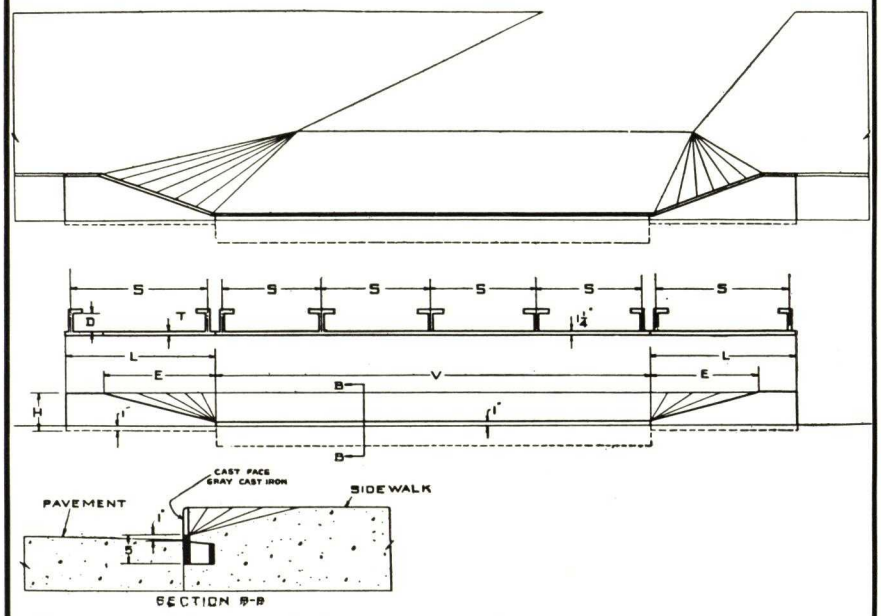


DROP CURB "TYPE A"

No. 521

DIMENSIONS—INCHES	
R	12, 18, 24, 30 and 36 Inches
H	6, 8, 10 and 12 Inches
T	7/8 to 1 Inch
S	20 Inches
D	5 Inches
C	8 Inches
L	As Required
Batter	1/2 to 8 Inches



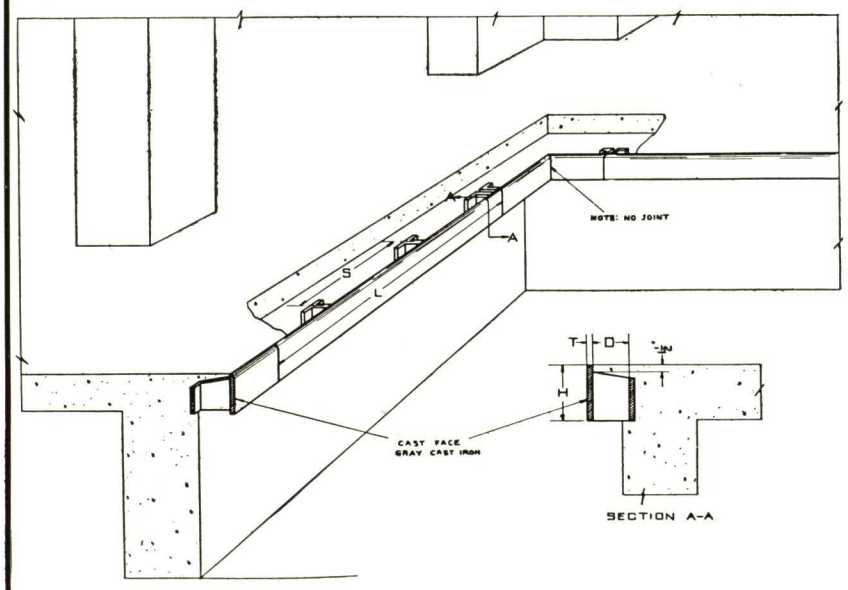


DROP CURB "TYPE B"

No. 523

DIMENSIONS—INCHES	
H	6, 8, 10 and12 Inches
T	7/8 to 1 Inch
E	18, 24 and 30 Inches
L	As Required
V	Variable
D	4 Inches
S	20 Inches

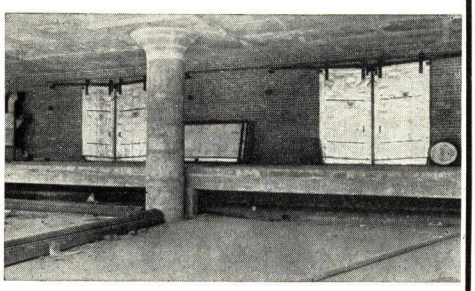
This is an alternate type of drop curb to No. 521 shown above.



LOADING PLATFORM

No. 525

DIMENSIONS—INCHES	
H	6, 8, 10 and 12 Inches
T	7/8 to 1 Inch
S	20 Inches
D	6 Inches Minimum
L	As Required



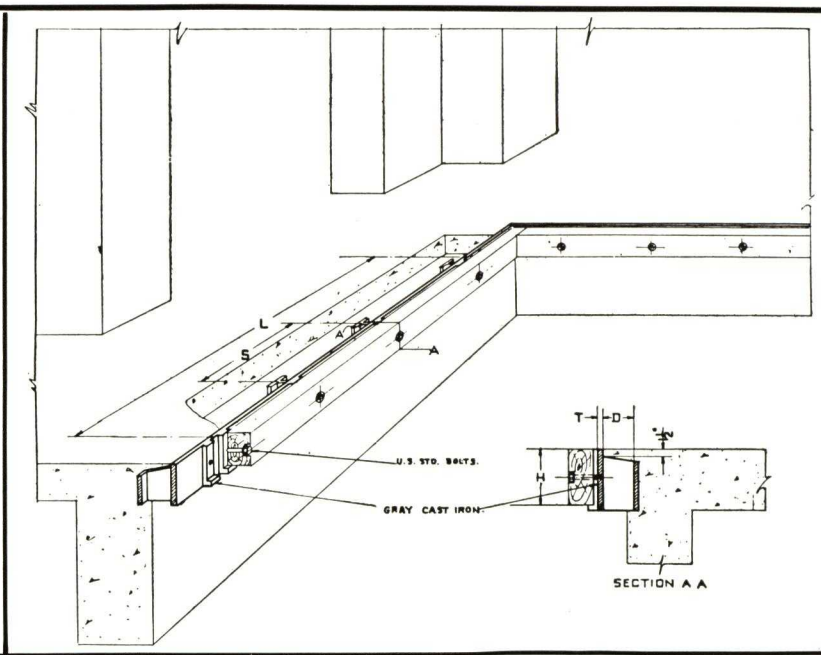
ARMORED CONCRETE LOADING PLATFORM AND DOORWAY GUARD

LOADING PLATFORM WITH WOOD BUMPER

No. 536

DIMENSIONS—INCHES	
H	6, 8, 10 and 12 Inches
T	⅞ to 1 Inch
S	20 Inches
D	6 Inches Minimum
L	As Required

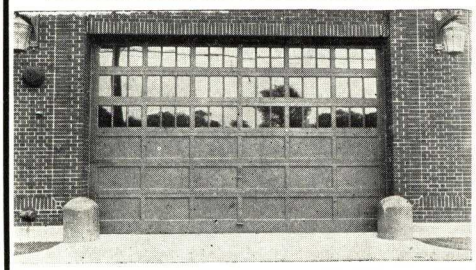
In this type provision is made for a renewable wooden bumper to prevent injury to vehicles.

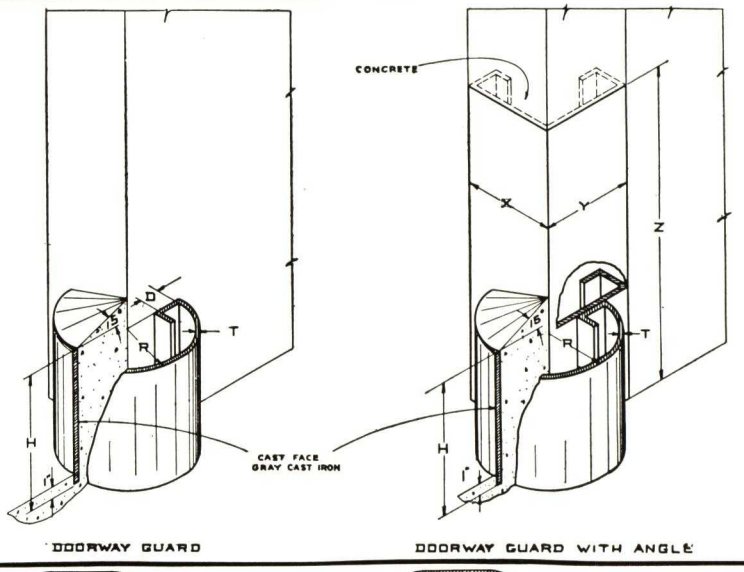


DOORWAY GUARD

No. 532

DIMENSIONS—INCHES	
R	8 and 12 Inches
H	8, 16, and 24 Inches
T	1 Inch
S	20 Inches
D	4 Inches
C	8 Inches Minimum
X	6, 8, 10 and 12 Inches
Y	6, 8, 10 and 12 Inches
Z	2, 3, 4, 5, 6 and 7 Feet



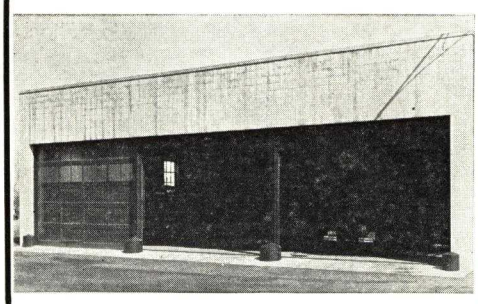


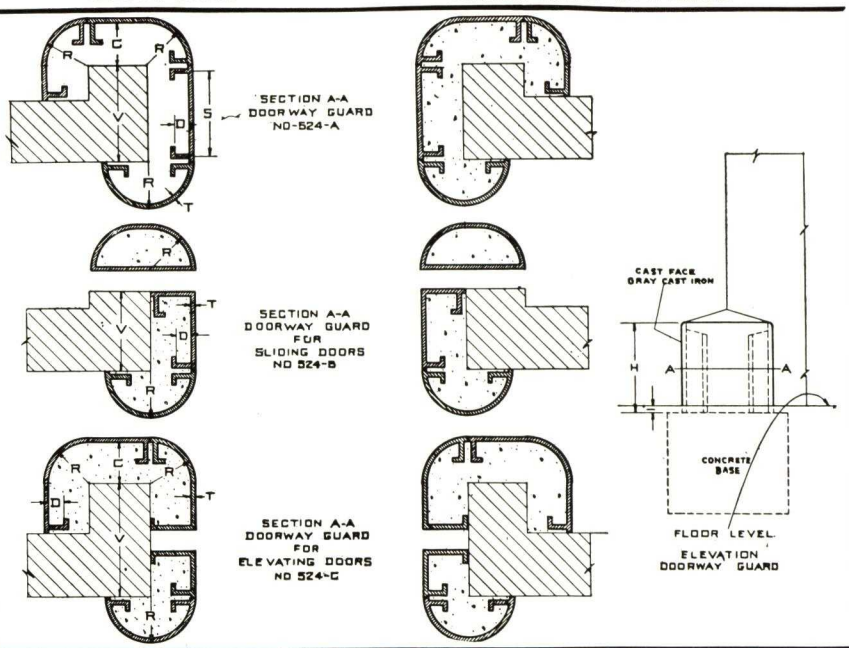
DOORWAY GUARD — DOORWAY GUARD WITH ANGLE

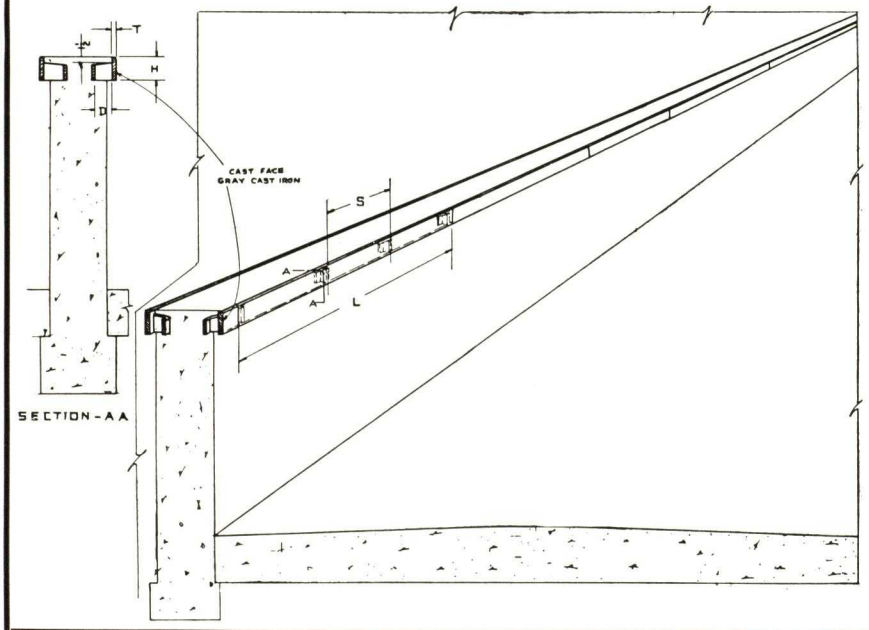
DOORWAY GUARD

No. 524

DIMENSIONS—INCHES	
R	8 and 12 Inches
H	8, 16 and 24 Inches
T	⅞ to 1 Inch
S	20 Inches
D	4 Inches
C	7 Inches Minimum
V	Variable





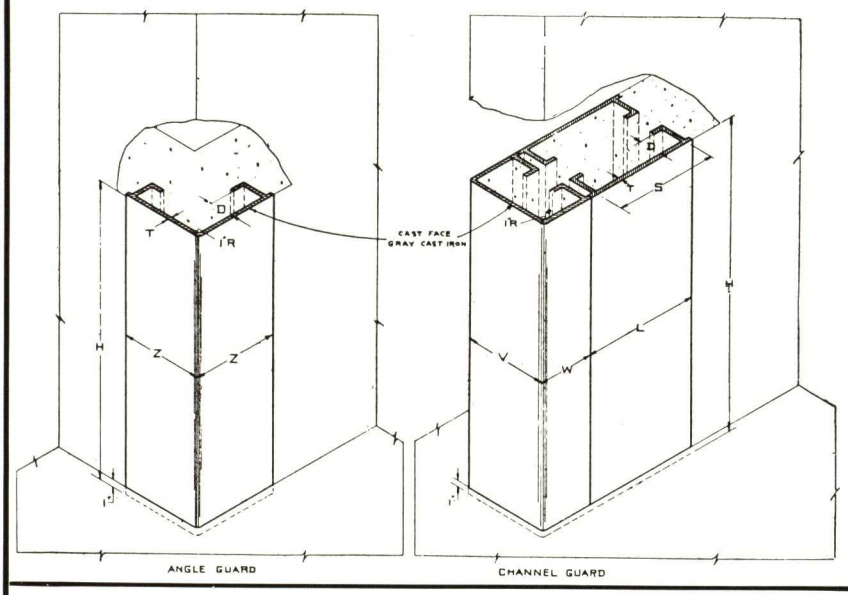


COPING GUARD

TYPE No. 112

DIMENSIONS—INCHES	
H	4 and 5 Inches
T	7/8 to 1 Inch
S	20 Inches
D	5 Inches Minimum
L	As Required

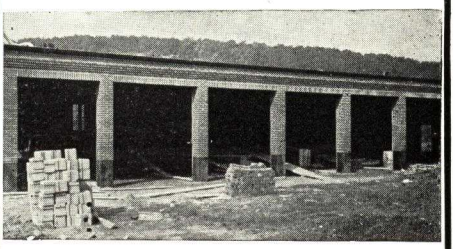
This is the only known successful type of cope for walls exposed to traffic.

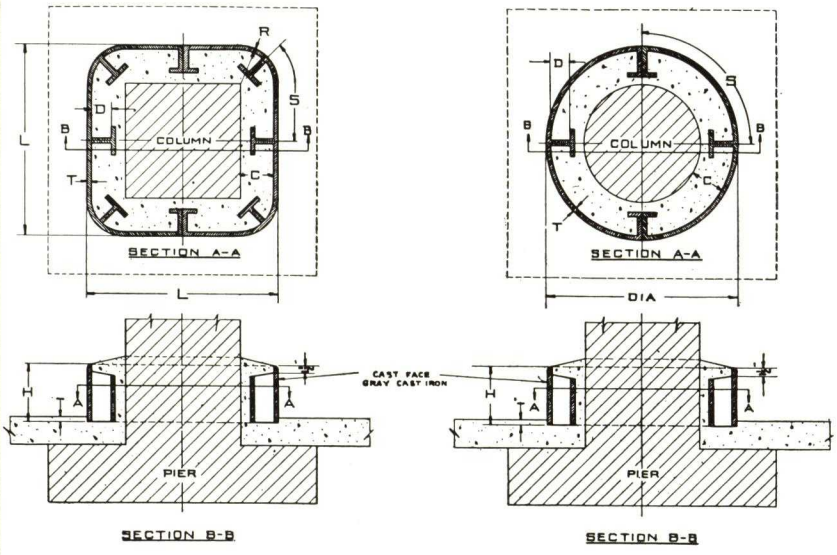


WALL CORNER and END PROTECTION

No. 531

DIMENSIONS—INCHES	
H	2, 3, 4, 5, 6 and 7 Inches
Z	6, 8, 10 and 12 Inches
V	Variable
W	12 Inches
L	Variable
T	1 Inch
S	20 Inches Maximum
D	4 Inches





COLUMN GUARDS CIRCULAR and SQUARE

No. 522

DIMENSIONS—INCHES	
RECTANGULAR	
R	8 and 12 Inches
H	8, 16 and 24 Inches
T	7/8 to 1 Inch
L	As Required
S	20 Inches
D	4 Inches
C	7 Inches Minimum
CIRCULAR	
Dia.	As Required
H	8, 16 and 24 Inches
T	7/8 to 1 Inch
S	20 Inches
D	4 Inches
C	7 Inches

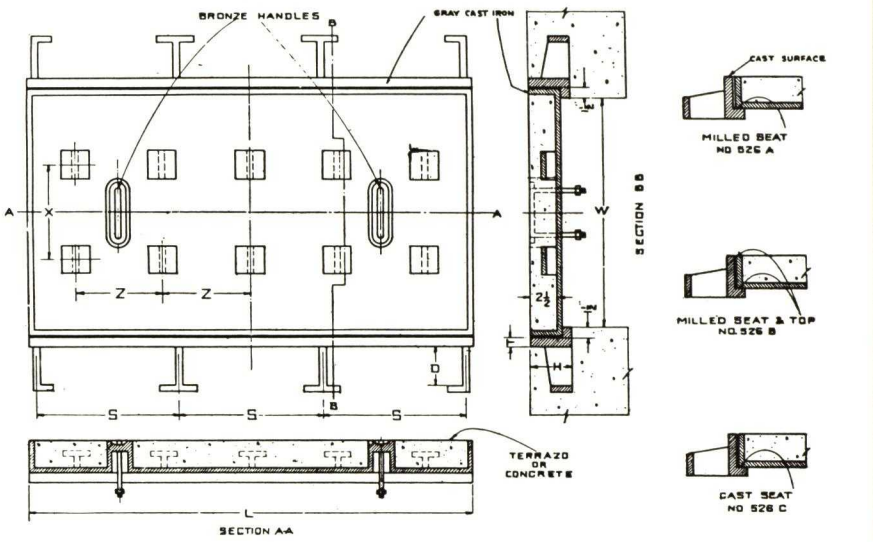
ARMORED CONCRETE TRENCH FRAMES COVERS or GRATINGS

TRENCH FRAMES and COVERS For CONCRETE or TERRAZZO FILL

No. 526

DIMENSIONS—INCHES	
W	6, 12, 18 and 24 inches
L	36 Inches
H	4½ Inches
T	½ Inch
S	20 Inches Maximum
D	4 Inches
X	10 Inches
Z	10 Inches

The use of cast iron is especially indicated for covers which are to be filled with concrete or terrazzo as the rigidity of cast iron prevents cracking of the fill.

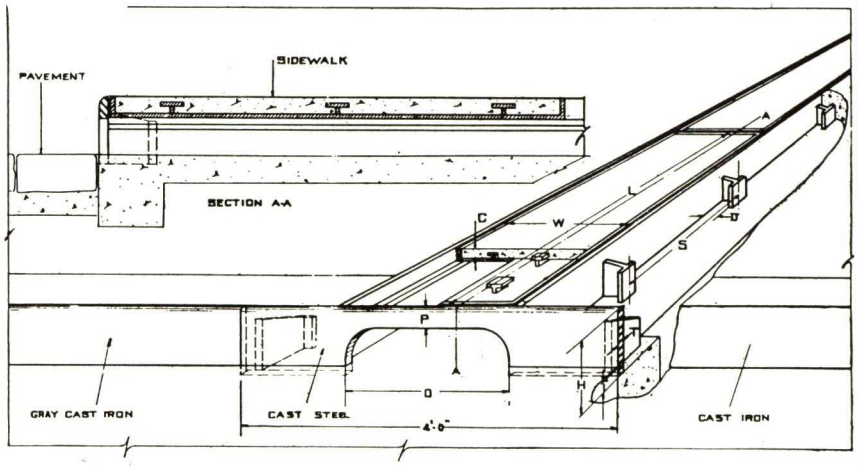


LEADER DRAIN UNDER SIDEWALK

No. 542

DIMENSIONS—INCHES	
O	6, 8, 10 and 12 Inches
P	2½ Inches Minimum
H	6, 8, 10 and 12 Inches
T	1 Inch
W	6, 8, 10 and 12 Inches
L	4½ Foot Maximum
C	2½ Inches
S	20 Inches
D	5 Inches

Note that the curb section is made of cast steel owing to the necessarily fragile design.

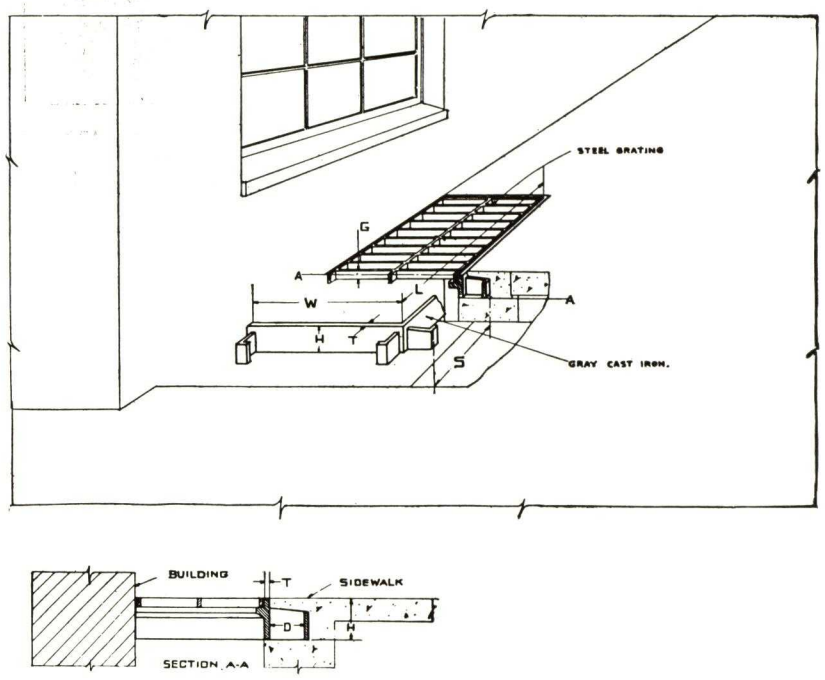


SIDEWALK FRAMES AND GRATINGS

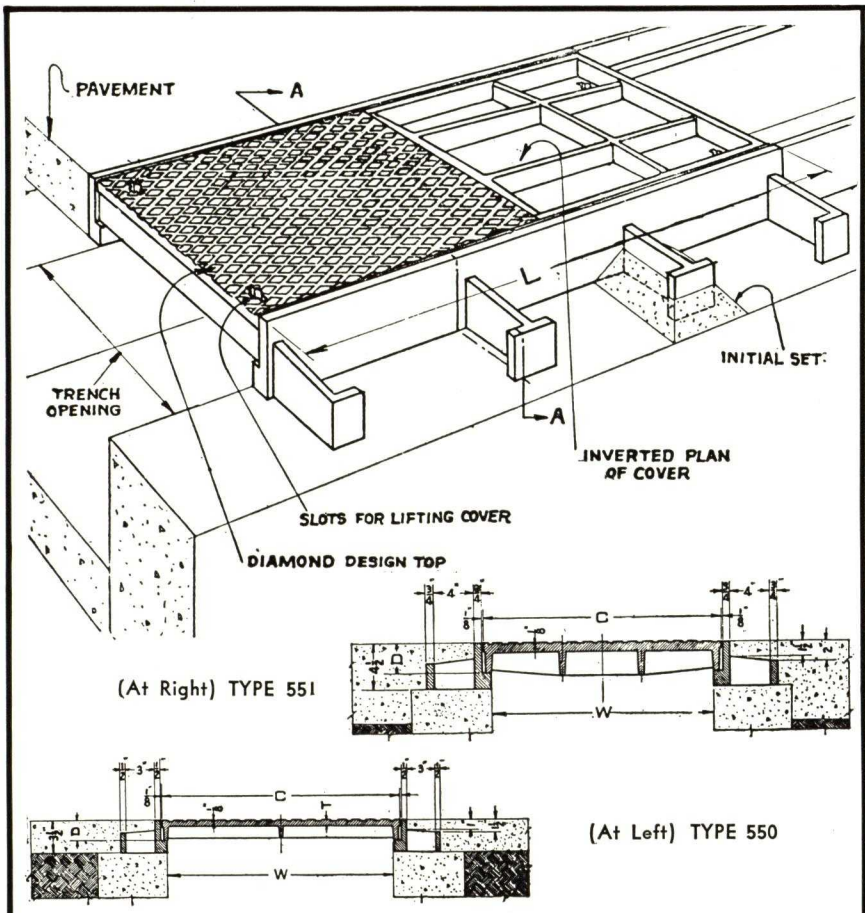
No. 541

DIMENSIONS—INCHES	
L	As Required
W	As Required
H	4½ Inches
T	⅝ Inches
S	20 Inches Maximum
D	4 Inches
G	As Required

The advantage of this type of construction is that the cast iron frame is not destroyed by corrosion.



ARMORED CONCRETE TRENCH FRAMES COVERS OR GRATINGS



(At Right) TYPE 551

(At Left) TYPE 550

TRENCH FRAMES AND COVERS

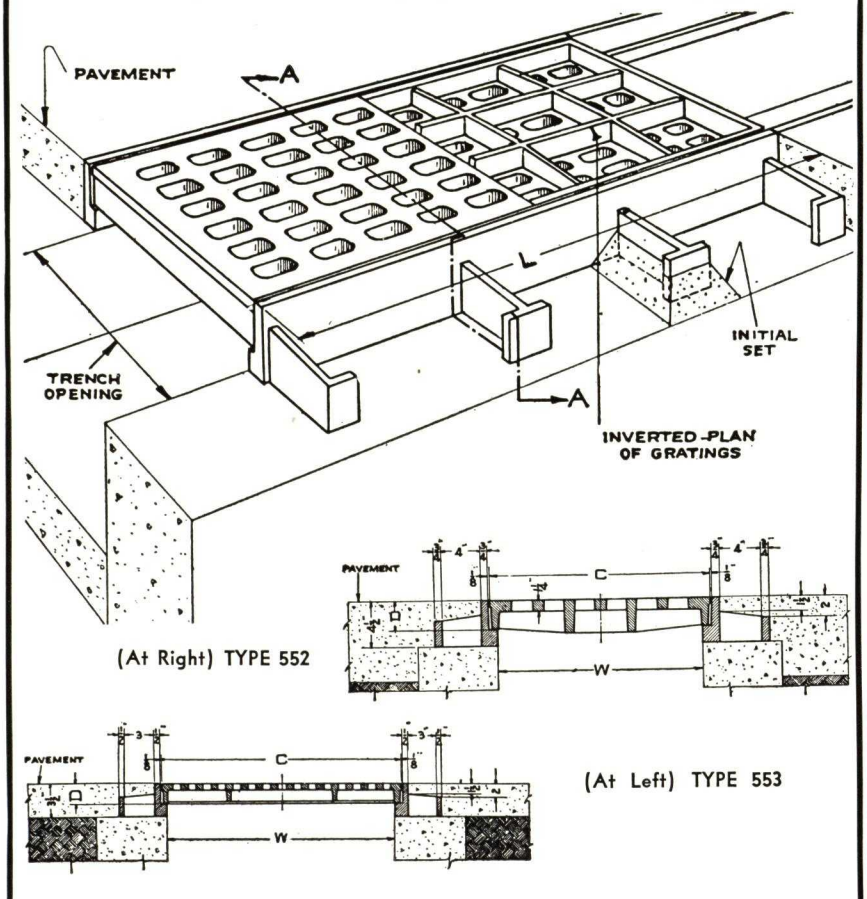
A Indicates Cast Fitting Surfaces.
B Indicates Milled Horizontal Fitting Surfaces.
C Indicates Milled Hor. & Vert. Fitting Surfaces.

TYPE 551 FOR ROADWAYS

TYPE AND CODE NUMBER			DIMENSIONS INCHES			
551-A	551-B	551-C	W	L	C	D
41750	41764	41778	6	48	7¾	2
41751	41765	41779	8	48	9¾	2
41752	41766	41780	10	48	11¾	2
41753	41767	41781	12	48	13¾	2
41754	41768	41782	14	48	15¾	2½
41755	41769	41783	16	48	17¾	2½
41756	41770	41784	18	48	19¾	2½
41757	41771	41785	20	48	21¾	2½
41758	41772	41786	22	48	23¾	2½
41759	41773	41787	24	48	25¾	3
41760	41774	41788	30	48	31¾	3
41761	41775	41789	36	48	37¾	3
41762	41776	41790	42	48	43¾	3
41763	41777	41791	48	48	49¾	3

TYPE 550 FOR WALKWAYS

TYPE AND CODE NUMBER			DIMENSIONS INCHES			
550-A	550-B	550-C	W	L	C	D
41550	41564	41578	6	48	7¾	1½
41551	41565	41579	8	48	9¾	1½
41552	41566	41580	10	48	11¾	1½
41553	41567	41581	12	48	13¾	1½
41554	41568	41582	14	48	15¾	2
41555	41569	41583	16	48	17¾	2
41556	41570	41584	18	48	19¾	2
41557	41571	41585	20	48	21¾	2
41558	41572	41586	22	48	23¾	2
41559	41573	41587	24	48	25¾	2½
41560	41574	41588	30	48	31¾	2½
41561	41575	41589	36	48	37¾	2½
41562	41576	41590	42	48	43¾	2½
41563	41577	41591	48	48	49¾	2½



(At Right) TYPE 552

(At Left) TYPE 553

TRENCH FRAMES AND GRATINGS

A Indicates Cast Fitting Surfaces.
B Indicates Milled Horizontal Fitting Surfaces.
C Indicates Milled Hor. & Vert. Fitting Surfaces.

TYPE 552 FOR ROADWAYS

TYPE AND CODE NUMBER			DIMENSIONS INCHES			
552-A	552-B	552-C	W	L	C	D
41850	41864	41878	6	48	7¾	2
41851	41865	41879	8	48	9¾	2
41852	41866	41880	10	48	11¾	2
41853	41867	41881	12	48	13¾	2
41854	41868	41882	14	48	15¾	2½
41855	41869	41883	16	48	17¾	2½
41856	41870	41884	18	48	19¾	2½
41857	41871	41885	20	48	21¾	2½
41858	41872	41886	22	48	23¾	2½
41859	41873	41887	24	48	25¾	3
41860	41874	41888	30	48	31¾	3
41861	41875	41889	36	48	37¾	3
41862	41876	41890	42	48	43¾	3
41863	41877	41891	48	48	49¾	3

TYPE 553 FOR WALKWAYS

TYPE AND CODE NUMBER			DIMENSIONS INCHES			
553-A	553-B	553-C	W	L	C	D
41650	41664	41678	6	48	7¾	1½
41651	41665	41679	8	48	9¾	1½
41652	41666	41680	10	48	11¾	1½
41653	41667	41681	12	48	13¾	1½
41654	41668	41682	14	48	15¾	2
41655	41669	41683	16	48	17¾	2
41656	41670	41684	18	48	19¾	2
41657	41671	41685	20	48	21¾	2
41658	41672	41686	22	48	23¾	2
41659	41673	41687	24	48	25¾	2½
41660	41674	41688	30	48	31¾	2½
41661	41675	41689	36	48	37¾	2½
41662	41676	41690	42	48	43¾	2½
41663	41677	41691	48	48	49¾	2½

CONSTRUCTION CASTINGS

GUARANTEE

Any casting designated for "Roadway" duty which shall break in service within a period of ten years from date of invoice will be replaced free of charge, f.o.b. nearest railroad station in event of failure from any cause whatsoever.

THE RETURN OF GRAY IRON

GRAY CAST IRON

Gray Iron, long practically forgotten, has within the past fifteen years been developed to a wide range of utility. Its return as a major material for specific uses is now widely acknowledged.

Both architects and engineers have always academically recognized gray iron as unequaled in its resistance to corrosion and abrasion. Due to inadequate understanding of its nature, its performance has been so unsatisfactory under impact and modern conditions that its use has become vestigial.

RESEARCH AND DEVELOPMENT OF GRAY IRON

Fifteen years ago our Department of Research and Development initiated an extensive program to determine:

1. The limits to which gray iron could be relied upon.
2. The design of gray iron structures adequate to resist heavy oblique impacts.
3. The development of a definite system of design with the purpose of establishing gray iron as a reliable and economic material.

Some of the results of this research are embodied in this catalog, featuring guaranteed simple gray cast iron constructions.

DESIGN OF GRAY CAST IRON

The essential principle in producing an effective and economical casting is proper design. Our effort is to produce constructions adequate for the conditions imposed and simple in design for economical costs.

SCOPE OF GRAY IRON

Research indicates conclusively that gray iron, properly designed, is one of the best and most economical materials for stationary, permanent structures. This is especially true where the factors of corrosion, abrasion and oblique impact occur.

Research also indicated that castings had been improperly designed, being too heavy in some cases and too light in others. While gray iron had been used in finest machinery its application in the construction field is as yet slightly developed.

PROTECTION OF CAST IRON

Painting and galvanizing are not required unless for aesthetic reasons. Castings are a perfect unit, there is nothing to come apart.

AVAILABILITY OF GUARANTEED CONSTRUCTION CASTINGS

WIDE RANGE OF TYPES AND SIZES

On the following pages are described the more common types of construction castings. It does not represent complete line which is probably the most complete in the world.

ENGINEERING SERVICE

For situations not described in this catalog we ask architects and engineers to address our Department of Research and Development. Special design service will be rendered without charge or obligation.

ORDERS

In ordering specify Type and Code Number. Modifications should be clearly explained.

NOTES

Material. All castings are made of close-grained gray cast iron and are readily machineable. Gray cast iron properly designed is one of the most desirable architectural materials.

Milled Fitting Parts. When specified frames and covers, etc., are supplied with milled horizontal bearing surfaces, or with milled horizontal and vertical bearing surfaces.

Lift Handles. All covers are supplied with lift handles instead of pick holes when specified.

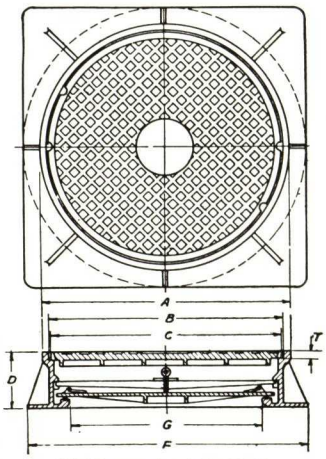
Locks. All covers may be supplied with a locking device opened by means of a socket wrench when specified.

ROADWAY FRAMES FOR PIT OR SLAB CONSTRUCTION *SEALED AND LOCKED* COVERS—

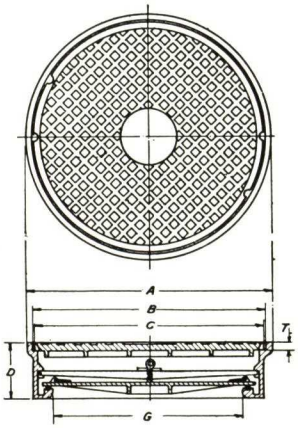
CIRCULAR

FOR PIT, SLAB OR WATER-PROOF SLAB CONSTRUCTION.

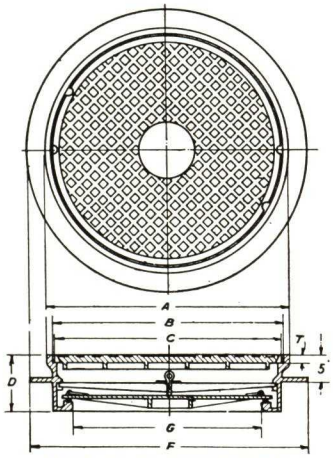
TYPES AND CODE NUMBERS								DIMENSIONS—INCHES						
154-A Circular Flange		154-A Square Flange		154-RA		154-SA		G	A	B	D	F	C	*T
Roadways	Walkways	Roadways	Walkways	Roadways	Walkways	Roadways	Walkways							
28478	28486	27482	27483	27700	27706	27481	27484	24	34¾	31¾	10	40½	31½	1¼
28479	28487	26140	26180	27701	27707	26145	26185	27	36½	33½	11	43½	33¼	1½
28480	28488	26150	26190	27702	27708	26155	26195	30	39½	36½	11	46½	36¼	1½
28481	28489	25910	27888	27790	27791	28494	28495	31	41¼	38¼	11	47	38	1½
28482	28490	27887	27886	27703	27709	27889	27890	36	47	44	10	52½	43⅝	1½
28483	28491	27864	27885	27704	27710	27891	27892	40	51	48	10	55½	47⅝	1½
28484	28492	28496	28497	27705	27711	27473	27474	42	53	50	10	57½	49⅝	1½
28485	28493	27792	27793	27794	27795	27796	27797	48	58	55	10	63	54⅝	1½



TYPE 154-A FOR PITS
Circular or Square Flange



TYPE 154-RA FOR SLABS



TYPE 154-SA FOR WATER-PROOF SLAB

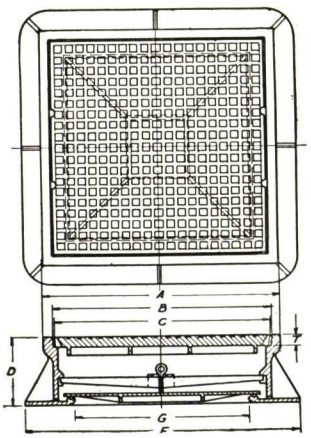
Type 154 — Frames and covers are supplied with rubber gasket ¾ inch in diameter. The set screws are bronze and the saddle soft steel. A padlock may be used to secure the inner cover.

All covers showing a "C" dimension of 36 in. or more are, when specified, made in two concentric parts.

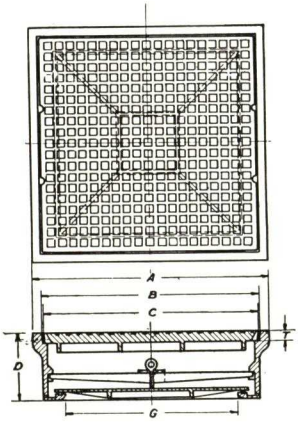
SQUARE

FOR PIT, SLAB OR WATERPROOF SLAB CONSTRUCTION.

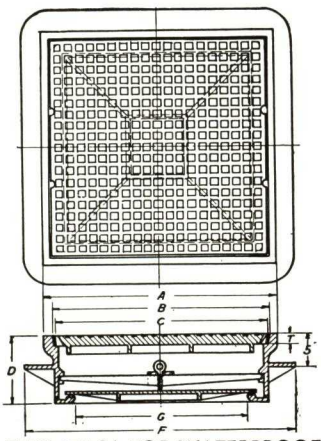
TYPES AND CODE NUMBERS						DIMENSIONS—INCHES						
174-A		174-RA		174-SA		G	A	B	D	F	C	*T
Roadways	Walkways	Roadways	Walkways	Roadways	Walkways							
28000	28001	28002	28003	28004	28005	20	31	28	10	36½	27¾	1½
28006	28007	28008	28009	28010	28011	24	35	32	10	40½	31¾	1½
28012	28013	28014	28015	28016	28017	27	38	35	10	43½	34¾	1½
28018	28019	28020	28021	28022	28023	30	41	38	10	46½	37¾	1½
28024	28025	28026	28027	28028	28029	33	44	41	10	49½	40¾	1½
28030	28031	28032	28033	28034	28035	36	47	44	10	52½	43⅝	1½
28036	28037	28038	28039	28040	28041	40	51	48	10	55½	47⅝	1½
28042	28043	28044	28045	28046	28047	42	53	50	10	57½	49⅝	1½
28048	28049	28050	28051	28052	28053	48	59	56	10	63½	55⅝	1½



TYPE 174-A FOR PITS



TYPE 174-RA FOR SLABS

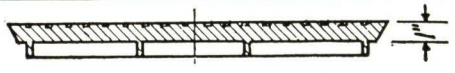


TYPE 174-SA FOR WATERPROOF SLABS

Type 174 — Frames and covers are supplied with rubber gasket ¾ inch in diameter. The set screws are bronze and the saddle soft steel. A padlock may be used to secure the inner cover.

All covers showing a "C" dimension of 36 in. or more are, when specified, made in two equal and identical parts.

WALKWAY FRAMES FOR PIT OR SLAB CONSTRUCTION *SEALED AND LOCKED* COVERS—



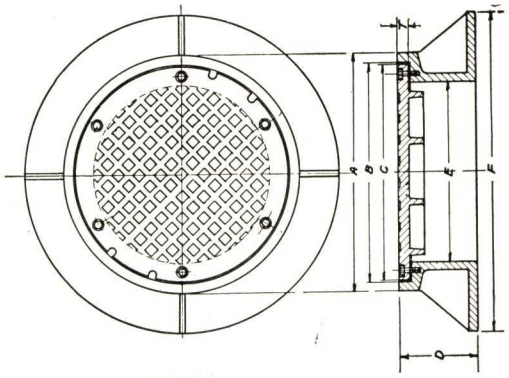
WALKWAY COVERS*

*Both of the types described over 154-174 are supplied with 1 inch thick covers for walkway service. All other dimensions and code numbers are given above.

ROADWAY FRAMES FOR PIT OR SLAB CONSTRUCTION
GASKETED AND BOLTED COVERS

13/52

CIRCULAR

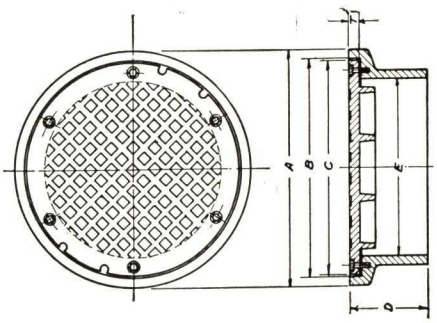


TYPE 194-C FOR PITS

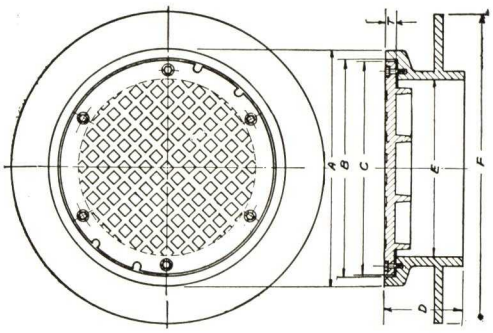
TYPE AND CODE NUMBER			DIMENSIONS—INCHES							No. of Cap Screws
194-C	194-CD	194-CE	E	A	B	D	F	C	T	
28350	28357	28364	**12**	18	16	8	26	15⅞	1¼	4
28351	28358	28365	**18**	24	22	8	32	21⅞	1¼	4
28352	28359	28366	**24**	30	28	8	38	27⅞	1¼	6
28353	28360	28367	**30**	36	34	8	44	33⅞	1½	6
28354	28361	28368	**36**	42	40	8	50	39⅞	1½	8
28355	28362	28369	**42**	48	46	8	56	45⅞	1½	8
28356	28363	28370	**48**	54	52	8	26	51⅞	1½	10

Gasketed and Bolted Type 194 is supplied where a sealed frame and cover is required at less cost than the sealed and locked types on page 13, but it requires more time to remove and replace covers.

The bearing surfaces on both the frame and cover are milled to a true and even surface and a ¼ inch flat rubber gasket is supplied.



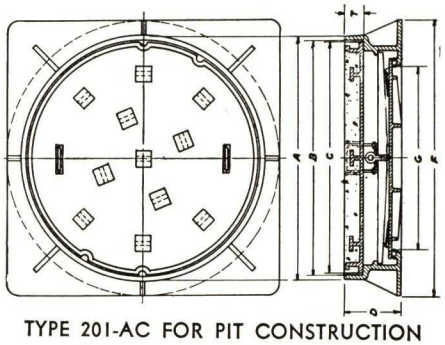
TYPE 194-CD FOR SLABS



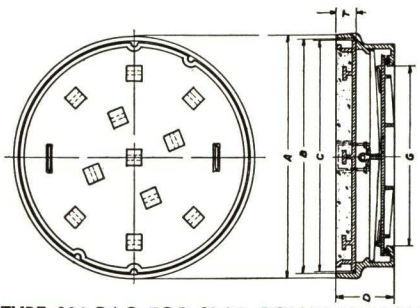
TYPE 194-CE FOR WATER-PROOF SLABS

WALKWAY FRAMES FOR PIT OR SLAB CONSTRUCTION
SEALED AND LOCKED COVERS FOR CONCRETE FILL

CIRCULAR

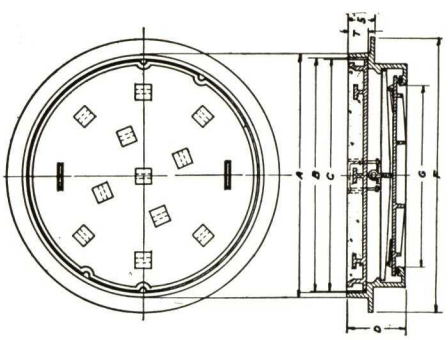


TYPE 201-AC FOR PIT CONSTRUCTION
CIRCULAR SQUARE FLANGE



TYPE 201-RAC FOR SLAB CONSTRUCTION

TYPE AND CODE NUMBER				DIMENSIONS—INCHES						
201-AC Circular Flange	201-AC Square Flange	201-RAC Circular Flange	201-SAC Circular Flange	G	A	B	D	F	C	T
28550	28551	28552	28553	**20**	31¼	29¾	11½	36½	29½	3½
28554	28555	28556	28557	**24**	35¼	33¾	11½	40½	33½	3½
28558	28559	28560	28561	**27**	38¼	36¾	11½	43½	36½	3½
28562	28563	28564	28565	**30**	41¼	39¾	11½	46½	39½	3½
28566	28567	28568	28569	**36**	47¼	45¾	11½	52½	45½	3½
28570	28571	28572	28573	**42**	53¼	51¾	11½	58½	51½	3½
28574	28575	28576	28577	**48**	59¼	57¾	11½	64½	57½	3½



TYPE 201-SAC WATERPROOF SLAB CONSTRUCTION

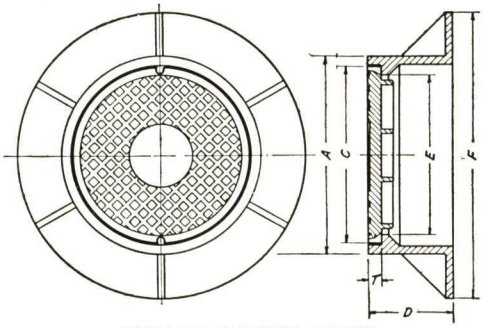
Type 201 — Frames and Covers are supplied with a rubber gasket ¾ in. in diameter. The set screws and lift handles are bronze and the saddle soft steel. Provision is made for locking inner cover with a padlock.

Being of cast iron, the covers have the rigidity to prevent cracking of the concrete or terrazzo fill.

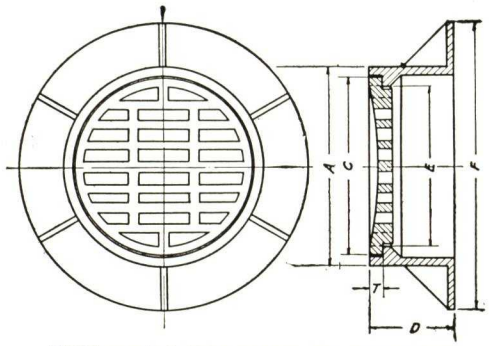
14

ROADWAY FRAMES FOR PIT CONSTRUCTION
GRAVITY COVERS OR GRATINGS

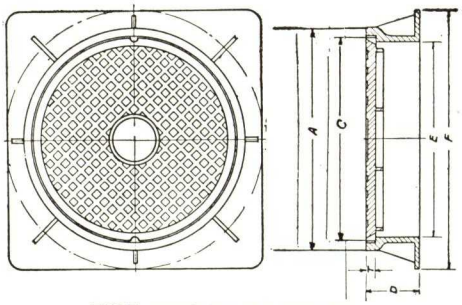
CIRCULAR



TYPE 158-D WITH COVER



TYPE 158-D WITH PLANE OR CONCAVE GRATINGS

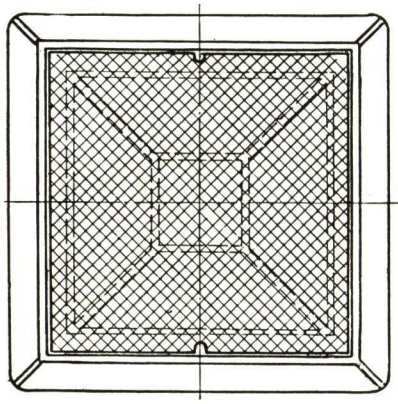


TYPE 173-C WITH COVER

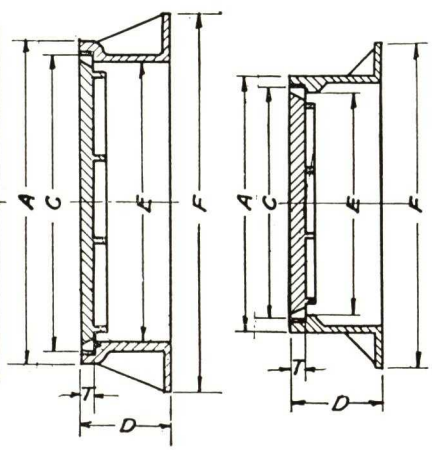
TYPE AND CODE NUMBER					DIMENSIONS—INCHES					
158-D			173-C							
With Cover	Concave Gratings	Plane Gratings	Square Flange	Circular Flange	E	A	D	F	C	T
25112	27413	27410			10¾	14	8	17	12	1¼
27414					15	18¾	8	27	16½	1¼
			28071	28072	15¾	19½	8	24	17½	1
25015					19½	24	9⅝	37	21⅛	1⅜
25001	25099	27411			21	25½	10	40	22½	1½
25063					21¼	25⅝	9	36	23¼	1½
25700					21½	27¼	6	38½	23¾	1½
25008					21½	25⅝	7	32	23¾	3
25026					21½	26	8	31¾	24⅛	3
25088					21½	26	9	41½	24	2
25203					21½	26½	12	38	23¾	1⅜
25226	27412				21¾	26¾	8	46	24	1⅜
25031		25032			22	26	7	32	24½	1¼
25273					22	26	8	37	23½	1
25017		25006			23½	27½	8	37	25	1⅜
25513					24	28½	9¼	36	25¾	1½
			28089	28090	24	28½	6	38	26	1½
			28085	28054	24	28½	8	38	26	1½
25261					24½	29¾	12	40½	26¼	1½
27884					25½	29¾	8	36	27½	1½
			26110	28055	26½	31	10	37	28¼	1¼
26225					27	31	10	38	28¾	2¾
	25904		26383	28056	30	34½	8	44	32	1½
			28075	28057	30	35	12	46	31¾	1½
25557					34	38½	8	48½	36	1½
			28084	28085	34	39½	11	48½	36¼	1½
25960					36	40½	7	54	37¾	1½
			25206	28058	36	41⅛	8	48	37⅞	1½
			28076	28059	36	42½	12	48	38¼	2
			26223	28060	42	46¾	10	58	44½	3
			28082	28083	48	53	10	57½	49⅝	1½

ROADWAY FRAMES FOR PIT CONSTRUCTION
GRAVITY COVERS

SQUARE



TYPE 169-C

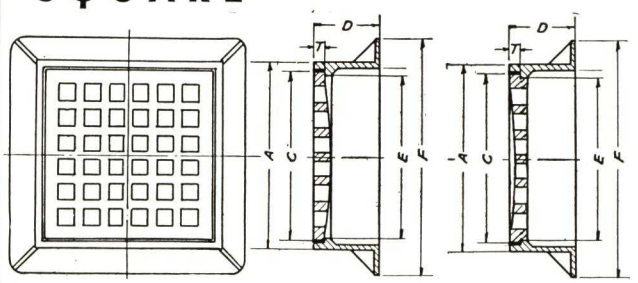


TYPE 169-D

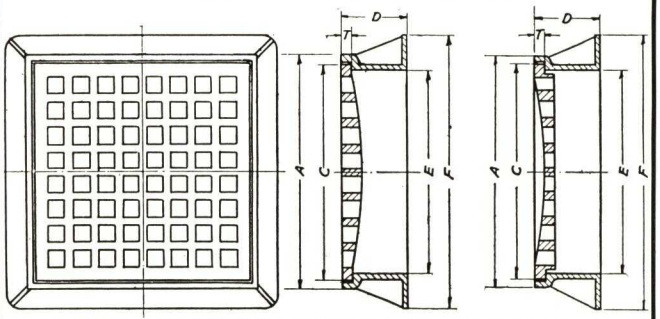
TYPE AND CODE NUMBER		DIMENSIONS—INCHES					
169-D	169-C	E	A	F	D	C	T
25403		8⅝	11⅞	17	9	10⅝	3
25406		9½	12½	21½	9⅝	11¼	3
25404		11½	14	20	9	13	2½
	26320	21½	26	36	9¾	23¾	1½
25914		22	27	40	8	24	1¾
26393		24	27½	35	8	25¾	1½
	28235	24	29¼	40¼	8	26	1½
	28236	26	31	36½	10	27¾	1¼
	28237	30	35	40½	10	31¾	1¼
28238		32	36	44	4	34	1
	28239	33	38	43½	10	34¾	1¼
	28240	36	41	46½	10	37¾	1¼
	28241	39	44	49½	10	40¾	1¼
	28242	42	47	52½	10	43¾	1¼
	28243	46	51	56½	10	47¾	1¼
	28244	48	53	58½	10	49¾	1¼
	28245	54	59	64½	10	55¾	1¼
	28246	60	65	70½	10	61¾	1½

ROADWAY FRAMES FOR PIT CONSTRUCTION
GRAVITY GRATINGS

SQUARE



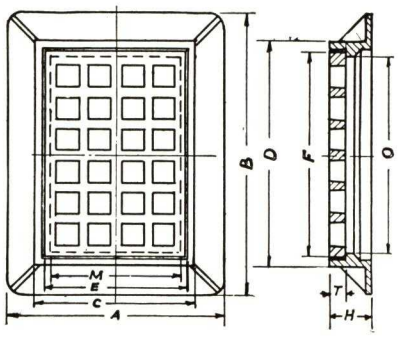
TYPE 192-D WITH PLANE OR CONCAVE GRATING



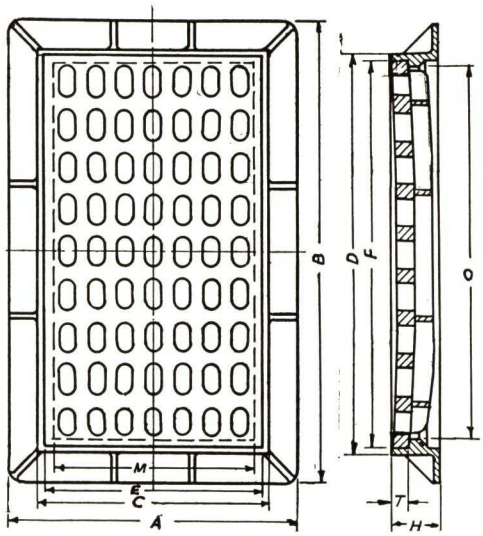
TYPE 192-C WITH PLANE OR CONCAVE GRATING

TYPE AND CODE NUMBER				DIMENSIONS—INCHES					
192-D		192-C							
With Plane Grating	With Concave Grating	With Plane Grating	With Concave Grating	E	A	C	D	F	T
28210	28220			8 5/8	11 7/8	10 5/8	9	17	3
28211	28221			9 1/2	12 1/2	11 1/4	9 5/8	21 1/2	3
28212	28222			11 1/2	13 3/4	13	9	20	2 1/2
25414	28223			22	26 7/8	24	8	40 1/4	1 3/4
		28200	28224	24	29 1/4	26	10	40 1/4	1 1/2
		28201	28225	26	31	27 3/4	10	36 1/2	1 1/2
		28202	28226	30	35	31 3/4	10	40 1/2	1 1/2
25471	28227			32	36	34	4	44	2 1/2
		28203	28228	33	38	34 3/4	10	43 1/2	1 1/2
		28204	28229	36	41	37 3/4	10	46 1/2	1 1/2
		28205	28230	39	44	40 3/4	10	49 1/2	1 1/2
		28206	28231	42	47	43 3/4	10	52 1/2	1 1/2
		28207	28232	46	51	47 3/4	10	56 1/2	1 1/2
		28208	28233	48	53	49 3/4	10	58 1/2	1 1/2
		28209	28234	54	59	55 3/4	10	64 1/2	1 1/2

RECTANGULAR



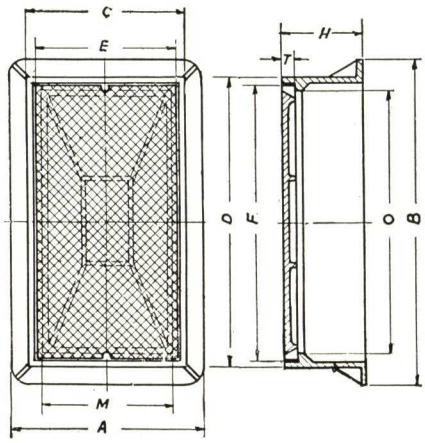
TYPE 187-D WITH PLANE GRATING



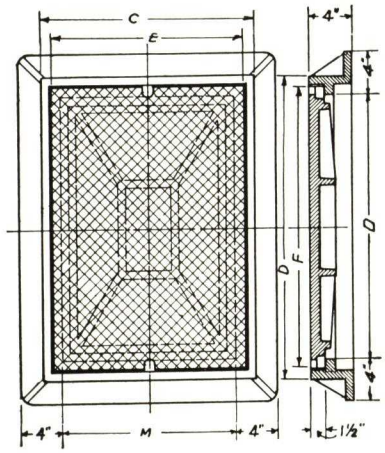
TYPE 163-D WITH CONCAVE GRATING

TYPE AND CODE NO.		DIMENSIONS—INCHES									
187-D	163-D										
With Plane Grating	With Concave Grating	M	O	A	B	C	D	E	F	H	T
26403		10 1/2	16 3/8	19 1/2	25 1/2	15	21	12	18	5 1/2	1 1/2
26002		11	46 1/2	21	57	17	54 1/4	13 1/2	49	3	2
26424		13	21	21	29	18	26	16	24	3 1/2	3
26687		14	19 1/2	24 1/2	29 1/2	18 1/4	23 1/2	16 1/2	21 3/4	4	2
26688		16 3/8	22 3/8	23	29	20	26	18	24	3 3/4	2
26658		17	22 1/2	26 1/4	32	24 3/4	26	18 1/2	23 3/4	5	2
26040		17 1/2	21 1/2	24	28	20 1/4	24 1/4	18 3/4	22 3/4	4	2
26112		18 3/4	33 1/2	28	43	22 3/4	37 1/4	20 1/4	35 1/2	4	1 3/4
25872		19	22 3/4	26 1/2	31	21 3/4	25 3/4	20	24	8	1 1/2
25465		19	22 3/4	26 1/2	31	21 3/4	25 3/4	20	24	3	1 1/2
26692		19 1/2	29	29 1/2	39	23 1/2	33 7/8	21 3/4	32 1/8	4	1 1/2
	25101	19 1/2	45 1/2	28	54	23 1/2	49 1/2	21 1/2	47 1/2	5	1 1/4
	26118	19 5/8	36	30 1/2	46 3/4	24 1/2	40 7/8	21 5/8	38	5	2
	26447	20 3/4	27 1/2	27 1/2	34	25 1/4	31 3/4	22 3/4	29 1/4	3	2
26439		21 3/4	25 3/4	32 1/4	36 1/4	26 1/4	30 1/4	24	28	4 1/2	1 5/8
26498		22	26	31 3/4	40	26 1/4	30 1/4	24	28	4	1 5/8
25216		22	26	32	40	27 1/4	31	24	28	8 3/4	1 5/8
26499		22	32 1/4	32	42	25 3/4	35 1/2	24	33 3/4	3 1/4	2
26368		22 1/2	32 1/4	32	42 1/4	25 3/4	35 3/4	24	33 3/4	4	2
25472		22 1/2	34	32 3/4	41	30	38 1/4	26	36	4	3
25413		24	34	37	46 3/4	28 1/2	38 1/4	26	35 1/2	8	3
	26219	24 1/2	34	32	42 1/2	28 3/4	38 1/4	26 1/4	36	4 1/2	3
26471		24 3/4	35 1/4	35	45	29	39 1/2	26	36 5/8	3 1/2	2
26364		26	38	36	48	29 3/4	41 3/4	28	40	5	2
	25115	27 1/2	47 1/2	36	55 1/2	32	51 1/2	29 1/2	49 1/2	5	1
	26117	33	40	43	49 3/4	37	35 3/4	35	42	5	1 1/4
26473		34 1/2	40 3/4	42	48	39	45	36	42 1/4	4	2
35002		35 1/4	48	48	61	38 1/4	51 1/4	36 1/2	49 1/2	4	1 1/2
	26119	41 1/2	45 3/4	49 3/4	54	45 3/4	49 1/2	43 1/2	47 3/4	5	1 1/4

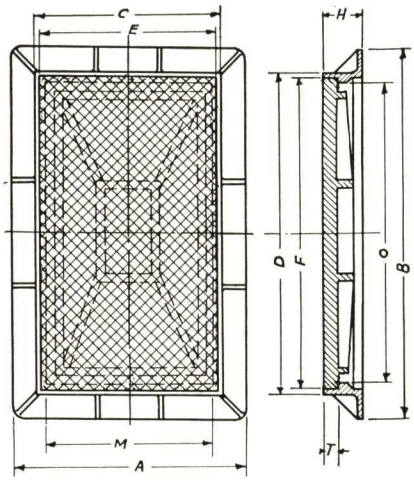
RECTANGULAR



TYPE 169-D



TYPE 204-E

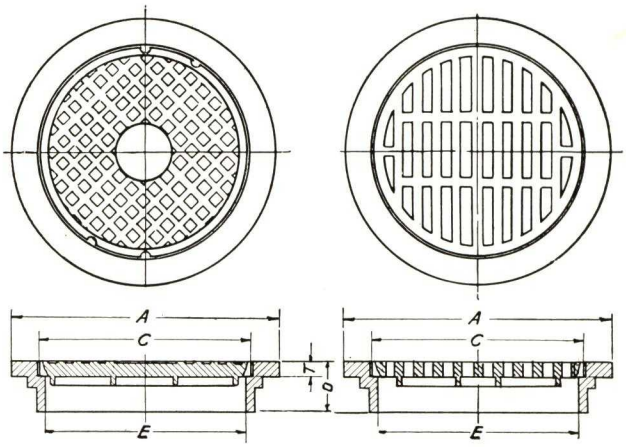


TYPE 163-D

TYPE AND CODE NUMBER			DIMENSIONS — INCHES									
169-D	204-E	163-D	M	O	A	B	C	D	E	F	H	T
	28901		10	15			13½	18½	11½	16½		
	28921		10	20			13½	23½	10½	21½		
27724			12	18	20	26	14¾	20¾	13	19	8	2
	28902		12	18			15½	21½	13½	19½		
	28922		12	24			15½	27½	13½	25½		
	28903		14	21			17½	24½	15½	22½		
26441			14	27	20	33	16½	29½	15¼	28¼	8½	1¼
	28923		14	28			17½	31½	15½	29½		
	28904		16	24			19½	27½	17½	25½		
	28924		16	32			19½	35½	17½	33½		
26105			16¾	21½	31¾	35	21	24¾	19	22¾	8½	1½
	28905		18	27			21½	30½	19½	28½		
	28925		18	36			21½	39½	19½	37½		
		25642	19½	45½	28	54	23½	49½	21½	47½	5	1¼
		25641	19⅝	36	30½	46¾	24½	40⅞	21⅝	38	5	2
26443			20	26¼	34	40	24	30	21¾	28¼	10¾	1¼
	28906		20	30			23½	33½	21½	31½		
	28926		20	40			23½	43½	21½	41½		
		25640	20¾	27½	27½	34	25¼	31¾	22¾	29¼	3	2
26607			21½	41½	32	59	25½	45½	23⅞	43⅞	9¾	1
	28907		22	33			25½	36½	23½	34½		
26606			22	42	39	59	26	46	24¾	44¾	10¼	1½
	28927		22	44			25½	47½	23½	45½		
26367			24	28	38	42	28	32	25⅝	29⅝	9¾	1¼
26454			24	29	35¼	40¼	27½	32¼	25¾	30¾	8	1½
	28908		24	36			27½	39½	25½	37½		
	28928		24	48			27½	51½	25½	49½		
		25645	24½	34	32	42½	28¾	38¼	26¼	36	4¼	3
27789			26	30	38	42	30	34	28	32	8¾	1½
	28909		26	39			29½	42½	27½	40½		
	28929		26	52			29½	55½	27½	53½		
		25643	27½	47½	36	55½	32	51½	29½	49½	5	1
	28910		28	42			31½	45½	29½	43½		
26375			28	50	44	66	31½	53½	29⅝	51⅝	9½	1½
	28930		28	56			31½	59½	29½	57½		
27788			29½	48	48	66	36	54	34⅛	52⅛	12	1½
	28911		30	45			33½	48½	31½	46½		
25111			30	46	32	60	34	50	32	48	5	2
	28931		30	60			33½	63½	31½	61½		
	28912		32	48			35½	51½	33½	49½		
	28932		32	64			35½	67½	33½	65½		
		25644	33	40	43	49¾	37	44	35	42	5	1¼
27723			34	46	47	60	38	51	36	49	8	1¼
	28913		34	51			37½	54½	35½	52½		
	28933		34	68			37½	71½	35½	69½		
	28914		36	54			39½	57½	37½	55½		
	28934		36	72			39½	75½	37½	73½		
	28915		38	57			41½	60½	39½	58½		
	28935		38	76			41½	79½	39½	77½		
	28916		40	60			43½	63½	41½	61½		
	28936		40	80			43½	83½	41½	81½		
		25646	41½	45¾	49¾	54	45¾	49½	43½	47¾	5	1¼
	28917		42	63			45½	66½	43½	64½		
	28937		42	80			45½	83½	43½	80½		
	28918		44	66			47½	69½	45½	67½		
	28938		44	80			47½	83½	45½	81½		
	28919		46	69			49½	72½	47½	70½		
	28939		46	80			49½	83½	47½	81½		
	28920		48	72			51½	75½	49½	73½		
	28940		48	80			51½	83½	49½	81½		

ROADWAY FRAMES FOR SLAB CONSTRUCTION *GRAVITY* COVERS OR GRATINGS—

CIRCULAR



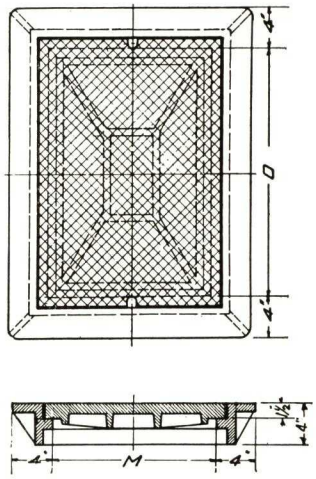
TYPE 159-H

TYPE AND CODE NUMBER 159-H				DIMENSIONS INCHES			
Frames and Covers			*Grating Without Frame	E	A	C	T
D = 8 In.	D = 6 In.	D = 4½ In.					
27831	27843	27817	27919-G	6	12	8	1
27832	27844	27818	27925-G	9	15	11	1
27833	27883	27819	27926-G	12	19	14	1
27834	27845	27823	27826-G	16	22	18	1¼
27835	27846	26629	27930-G	18	24	19	1⅜
27836	27847	25056	27827-G	20	28½	23	1¼
27837	27848	26274	27828-G	24	32½	26	1½
27838	27849	26273	27829-G	30	36½	32	1½
27839	27813	26675	27931-G	36	42½	38	1½
27840	27814	26676	27932-G	42	50	44	1½
27841	27815	27824	27933-G	48	56	50	1½
27842	27816	27825	27934-G	54	62	56	1½

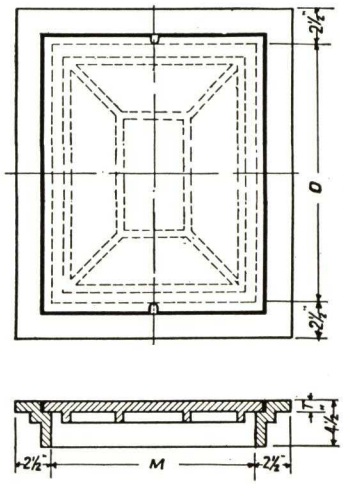
*In ordering this type with grating instead of cover specify proper depth and code number of associated frame.

Flanges may be increased to any desired square, rectangular or circular up to 56 in.

RECTANGULAR



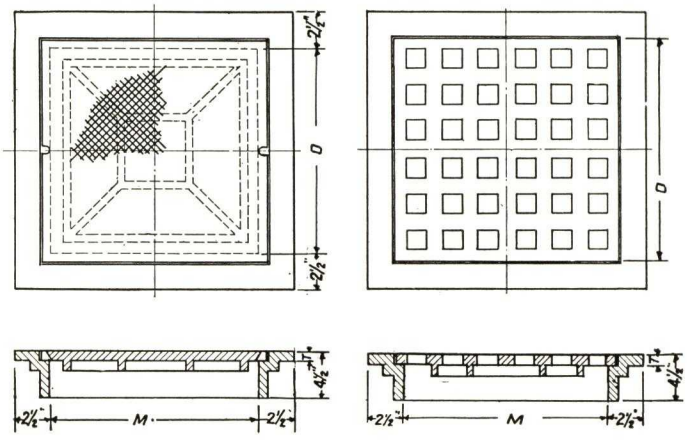
TYPE 204-P



TYPE 135-H

TYPE AND CODE NO.			DIMENSIONS INCHES		
135-H		204-P	M	O	T
With Covers	With Gratings	With Covers			
		28941	10	15	
		28961	10	20	
27572	27584	28942	12	18	1
27573	27583	28962	12	24	1
		28943	14	21	
		28963	14	28	
27574	27586	28944	16	24	1
27575	27587	28964	16	32	1
		28945	18	27	
		28965	18	36	
27576	27588	28946	20	30	1¼
27577	27589	28966	20	40	1¼
		28947	22	33	
		28967	22	44	
27578	27590	28948	24	36	1¼
27579	27591	28968	24	48	1¼
		28949	26	39	
		28969	26	52	
		28950	28	42	
		28970	28	56	
27580		28951	30	45	1½
27581		28971	30	60	1½
		28952	32	48	
		28972	32	64	
		28953	34	51	
		28973	34	68	
27582		28954	36	54	1½
27583		28974	36	72	1½
		28955	38	57	
		28975	38	76	
		28956	40	60	
		28976	40	80	
		28957	42	63	
		28977	42	80	
		28958	44	66	
		28978	44	80	
		28959	46	69	
		28979	46	80	
		28960	48	72	
		28980	48	80	

SQUARE



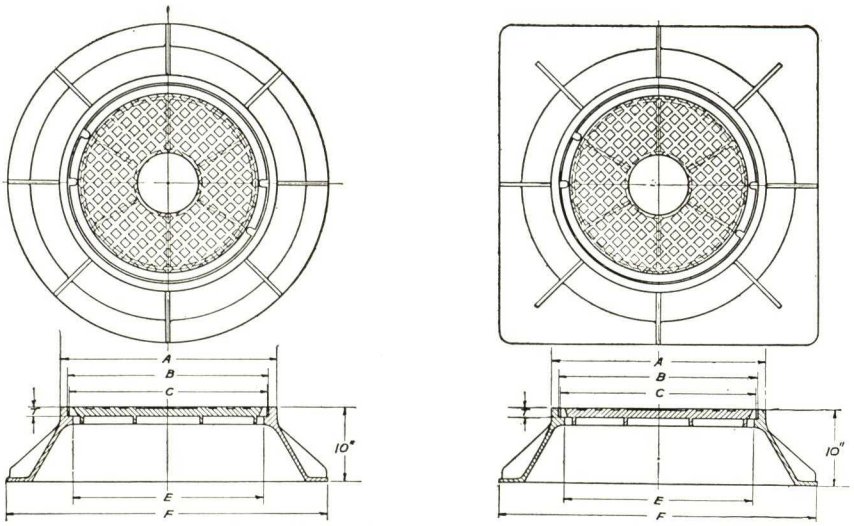
TYPE 135-H

TYPE AND CODE NUMBER 135		DIMENSIONS INCHES	
With Covers	With Gratings	M	T
27558	27565	12	1
27559	27566	16	1
27560	27567	26	1
27561	27568	24	1¼
27562	27569	30	1¼
27563	27570	36	1½
27564	27571	42	1½

ROADWAY AND WALKWAY

FLARED FRAMES FOR PIT CONSTRUCTION
GRAVITY COVERS

CIRCULAR



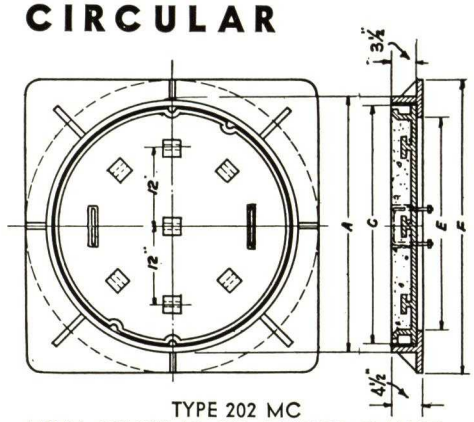
CIRCULAR FLANGE—TYPE 168-B—SQUARE FLANGE

ROADWAY							
TYPE AND CODE NUMBER		DIMENSIONS INCHES					
168-B							
With Circular Flange	With Square Flange	E	A	B	F	C	T
26560	28213	**24**	28	26	43	25¾	1⅜
26562	28214	**27**	31	29	46	28¾	1⅜
26564	28215	**30**	34	32	49	31¾	1⅜
WALKWAYS							
TYPE AND CODE NUMBER		DIMENSIONS INCHES					
168-B							
With Circular Flange	With Square Flange	E	A	B	F	C	T
26566	28216	**24**	28	26	43	25¾	¾
26568	28217	**27**	31	29	46	28¾	¾
26570	28218	**30**	34	32	49	31¾	¾

WALKWAY

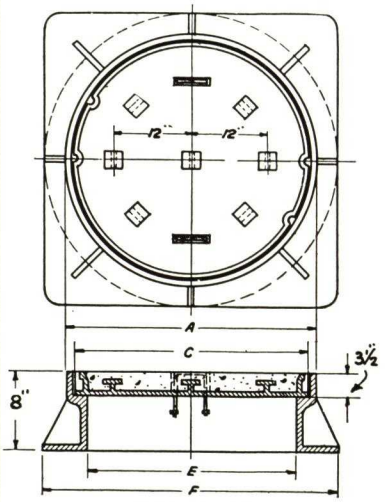
FRAMES FOR PIT OR SLAB CONSTRUCTION
GRAVITY COVERS FOR CONCRETE OR TERRAZZO FILL

CIRCULAR

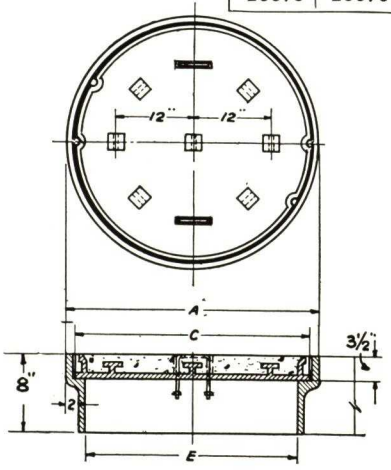


TYPE 202 MC
WITH CIRCULAR OR SQUARE FLANGE
FOR PIT CONSTRUCTION

TYPE AND CODE NUMBER					DIMENSIONS INCHES			
202-MC		202-CC		202-HC				
With Circular Flange	With Square Flange	With Circular Flange	With Square Flange	For Slab Construction	E	A	F	C
28578	28579	28580	28581	28582	**10**	15¼	26	13½
28583	28584	28585	28586	28587	**14**	19¼	30	17½
28660	28661	28662	28663	28664	**16**	21¼	32	19½
28665	28666	28667	28668	28669	**20**	25¼	36	23½
28670	28671	28672	28673	28674	**24**	29¼	40	27½
28675	28676	28677	28678	28679	**30**	35¼	46	33½
28680	28681	28682	28683	28684	**36**	41¼	52	39½
28685	28686	28687	28688	28689	**42**	47¼	58	45½
28690	28691	28692	28693	28694	**48**	53¼	64	51½
28695	28696	28697	28698	28699	**54**	59¼	70	57½



TYPE 202-CC
WITH CIRCULAR OR SQUARE
FLANGE FOR PIT CONSTRUCTION



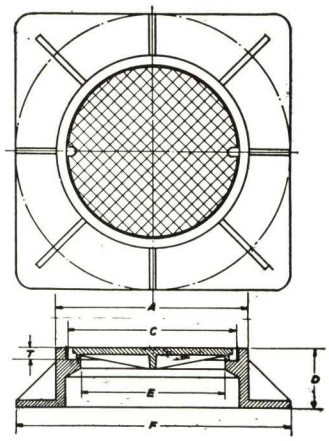
TYPE 202-HC
FOR SLAB CONSTRUCTION

The use of cast iron is particularly advisable for covers which are to be filled with concrete or terrazzo as the rigidity insures against cracking of the fill.

Covers are provided with bronze lift handles.

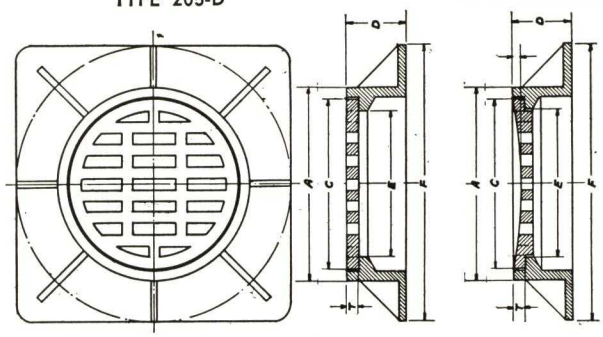
WALKWAY FRAMES FOR PIT CONSTRUCTION
GRAVITY COVERS OR GRATINGS

CIRCULAR



TYPE 205-D

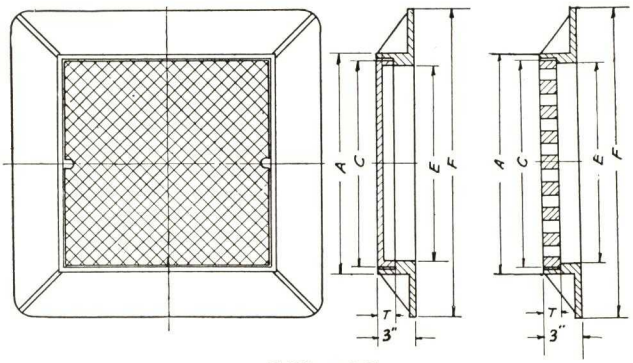
TYPE AND CODE NUMBER 205-D						DIMENSIONS—INCHES					
With Concave Gratings		With Plane Gratings		With Covers		E	A	D	F	C	T
Circular Flange	Square Flange	Circular Flange	Square Flange	Circular Flange	Square Flange						
27512	27956	27504	27967	25598	27978	**8**	11½	8	16½	9¾	1
27513	27957	27505	27968	27503	27979	**12**	16	6	23	14	1
27953	27958	27950	27969	26690	27980	**18¾**	22½	5	29	20½	1
27514	27959	27506	27970	25204	27981	**22**	26	6	36	24	1⅛
				25003	27982	**22**	26	6	44	24	1⅛
27954	27960	27951	27971	25076	27983	**24**	28	6	34	26	1
27515	27961	27507	27972	25007	27984	**28**	31⅛	4½	39¼	30	¾
27516	27962	27508	27973	26183	27985	**30**	34	6	43	32	1¼
27517	27963	27509	27974	26380	27986	**34**	37	5¼	46	35¾	1⅛
27518	27964	27510	27975	26590	27987	**36**	39½	4¾	48	37¾	1¼
27519	27965	27511	27976	26591	27988	**42**	45½	6	54	43¾	1¼
27955	27966	27952	27977	26592	27989	**48**	51½	6	58	49¾	1¼



TYPE 205-D—WITH PLANE OR CONCAVE GRATINGS

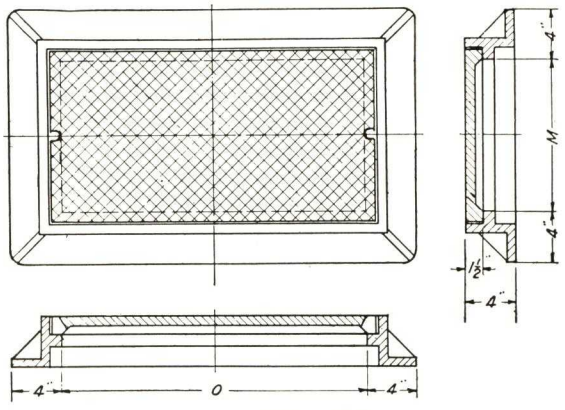
TYPE AND CODE NO. 183-E		DIMENSIONS—INCHES				
With Gratings	With Covers	E	A	F	C	T
27540	27500	**6**	8½	12	7¼	1¼
27541	26515	**8**	10½	14	9¼	1¼
27542	26120	**10**	12½	16	11¼	1½
27543	26121	**12**	14½	18	13¼	1½
27544	26122	**14**	16½	20	15¼	1½
27545	26123	**16**	18½	22	17¼	1½
27546	26124	**18**	20½	24	19¼	1½
27547	26125	**20**	22½	26	21¼	1½
27548	26126	**22**	24½	28	23¼	1½
27549	26127	**24**	26½	30	25¼	1½
27550	26128	**26**	29	32	27¼	1½
27551	26129	**28**	31	34	29¼	1½
27552	26130	**30**	33	36	31¼	1½
27553	26131	**32**	35	38	33¼	1½
27554	26132	**34**	37	40	35¼	1½
27555	26133	**36**	39	42	37¼	1½
27556	26134	**42**	45	48	43¼	1½
27557	26135	**48**	51	54	49¼	1½

SQUARE



TYPE 183-E

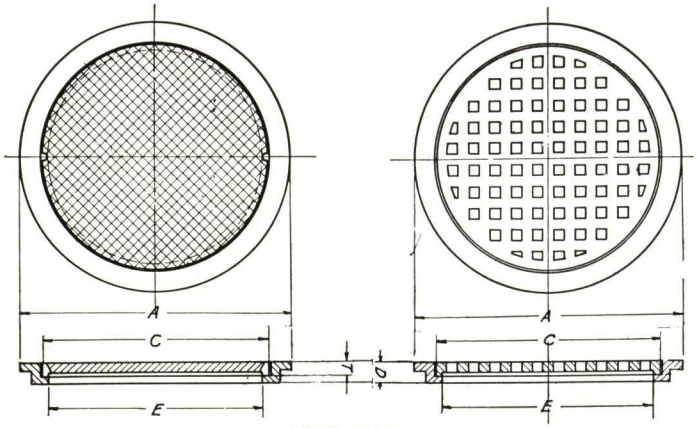
RECTANGULAR



TYPE 195-E

TYPE AND CODE NO. 195-E	DIMENSIONS—INCHES M	O	TYPE AND CODE NO. 195-E	DIMENSIONS—INCHES M	O
25420	**10**	**15**	25440	**10**	**20**
25421	**12**	**18**	25441	**12**	**24**
25422	**14**	**21**	25442	**14**	**28**
25423	**16**	**24**	25443	**16**	**32**
25424	**18**	**27**	25444	**18**	**36**
25425	**20**	**30**	25445	**20**	**40**
25426	**22**	**33**	25446	**22**	**44**
25427	**24**	**36**	25447	**24**	**48**
25428	**26**	**39**	25448	**26**	**52**
25429	**28**	**42**	25449	**28**	**56**
25430	**30**	**45**	25450	**30**	**60**
25431	**32**	**48**	25451	**32**	**64**
25432	**34**	**51**	25452	**34**	**68**
25433	**36**	**54**	25453	**36**	**72**
25434	**38**	**57**	25454	**38**	**76**
25435	**40**	**60**	25455	**40**	**80**
25436	**42**	**63**	25456	**42**	**80**
25437	**44**	**66**	25457	**44**	**80**
25438	**46**	**69**	25458	**46**	**80**
25439	**48**	**72**	25459	**48**	**80**

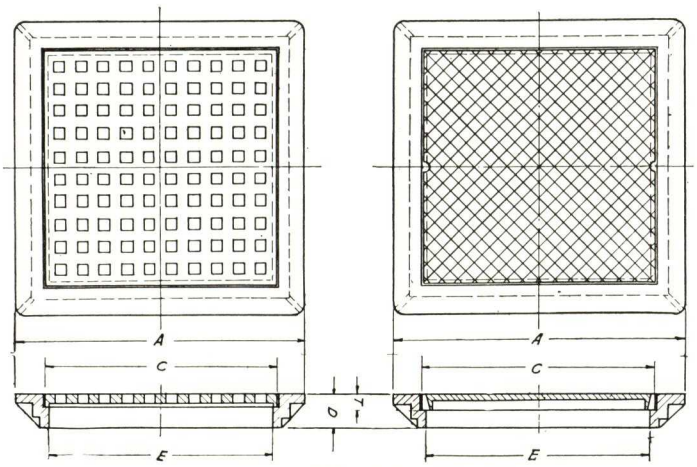
CIRCULAR



TYPE 156-P

TYPE AND CODE NUMBER 156-P			DIMENSIONS—INCHES				
With Covers	With Concave Gratings	With Plane Gratings	E	A	C	D	T
28474			6	10	7	1 7/8	3/4
28475			9	13	10	1 7/8	3/4
28476	28460	28467	12	16	13	1 7/8	3/4
25050	28461	28468	16	20 1/4	17	1 7/8	3/4
25051	28462	28469	18	22 1/4	19	1 7/8	3/4
25052	28463	28470	20	24	21	1 7/8	1 1/4
25054	28464	28471	24	28	25	1 7/8	1 1/4
26373	28465	28472	30	34 1/2	31	1 7/8	1
25324	28466	28473	36	41	37 3/4	2	1 1/4
25325			42	47	43 3/4	2	1 1/4
28477			48	53	49 3/4	2	1 1/4
27722			54	59	55 3/4	2	1 1/4

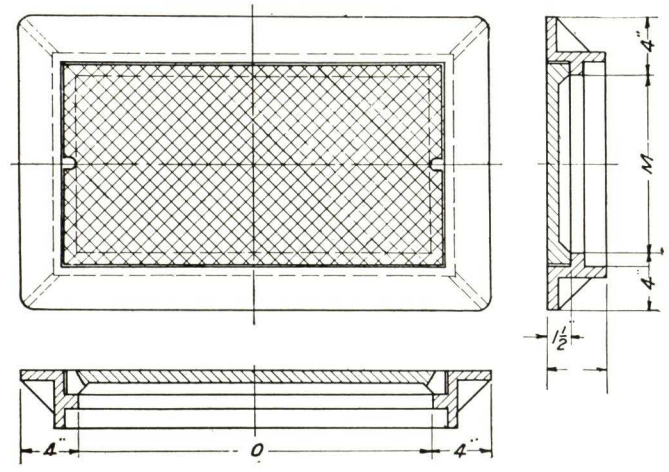
SQUARE



TYPE 142-P

TYPE AND CODE NO. 142-P		DIMENSIONS—INCHES				
With Plane Gratings	With Covers	E	A	D	C	T
27453	27435	6	12	3	7 1/4	1 1/4
27454	27436	8	14	3	9 1/4	1 1/4
27455	27437	10	16	3	11 1/4	1 1/2
27456	27438	12	18	3	13 1/4	1 1/2
27457	27439	14	20	3	15 1/4	1 1/2
27458	27440	16	22	3	17 1/4	1 1/2
27459	27441	18	24	3	19 1/4	1 1/2
27460	27442	20	26	3	21 1/4	1 1/2
27461	27443	22	28	3	23 1/4	1 1/2
27462	27444	24	30	3	25 1/4	1 1/2
27463	27445	26	32	3	27 1/4	1 1/2
27464	27446	28	34	3	29 1/4	1 1/2
27465	27447	30	36	3	31 1/4	1 1/2
27466	27448	32	38	3	33 1/4	1 1/2
27467	27449	34	40	3	35 1/4	1 1/2
27468	27450	36	42	3	37 1/4	1 1/2
27469	27451	42	48	3	43 1/4	1 1/2
27470	27452	48	54	3	49 1/4	1 1/2

RECTANGULAR



TYPE 195-P

TYPE AND CODE NO.	DIMENSIONS INCHES		TYPE AND CODE NO.	DIMENSIONS INCHES	
195-P	M	O	195-P	M	O
28510	10	15	28530	10	20
28511	12	18	28531	12	24
28512	14	21	28532	14	28
28513	16	24	28533	16	32
28514	18	27	28534	18	36
28515	20	30	28535	20	40
28516	22	33	28536	22	44
28517	24	36	28537	24	48
28518	26	39	28538	26	52
28519	28	42	28539	28	56
28520	30	45	28540	30	60
28521	32	48	28541	32	64
28522	34	51	28542	34	68
28523	36	54	28543	36	72
28524	38	57	28544	38	76
28525	40	60	28545	40	80
28526	42	63	28546	42	80
28527	44	66	28547	44	80
28528	46	69	28548	46	80
28529	48	72	28549	48	80

ROADWAY VALVE AND HYDRANT BOXES

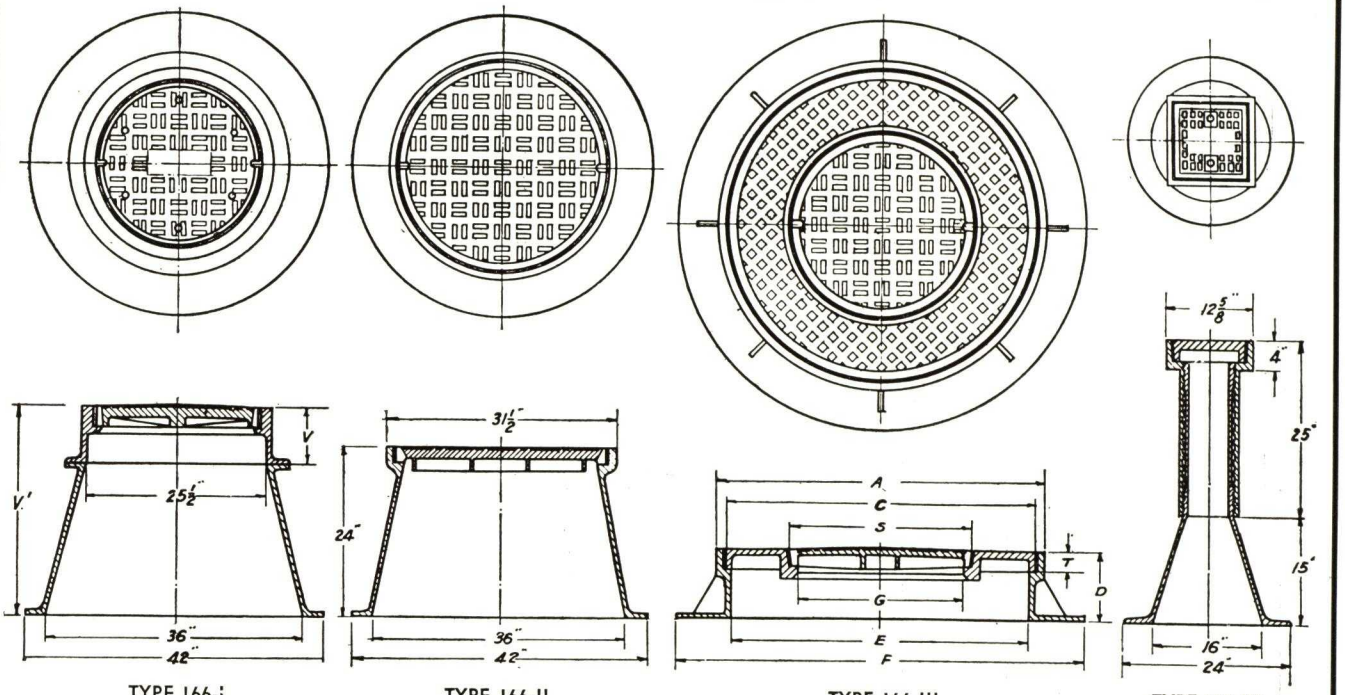
Note: Type IV is adjustable in total height from 40 inches to 60 inches.

TYPE & CODE NO.	DIMENSIONS INCHES	
166-I	V	VI
28601	6	30
28602	8	32
28603	9½	33½
28604	12	36

TYPE & CODE NO.
166-II
28610

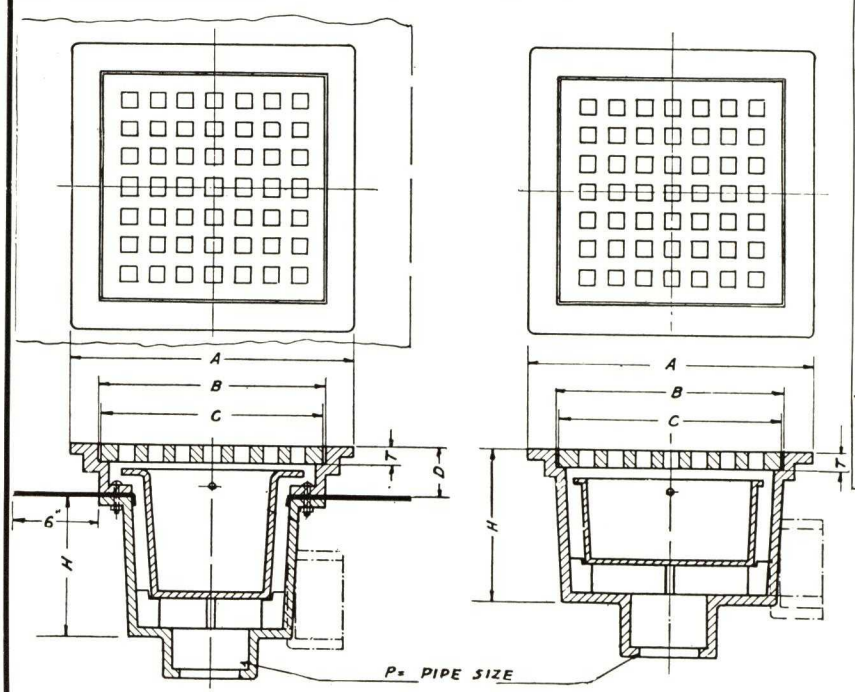
TYPE & CODE NO.	DIMENSIONS—INCHES							
166-III	E	A	G	D	F	C	T	S
27876	36	41½	21⅜	8	48½	37¾	1⅜	23¾
26223	42	46¾	24	10	58	44½	3	26

TYPE & CODE NO.
166-IV
25284



TYPE 166-I TYPE 166-II TYPE 166-III TYPE 166-IV

ROADWAY WATER-TIGHT FLOOR DRAINS



FLASHED TYPE 199-I UNFLASHED TYPE 199-II

FLASHED TYPE

TYPE & CODE NO. 199-I		DIMENSIONS—INCHES						
BOTTOM OUTLET	SIDE OUTLET	A	B	D	H	P	C	T
29000	29004	12	8¼	3½	10	3	8	1¼
29001	29005	16	12¼	3½	10	3	12	1¼
29002	29006	20	16¼	3½	10	4	16	1¼
29003	29007	24	20¼	3½	10	4	20	1½

UNFLASHED TYPE

TYPE & CODE NO. 199-II		DIMENSIONS—INCHES					
BOTTOM OUTLET	SIDE OUTLET	A	B	H	P	C	T
29008	29012	12	8½	10	3	8	1¼
29009	29013	16	12½	10	3	12	1¼
29010	29014	20	16½	10	4	16	1¼
29011	29015	24	20½	10	4	20	1½

Water-tight Floor Drains Type 199 are supplied with dirt bucket equipped with handle.

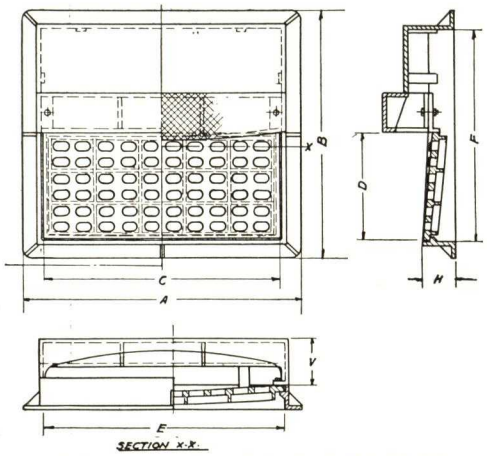
Both Type I and Type II are furnished with threaded outlets when specified.

CURB INLETS AND CATCH BASIN TRAPS

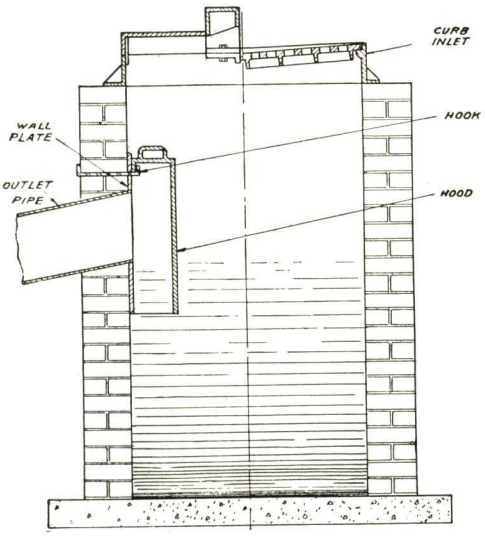
TYPE AND CODE NUMBER 181		DIMENSIONS — INCHES								
With Concave Grating	With Plane Grating	E	F	A	B	D	C	D	T	V
25335	25338	25½	27½	37	39½	6½	24	18¾	2½	See Note
25350	25352	36	34¾	43	43	6½	35	21	1¼	
25385	25341	48	29	54	37	6½	47¾	21¾	1¼	
25366	25342	48	42	54	48	6½	47¾	21¾	1¼	
25343	25344	49	36	55½	42¾	5	49½	29½	1	
25347	25329	48	50	54	56	5	47¾	43½	1¼	

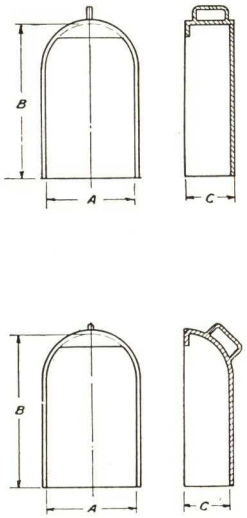
TYPE AND CODE NUMBER				DIMENSIONS INCHES		
199-I		199-II				
With Wall Plate	Without Wall Plate	With Wall Plate	Without Wall Plate	A	B	C
26705	26250	26713	26720	9½	16	4¾
26706	26251	26714	26721	11½	20½	5½
26707	26252	26715	26722	13¼	23½	6½
26708	26711	26716	26723	15¾	26	7½
25134	26712	26717	26724	18	27	9
26709	25221	26718	26725	20	27	11
26710	25186	26719	26726	25¼	29¼	14¾

Note—Unless otherwise specified, V=8 in., Normal practice cells for V to be 2 in. greater than adjacent curb depth.
For Curb inlets with circular base, write for information.



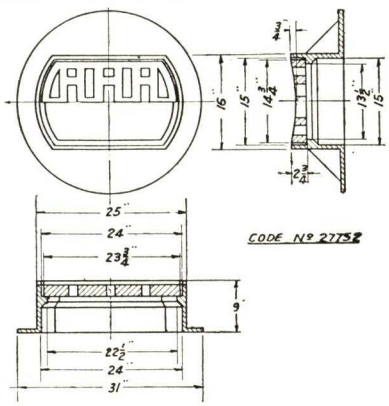
TYPE 181 RECTANGULAR CURB INLET

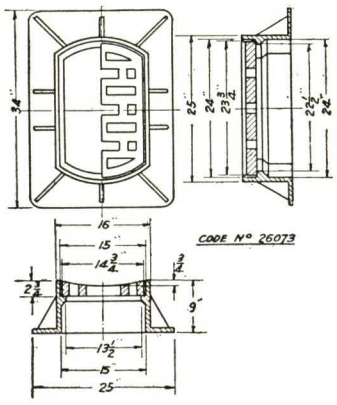


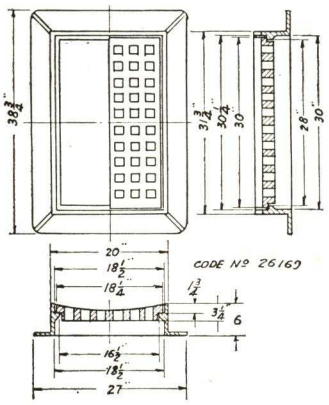


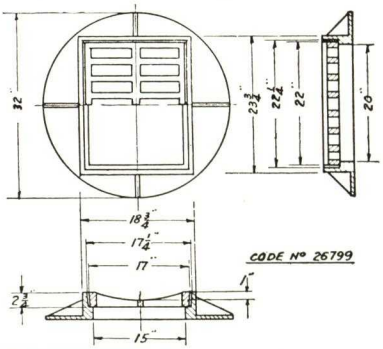
TYPE 199-I

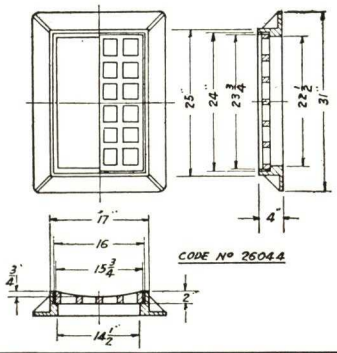
GUTTER FRAMES AND GRATINGS

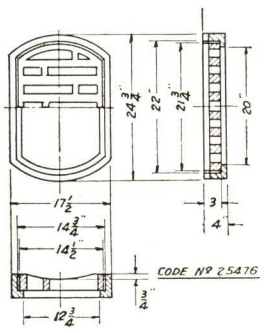






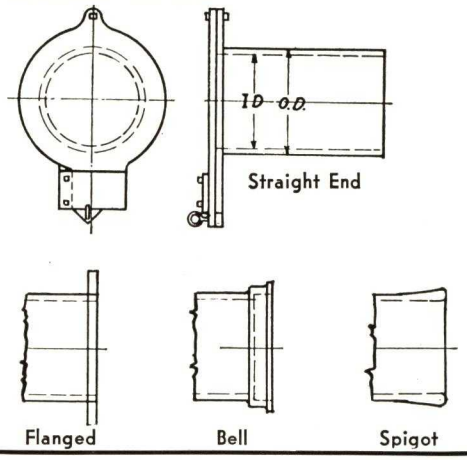






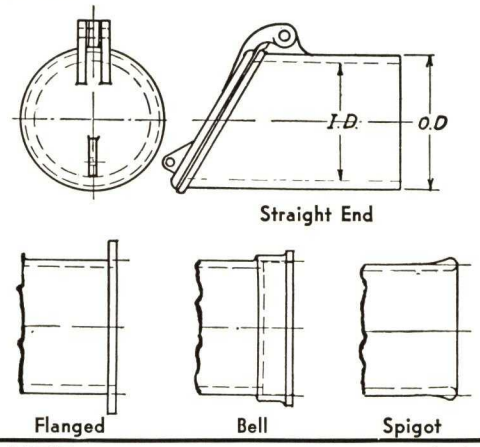
VALVES

SHEAR GATE



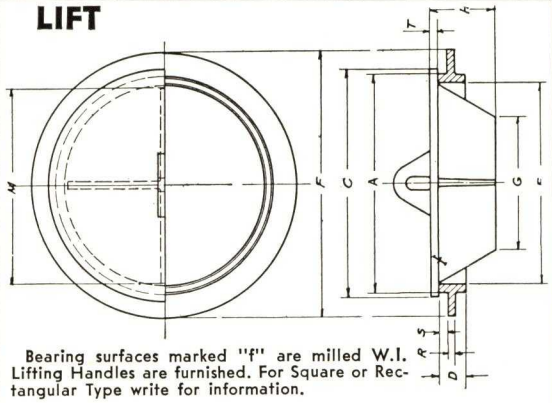
TYPE AND CODE NUMBER 189								DIMENS. INCHES	
MACHINED				MACHINED AND BRONZE LINER					
Straight	Flanged	Bell	Spigot	Straight	Flanged	Bell	Spigot	I. D.	O. D.
26732	26733	26734	26735	26794	26795	26796	26797	7	7 3/4
26736	26737	26738	26739	28300	26701	26702	26703	8	8 3/4
26740	26741	26742	26743	26704	26705	26706	26707	10	10 3/4
26744	26745	26746	26747	26708	26709	26710	26711	12	13
26748	26749	26750	26751	26712	26713	26714	26715	14	15
26752	26753	26754	26755	26716	26717	26718	26719	16	17
26756	26757	26758	26759	26720	26721	26722	26723	18	19 1/4
26760	26761	26762	26763	26724	26725	26726	26727	20	21 1/4
26764	26765	26766	26767	26728	26729	26730	26731	24	25 1/2
26768	26769	26770	26771	26732	26733	26734	26735	30	31 1/2
26772	26773	26774	26775	26736	26737	26738	26739	36	37 3/4
26776	26777	26778	26779	26740	26741	26742	26743	42	44
26790	26791	26792	26793	27644	26745	26746	26747	48	50

FLAP



TYPE AND CODE NUMBER 191								DIMENS. INCHES	
MACHINED				MACHINED AND BRONZE LINER					
Straight	Flanged	Bell	Spigot	Straight	Flanged	Bell	Spigot	I. D.	O. D.
26800	26801	26802	26803	26852	26853	26854	26855	7	7 7/8
26804	26805	26806	26807	26856	26857	26858	26859	8	9
26808	26809	26810	26811	26860	26861	26862	26863	10	11
26812	26813	26814	26815	26864	26865	26866	26867	12	13
26816	26817	26818	26819	26868	26869	26870	26871	14	15 1/4
26820	26821	26822	26823	26872	26873	26874	26875	16	17 1/4
26824	26825	26826	26827	26876	26877	26878	26879	18	19 1/4
26828	26829	26830	26831	26880	26881	26882	26883	20	21 1/2
26832	26833	26834	26835	26884	26885	26886	26887	24	25 1/2
26836	26837	26838	26839	26888	26889	26890	26891	30	31 1/2
26840	26841	26842	26843	26892	26893	26894	26895	36	37 3/4
26844	26845	26846	26847	26896	26897	26898	26899	42	43 3/4
26848	26849	26850	26851	26920	26921	26922	26923	48	49 3/4

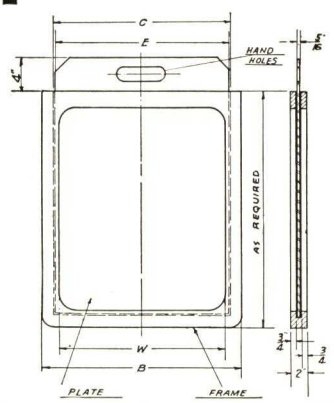
LIFT



Bearing surfaces marked "f" are milled W.I. Lifting Handles are furnished. For Square or Rectangular Type write for information.

TYPE AND CODE NO.	DIMENSIONS — INCHES										
185	E	F	R	S	D	A	C	G	H	M	T
26929	4	9	1/2	1/2	2	5	6	3	4 1/2	4	5/8
26952	6	11	3/4	3/4	2	7	8	4	5	6	5/8
26928	8	13 1/2	3/4	3/4	2 3/8	9	10 1/2	5	5	8	5/8
26950	10	15	3/4	3/4	2 3/8	11	12 1/2	6	5	10	5/8
26951	12	17	3/4	3/4	2 3/8	13	14 1/4	6	6	11 3/4	5/8
26954	14	19	3/4	3/4	2 3/8	15 1/4	16 1/2	8	6	14	3/4
26953	16	21 1/2	3/4	3/4	2 1/2	17 1/2	18 1/2	10	6	16	3/4
26955	18	24	3/4	3/4	2 1/2	19 1/2	20 1/2	12	6	18	3/4
26956	20	26	3/4	3/4	2 1/2	21 1/2	22 1/2	14	6	20	3/4
26957	22	30	3/4	3/4	2 1/2	23 1/2	24 1/2	16	6	22	3/4
26959	24	32	1	1	3	26	26 1/2	18	6	24	3/4

SLIDE

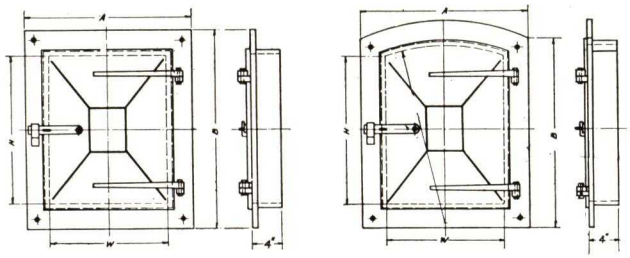


TYPE AND CODE NO.	DIMENSIONS — INCHES			
184	W	B	C	E
26960	6	10	7 1/2	7 1/4
26961	8	12	9 1/2	9 1/4
26962	10	14	11 1/2	11 1/4
26963	12	16	13 1/2	13 1/4
26964	14	18	15 1/2	15 1/4
26965	16	19	16 1/2	16 1/4
26966	16	20	17 1/2	17 1/4
26967	18	22	19 1/2	19 1/4
26968	20	24	21 1/2	21 1/4
26969	24	28	25 1/2	25 1/4
26970	30	34	31 1/2	31 1/4
26971	36	40	37 1/2	37 1/4
26972	42	46	43 1/2	43 1/4
26973	48	44	49 1/2	49 1/4

The frame is cast iron and the slide is boiler plate.

When E exceeds 18 in., two hand holes are provided.

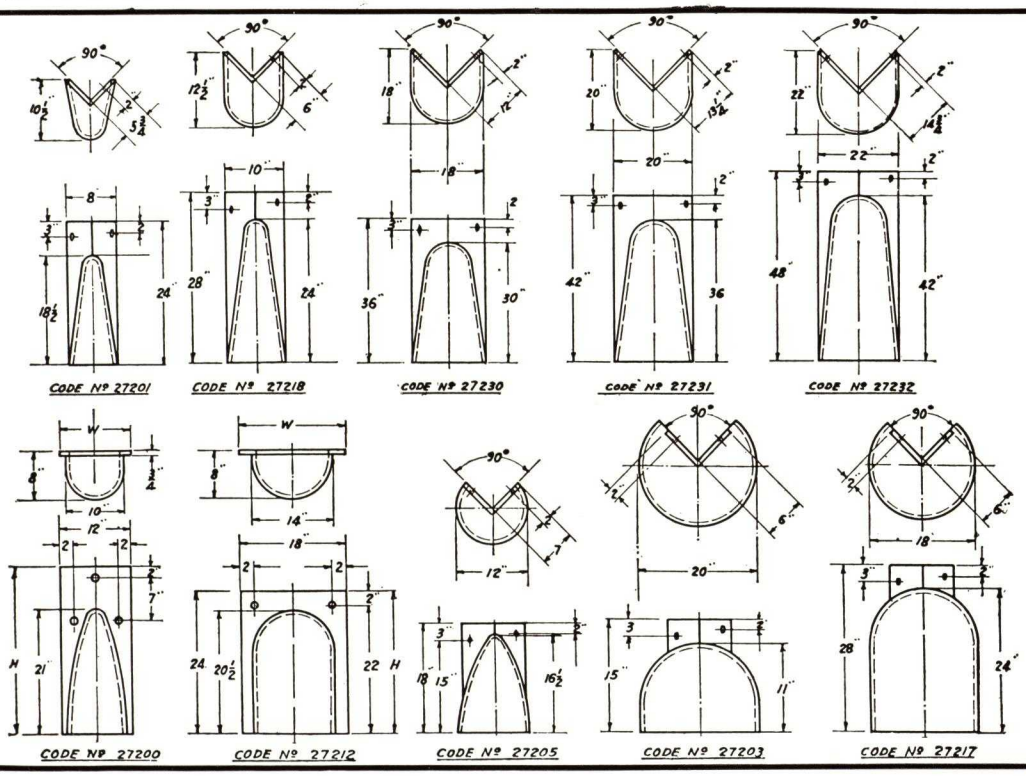
CLEAN-OUT FRAMES AND DOORS



Bearing surfaces of frames and doors are milled to a true and even surface when specified. Where doors are subject to heavy impast cast steel doors are furnished, when specified.

TYPE AND CODE NO.	DIMENSIONS INCHES				TYPE AND CODE NO.	DIMENSIONS INCHES			
179	W	H	A	B	179	W	H	A	B
27010	4	6	10¾	12¾	27027	20	16	26¾	22¾
27011	6	8	12¾	14¾	27028	20	20	26¾	26¾
27012	8	10	14¾	16¾	27029	20	30	26¾	36¾
27013	10	10	16¾	16¾	27030	24	18	30¾	24¾
27014	10	12	16¾	18¾	27031	24	24	31	31
27015	12	8	18¾	14¾	27032	24	30	31	37
27016	12	10	18¾	16¾	27033	24	36	31	43
27017	12	12	18¾	18¾	27034	24	42	31	49
27018	12	16	18¾	22¾	27035	24	48	31	55
27043	12	18	18¾	24¾	27036	30	24	37	31
27019	15	9	21¾	15¾	27037	30	30	37	37
27020	16	16	22¾	22¾	27038	30	36	37	43
27021	16	10	22¾	16¾	27042	30	48	37	55
27022	16	20	22¾	26¾	27039	36	36	43	43
27023	16	24	22¾	30¾	27041	36	48	43	55
27024	18	18	24¾	24¾	27040	35	72	43	79
27025	18	24	24¾	30¾	27044	42	48	49	55
27026	18	30	24¾	36¾					

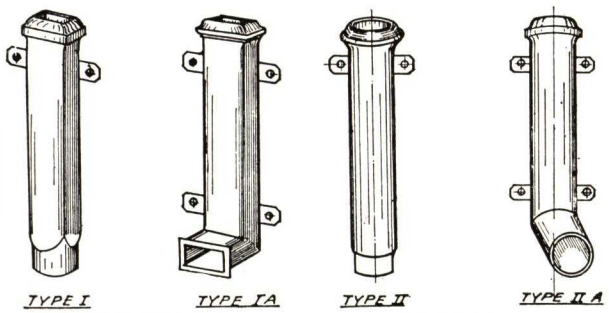
BOLTED WHEEL GUARDS



All guards are 1 in. thick; all holes are 7/8 in. cored. Grout holes are furnished when specified.

Dimensions H and W on Types 27200 and 27212 may be varied as desired.

LEADER SHOES



RECTANGULAR TYPE 196-I * Without Offset			LENGTH	CIRCULAR TYPE 196-II * Without Offset				LENGTH
Size 2" x 3"	Size 3" x 4"	Size 4" x 5"		Size 3" Dia.	Size 4" Dia.	Size 5" Dia.	Size 6" Dia.	
3" Outlet	4" Outlet	4" Outlet		3" Outlet	4" Outlet	5" Outlet	6" Outlet	
28700	28708	28716	12	28724	28732	28740	28748	12
28701	28709	28717	18	28725	28733	28741	28749	18
28702	28710	28718	24	28726	28734	28742	28750	24
28703	28711	28719	30	28727	28735	28743	28751	30
28704	28712	28720	36	28728	28736	28744	28752	36
28705	28713	28721	48	28729	28737	28745	28753	48
28706	28714	28722	60	28730	28738	28746	28754	60
28707	28715	28723	72	28731	28739	28747	28755	72

* For Offset Type Add "A" to Code Number.

NOVEMBER, 1937

PRODUCTS NOT LISTED IN THIS CATALOG

MANHOLE STEPS
MANHOLE DUST PANS
SCUPPERS
AIR VENTS FOR WATER LINES
SEWER MARKERS
AIR BRICKS
TRAFFIC BASES
RAILWAY BALLAST DRAINS
POST BASES
STOP-PLANK GROOVES
PATH BOXES
LOUVRES
BLAST GATES
MARINE CASTINGS

- Mooring Posts
- Bitts
- Cleats
- Chocks
- Navy Anchors
- Mushroom Anchors

CATALOG NO. 109

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THE CONSTRUCTION CASTINGS CORPORATION
THE ARMORED CONCRETE CORPORATION
FLOCKHART FOUNDRY COMPANY
NEWARK, N. J.

WINDSHIELD SCUPPER DIVISION

SARGENT BUILDING SPECIALTIES CO.

Windshield Scuppers, Concrete Inserts and Ventilating Blocks

16 Warren Street, NEW YORK

REPRESENTATIVES IN PRINCIPAL CITIES

WINDSHIELD SCUPPERS

Purpose and Advantages of Windshield Scuppers

To provide a quick escape for excess water on floors in case of fire, accidental discharge of sprinklers, bursting pipes, etc., reducing water damage. They are also used in film vaults and for overflows at roof parapets.

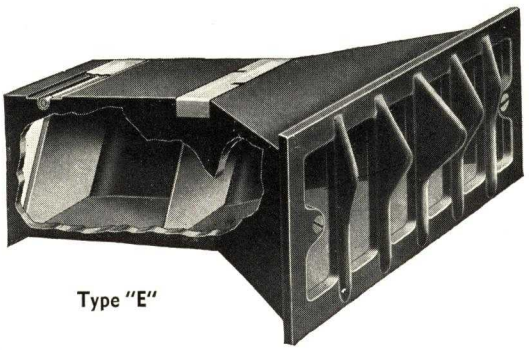
All Windshield Scuppers are cast in one piece, insuring proper setting in the same condition as when they leave the factory. Each is provided with a drip under the outlet to prevent staining face of building. Both the brass windshield and bronze exterior weather valve are provided with seats to permit a draftproof fit without binding; hinge pins and bushings are of bronze or brass.

One scupper should be provided for each 500 sq. ft. of floor area if building is sprinklered, otherwise one for each 1000 sq. ft.

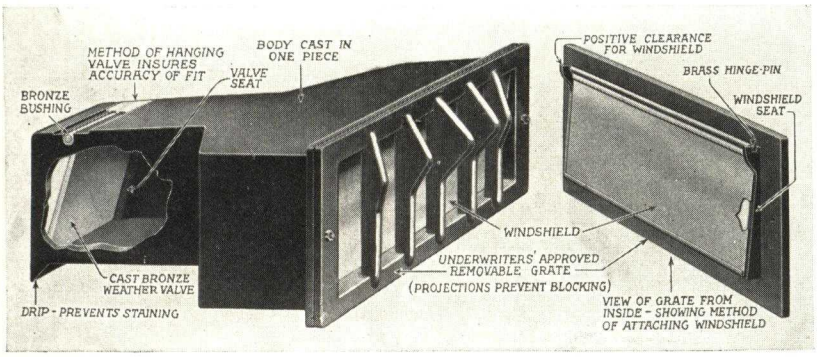
Extra Heavy Type "SG"—One-piece ⅜-in. cast iron body, bronze exterior weather valve, brass windshield at entrance, 4 x 4-in. clear outlet, 4 x 12-in. clear inlet, removable grating.

Where interior finish is to be considered, this type can be furnished with polished and lacquered brass windshield or without vertical bars at inlet.

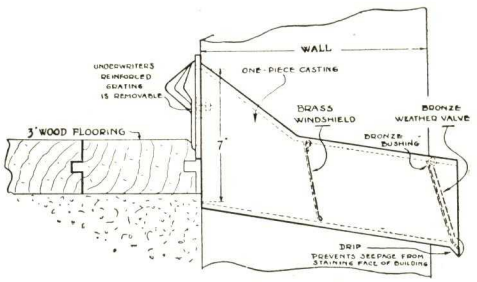
Type "E"—One-piece ¼-in. cast iron body, bronze exterior weather valve, brass windshield in throat, 4 x 4-in. clear outlet, 4 x 12-in. clear inlet removable grating. This type may be had without windshield at a slight saving.



Type "E"



Extra Heavy Type "SG" Showing How Windshield Can Be Removed



Type "W" for Wood Floor on Concrete

Specifications

Winshield Scuppers as made by the WINDSHIELD SCUPPER DIVISION OF SARGENT BUILDING SPECIALTIES CO., 16 Warren Street, New York, N. Y., shall be installed wherever scuppers are indicated on drawings. The type of scupper shall be (*specify type with stipulation regarding any optional features above described under "Types"*).

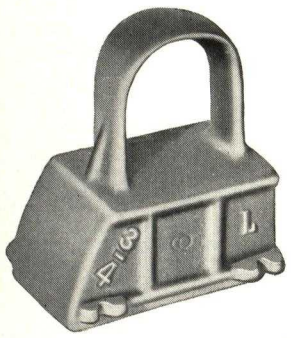
Scuppers shall be of proper depth to suit wall thickness in all cases. They shall be thoroughly bedded in mortar on all surfaces in the wall. Where plastered walls occur the cast iron box shall be set flush with the plaster so that only grating will project beyond plaster line.

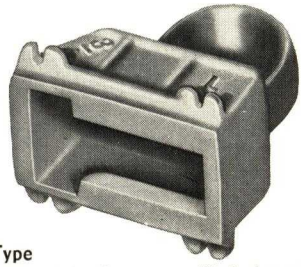
"SARGENT" CONCRETE INSERTS

For attaching machinery, shafting, pipes, sprinklers, fixtures, elevator guides, etc., obviating expensive drilling into hardened concrete. Made of malleable iron, combining strength and durability.

Tested to withstand, with factor of safety, the safe load of bolt of size for which designed.

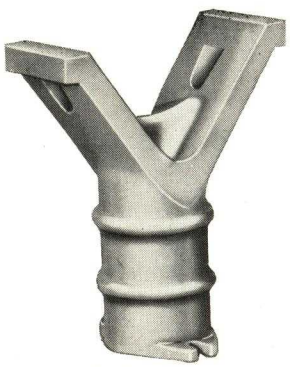
Space 4 ft. o.c. throughout concrete ceilings to provide for undetermined future attachment problems.





Loop Type

This type permits lateral adjustment; either head or nut will fit insert. Made for the following bolt sizes: ½, ⅝, ¾ in. Height: 2 7/16-2 13/16 and 3/16 in. respectively.



Socket Type

With ample bearing and provision for additional reinforcement where cinder concrete is used. Tapped for ½, ⅝, ¾ and ⅞-in. bolts.

VENTILATING BLOCK

Heavy cast iron ventilating block, which is made in two sizes that will fit conveniently into brickwork.

Optional equipment — bronze screen to keep out insects.

Sizes: 17 x 5½ x 4 in.;
8 x 5½ x 4¾ in.

DOORS - SECTION - 14

Section Number 1/5 Catalog Number

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Syracuse Fire Door Corp. 14/18
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Wheeler-Osgood Sales Corp. 14/47
Wilson, J. G., Corp. 14/35

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THIS INDEX INCLUDES ADDITIONAL INFORMATION WHICH IS FILED IN OTHER SECTIONS

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BUCKS
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(Continued on Next Page)

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DOORS—Cont.

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See Specific Type of Door
(Including Hollow Metal; Metal Covered; Rolling Steel; Tin Clad; Corrugated Steel; Veneered—Fireproof [Asbestos and Wood Combination]; etc.)

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Detroit Steel Products Co. 15/9
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Ellison Bronze Co., Inc. 14/7
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H-H-M 21/6
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Hauserman, E. F., Co. 20/6
International Revolving Door Co. 14/38
Jamestown Metal Corp. 14/10
Mesker Bros. Iron Co. 15/18
Niedringhaus, Inc. 20/11
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Reliance Bronze & Steel Co., Inc. 14/17
Snead & Co. 20/13
Truscon Steel Co. 15/22
Trussbilt, Div. of Siems Bros., Inc. 14/20
Tyler, W. S., Co. 14/19
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Vento Steel Products Co. 15/23
Vulcan 15/18
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Better Bilt Door Co. 16/15
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Dusing & Hunt, Inc. 14/5
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Allen Automatic Inc. 14/22
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Better Bilt Door Co. 16/15
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Cornell Iron Works, Inc. 14/30
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Kinnear Mfg. Co. 14/32; 16/17
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McKee Door Co. 16/18
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Peelle Co. 14/24
Richmond Fireproof Door Co. 14/25
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Crescent 7/36
Dusing & Hunt, Inc. 14/5
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Friedrich, E. H., Co. 14/9
Fyrgard 14/25
Hamlin, Irving 10/46
International Revolving Door Co. 14/38
Jamison Cold Storage Door Co. .. 28/29
Mahon, R. C., Co. 14/11
Mecco 14/13
Metal Clad Doors, Inc. 14/12
Metcla 14/12
Moeschl-Edwards Corrugating Co., Inc. 14/13
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Peelle Co. 14/24
Philipp Mfg. Co. 14/16
R-W 16/20
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Richmond Fireproof Door Co. ... 14/25
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Sec-Tel 14/27
Security Fire Door Co. 14/27
Simplex Door Co. 14/26
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Barcol OVERdoor 16/14
Bayley, William, Co. 15/3
Better Bilt Door Co. 16/15
Cornell Iron Works, Inc. 14/30
Detroit Steel Products Co. 15/9
Fenestra 15/9
Float-Over 14/30
Kinnear Mfg. Co. 14/32; 16/17
McKee Door Co. 16/18
Overdoors 15/22
Overhead Door Corp. 16/19
Pier 15/9
Qualitybilt 12/7
Roll-up 16/22
RoL-TOP 14/32; 16/17
Ro-Way 16/21
Rowe Mfg. Co. 16/21
Sectionfold 14/35
Stanley Works 16/22
Steeldor 16/18
Truscon Steel Co. 15/22
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Wilson, J. G., Corp. 14/35
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See Specific Type of Door; Doors—Mechanically or Motor Operated; Operators—Door

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Atchison Revolving Door Co. .. 14/37
General Bronze Corp. .. 13/27; 14/36
International Revolving Door Co. 14/38
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Cornell Iron Works, Inc. 14/30
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Kinnear Mfg. Co. 14/32
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Mahon, R. C., Co. 14/34
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Art Metal Construction Co. 14/3
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Ceco Steel Products Corp. 3/8
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Evanston 10/46
Hamlin, Irving 10/46
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Hauserman, E. F., Co. 20/6
Horn Folding Partition Co. 20/26
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Newcastle Products, Inc. 20/27
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Tin Clad

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See Doors—Hollow Metal

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Compound and Pyrono Door Co. 14/40
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Four Fold.....14/24
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Kiesling, John W., & Sons, Inc... 22/6
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Majestic Co......26/145
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Over-Fold 15/26
Overhead Door Corp......16/19
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See Grilles and Guards—Rolling or Coiling

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ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building
PITTSBURGH, PA.

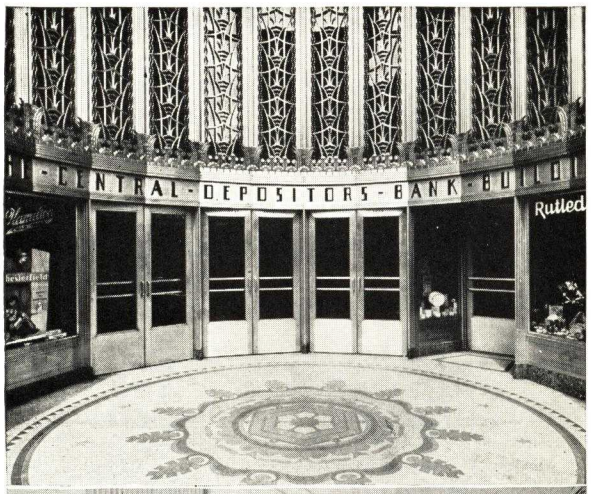
For Sales Offices, see Metals Section
For Other Pages on Alcoa Aluminum, Its Alloys and Uses, see File Index

ALCOA ALUMINUM FOR DOORS OF ALL TYPES

There are no limitations in your designing of doors when versatile aluminum is the metal used to carry out your conception.

Extruded shapes, bar, tubing, castings, and plate offer ornamental craftsmen ample material with which to develop door designs of extreme simplicity as well as those of greatest detail. Doors of aluminum are easy to operate, for aluminum is one of the lightest of commercial metals.

Many manufacturers fabricate doors of Alcoa Aluminum. They will furnish details of construction and available finishes.



AETNA STEEL PRODUCTS CORPORATION

Manufacturers of Hollow Metal Doors and Trim, Elevator Enclosures, Metal Covered and Kalamein Doors

MAIN OFFICE AND PLANT
87-109 Richardson Street
BROOKLYN, N. Y.

TELEPHONE
EVergreen 8-6310

REPRESENTATIVES IN ALL PRINCIPAL CITIES

AETNA PRODUCTS, EXPERIENCE AND FACILITIES

Products

Hollow Metal Doors, Jambs and Trim
Steel Door Frames
Elevator, Stair and Dumbwaiter Enclosures
Kalamein Doors, Frames and Trim
Tin Clad Fire Doors and Hardware
Cold Rolled Shapes

Service and Experience

Aetna products have been manufactured for nearly 40 years and our unusual manufacturing facilities, long experience, and organization trained in production and service, insure a high standard of quality and prompt deliveries.

Our thoroughly competent and experienced Engineering Department is at the service of those who meet with unusual and difficult problems, and our standard can be varied to meet this need at a slightly additional cost.

Aetna is housed in absolutely modern plants of brick and steel construction, consisting of more than 60,000 sq. ft. of manufacturing space. Recent additions of the newest and most modern equipment have been added to insure an excellence of product to satisfy the needs of the most discriminating architect, contractor and engineer.

Aetna Standard Finishes

All materials are thoroughly cleaned of all oil, grease, dust, rust, and other impurities and then given at least one shop coat of best metallic primer.

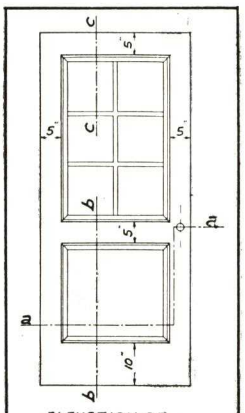
Realizing the importance of furnishing hollow metal products where baked-on enamel finishes are specified, this company recently built a complete new addition 50x100 ft., housing two spray booths and four Gehnrich gas heated baking ovens.

Our finishing department is adequately staffed by men who know their jobs. Hollow metal doors in particular are usually specified to receive baked-on enamel finish to consist of at least six coats, each baked at the proper temperature and sanded, and the last coat being carefully rubbed to an egg-shell gloss finish.

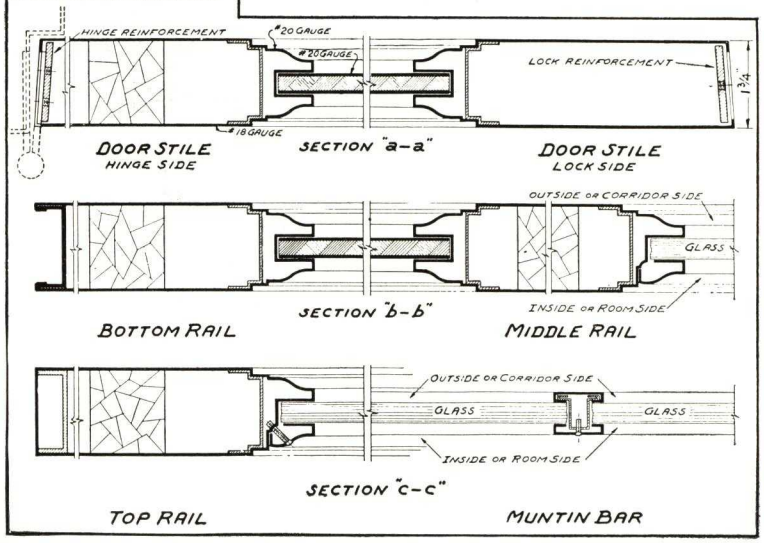
Aetna Label Service

Combination integral steel door frames, hollow metal doors and metal covered doors can be furnished to meet the requirements of the National Board of Fire Underwriters and bear their approved label.

Avoid Delay—Use Aetna Standards
Capacity (weekly)—3500 Frames; 500 Doors



ELEVATION OF HOLLOW METAL DOOR.



AETNA HOLLOW METAL DOORS

This company has standardized the shape of the panel mouldings for Hollow Metal doors to gain the benefit of the saving produced in fabricating large quantity of standard shapes. All our mouldings and shapes are rolled in our own shops, thereby insuring a rigid standard of excellence.

Note the construction features of our standard door shown below.

Our door department operates as a distinct unit and yet in constant co-operation with the steel door frame department, to insure accuracy in fit where doors occur in metal door frames.

Aetna Hollow Metal doors have been found especially adapted for installation in slum clearance projects, apartment houses, hospitals, schools, hotels, theatres, stores, loft and office buildings. They are made in a variety of styles, and sizes as determined by the architects and builders, embracing solid panel, glass panel, raised panel and louvre panel.

Semi-flush and Flush Doors—We recommend the semi-flush door and flush door for hospital installations particularly. We wish to point out that the semi-flush door carries all the characteristics and features of the flush door, but eliminates the usual flat monotonous appearance.

Elevator Doors—The flush type construction for the hatch side of our elevator doors, is in accordance with the best standard practices.

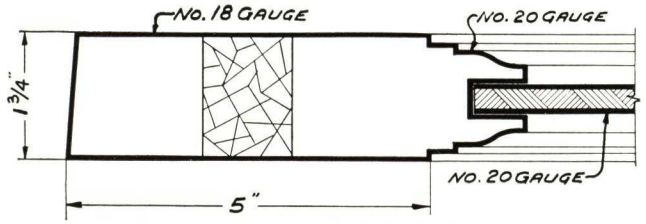
Construction Specification

Aetna Doors are constructed of the best quality open hearth, full cold rolled, full pickled, patent leveled sheet steel. Stiles and rails are formed of 18 U.S. standard gauge and 20-gauge for the panels and mouldings. Panel filler consists of a ⅜-in. approved filler, and stiles and rails are filled solid with asbestos air-cell or cork, to deaden the metallic sound. All joints between stiles and rails, and the mitres of all panel mouldings are welded and made perfectly smooth and invisible. The necessary hardware cutouts and reinforcements are provided for all types of hardware.

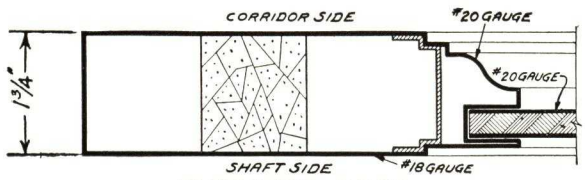
Elevator Enclosures

Aetna Elevator Entrances are furnished and erected complete, including hollow metal door with vision panel, where required; combination buck, saddle, facia, closer support as required, and all necessary hardware. All electrical equipment by others.

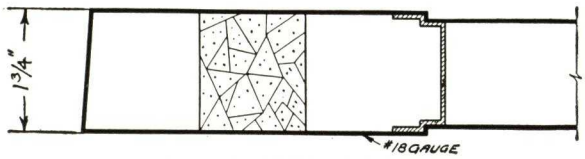
HOLLOW METAL DOOR SECTIONS



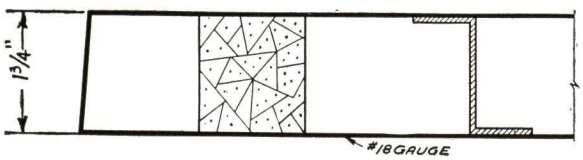
STANDARD PANEL DOOR



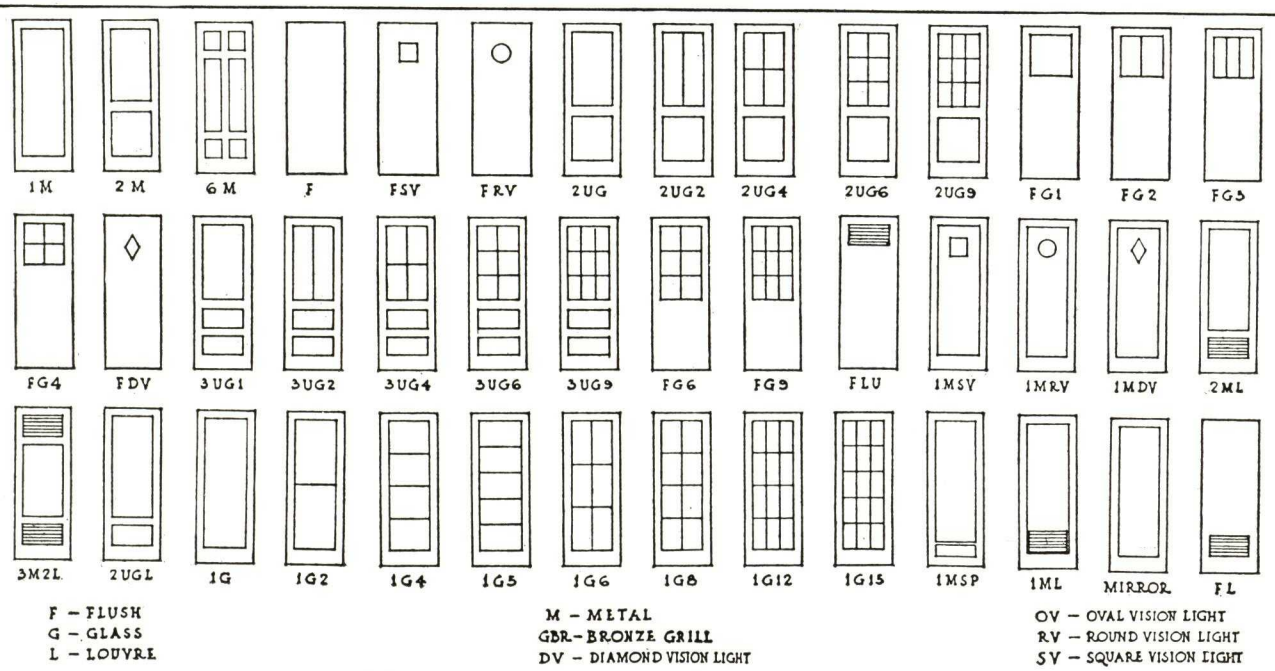
ELEVATOR DOOR



SEMI FLUSH DOOR



FLUSH DOOR



• STANDARD DOOR DESIGNS •

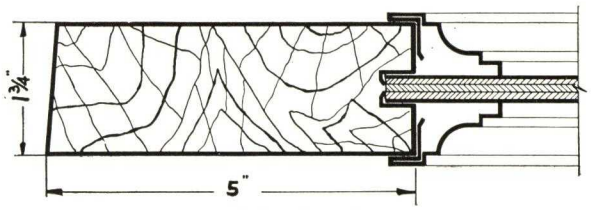
PARTIAL LIST OF INSTALLATIONS

Building	Location	Contractor	Architect
Bank of Manhattan Co. Building	40 Wall St., New York	Starrett Bros. & Eken	Craig Severance
Yale University Dormitory	New Haven, Conn.	Marc Eidlitz & Son	James Gamble Rogers
Hotel Lexington	New York, N. Y.	Turner Construction Co.	Schultze & Weaver
Julia Lathrop Housing (North)	Chicago, Ill.	Henry Ericsson Co.	Associated Architects
Julia Lathrop Housing (South)	Chicago, Ill.	U. S. Fireproofing Co.	Associated Architects
Hotel Roanoke	Roanoke, Va.	J. A. Jones Construction Co.	George B. Post & Sons
U. S. Veterans Hospital	Bedford, Mass.	Thomas O'Connor & Co.	Veterans Administration
Hillcreek Housing Project	Philadelphia, Pa.	Turner Construction Co.	Allied Architects, Philadelphia
N. T. State Teachers College	Denton, Tex.	Henger Construction Co.	Wyatt C. Hendrick
Laurel Homes Housing Project	Cincinnati, Ohio	David Gordon Building Co.	Associated Architects
U. S. Veterans Hospital	Togus, Me.	Doyle & Russell	Veterans Administration
Cheatham Place Housing Project	Nashville, Tenn.	Foster & Creighton	Nashville Allied Architects
Howard University Library	Washington, D. C.	Irwin & Leighton	Albert I. Cassell

AETNA KALAMEIN DOORS

Type No. 1 (With Hollow Metal Moulding)

Aetna Type No. 1 Kalamein doors are 1¾ in. thick and constructed of thoroughly dried solid wood pine cores, covered with 24-gauge patent leveled furniture steel sheets. Cores for stiles and rails are joined and mortised and tenoned in an approved manner. Metal is drawn around and clinched into wood cores to insure perfectly flat surfaces. Hollow Metal panel moulding is attached to the doors with concealed clips and greatly improves the appearance of this door, as no nails or screws appear on the surface.

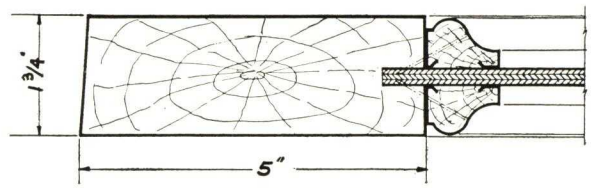


TYPE NO. 1

WITH HOLLOW METAL MOULDING

Type No. 2 (With Kalamein Moulding)

Aetna Type No. 2 Kalamein doors provide for a diversity in shape of Kalamein mouldings. Our completeness in stock of moulding insure our satisfying the needs of the most discriminating architect. All mouldings are fastened with screws or nails, and this door is especially desirable where a door of sturdy construction is required and where cost is paramount.



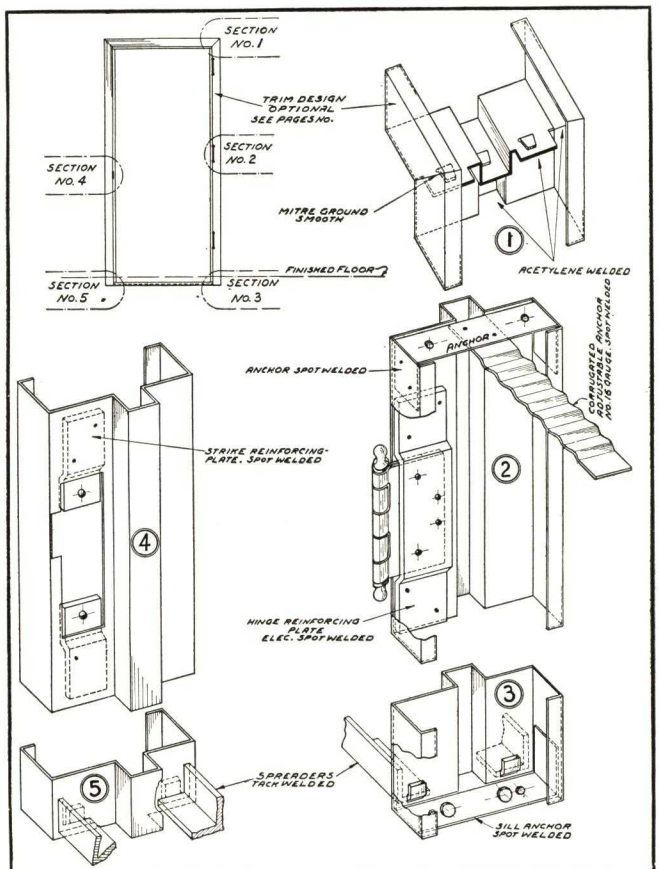
TYPE NO. 2

WITH KALAMEIN MOULDING

AETNA COMBINATION STEEL DOOR FRAMES

Aetna Combination Integral Frames are pressed or rolled of 12, 14 or 16 US gauge sheet steel. Cutting of jamb or trim is entirely eliminated as the frames are sized exactly with all cutouts, drilling and reinforcing for hardware provided. Frames are finished with one dipped coat of best metallic primer and any final finished coat may be applied over this.

Aetna frames will neither warp nor crack, and permanence and low initial cost warrant their use in place of wood jambs and trim.



DETAIL OF STANDARD CONSTRUCTION

Aetna Construction features

The general construction features illustrate our standard procedure, but type of wall anchor, size of reinforcing plate, and design of trim can be varied to suit individual requirements.

Figure 1—The entire inside through the jamb and mitre is continuously acetylene-welded. This insures that there will be no chance of breaking of head from jamb. Additional rigidity is obtained by the three tongues which prevent the head member breaking away from the jamb.

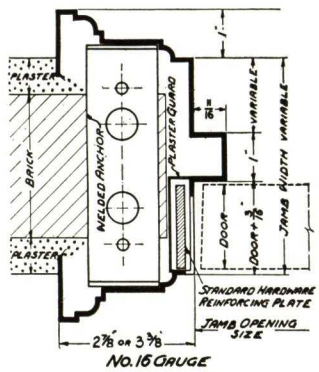
Figure 2—The hinge plate is rigidly spot-welded to the inside surface of the jamb with holes drilled and tapped to receive the hinge and is offset so that the hinge will finish flush with the outer surface of the jamb. The corrugated anchor solidly bonds the frame of the wall.

Various other type anchors can be made, at no additional charge, to suit varying wall conditions.

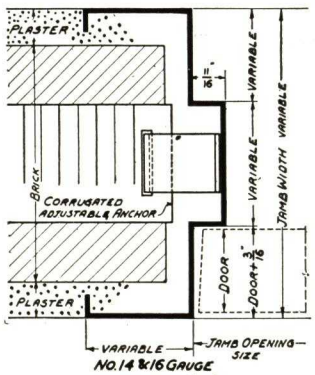
Figure 3—Two angle spreaders are furnished with tongues and are tack-welded (Figure 5) to insure parallel alignment. These spreaders may or may not be left in the opening when the finished floor is laid.

Figure 4—Cutout provided for all strikes and offset reinforcement plate to insure that the strike will lie flat and finish flush with the outer surface of the jamb. The location of this strike receives our utmost consideration, so that in all cases, a proper fit may be procured when the actual lock is installed in the center of the door. Strike plates located haphazardly result in objectionable rattle of the door.

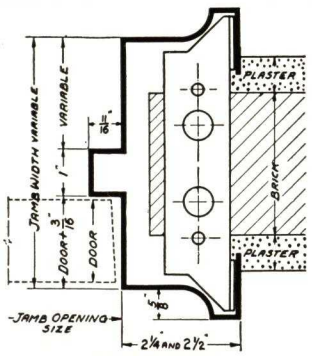
STANDARD DETAILS OF COMBINATION FRAMES



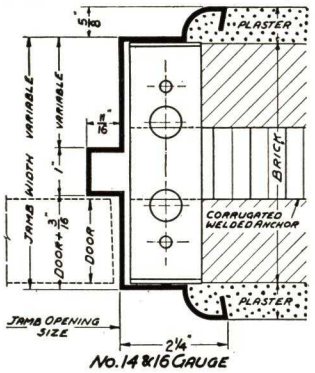
No. 16 GAUGE
TYPE "A"



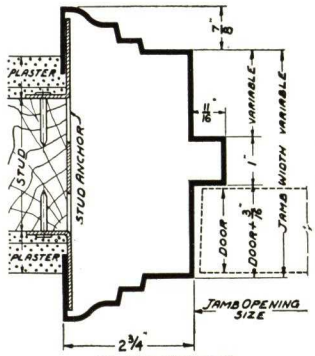
No. 14 & 16 GAUGE
TYPE "E"



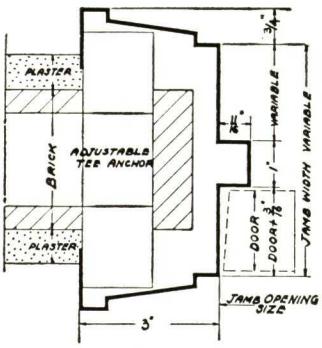
No. 14 & 16 GAUGE
TYPE "F"



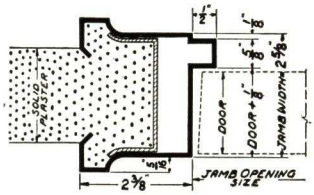
No. 14 & 16 GAUGE
TYPE "D"



No. 14 & 16 GAUGE
TYPE "C"



No. 14 & 16 GAUGE
TYPE "M"



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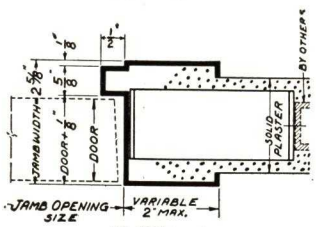
TYPE "G"



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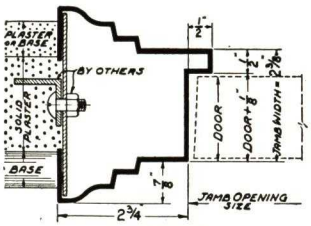
TYPE "H"



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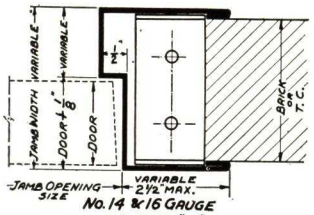

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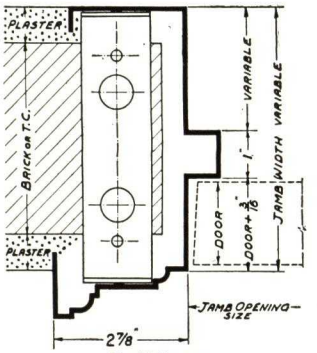
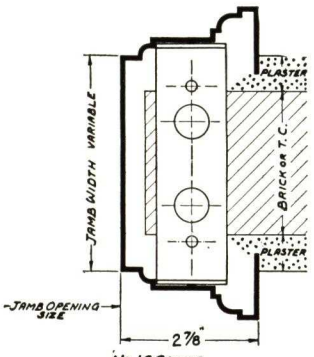
TYPE "J"



No. 16 GAUGE
TYPE "A2"



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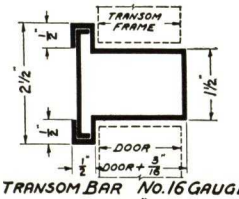
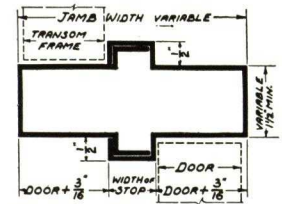
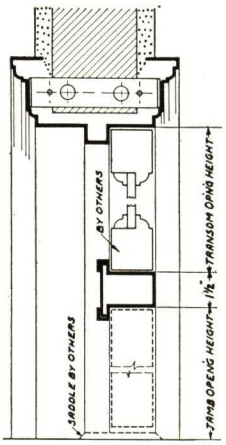


TRANSOM BAR NO. 16 GAUGE
TYPE "T1"



TRANSOM AND MULLION BAR
NO. 14 & 16 GAUGE
TYPE "T2"



VERTICAL SECTION THRU TRANSOM BUCK
TYPE "A" TRIM

ARCHITECTS SPECIFICATIONS

The contractor shall furnish and install combination steel door frames as manufactured by the AETNA STEEL PRODUCTS CORPORATION of Brooklyn, N. Y., in all interior door openings, except as otherwise noted on drawings or herein specified.

Frames shall be formed or rolled of No. (here state the gauge) buck steel. Head and jambs are to be continuously welded and ground off smooth.

Steel reinforcements 1/8x1 1/2x9 in. are to be provided for all hardware cutouts to insure rigid construction, same to be spot-welded to the inside surface of the jambs over which 26-gauge galvanized plaster guards are to be welded to prevent mortar and plaster from contact with the reinforcing plates. Steel angle spreaders are to be welded to the bottom to insure parallel alignment and anchors of 16-gauge steel are to be provided to bond frames solidly to the wall.

At completion, all steel door frames are to be given at least one shop coat, inside and outside, of best metallic primer.

MEMORANDA

ART METAL CONSTRUCTION COMPANY

Hollow Metal Division

JAMESTOWN, N. Y.

For Branch Offices, see Bank, Office and Library Equipment Section

For Steel Partitions, Kitchen Cabinets, Bank, Office, Library and Hospital Equipment, and Museum Cases, see File Index

ART METAL DOORS AND TRIM IN STEEL AND BRONZE

Products

HOLLOW METAL DOORS and BUILDING TRIM, ELEVATOR, STAIR and DUMB WAITER ENCLOSURES, CORRIDOR and OFFICE PARTITIONS and CABINET WORK in STEEL and BRONZE.

Art Metal
Jamestown, New York
U.S.A.

TRADE-MARK

Types of Doors

The types illustrated in this catalog cover Art Metal standard construction, with profiles carefully designed and selected to conform to the best in architectural detail.

Art Metal facilities make possible the fabrication of doors in any special type and profile where conditions warrant.

Casings and Mouldings

All mouldings are made of specially selected bronze or steel stock and carefully rolled through accurate dies giving a sharp profile. ART METAL CONSTRUCTION COMPANY has unusual facilities for producing special moulding to architect's designs where standard shapes will not meet requirements.

Service

Competent sales engineers are maintained at the Home Office and at all Branch Offices. Their services are offered to architects, contractors and builders without obligation.

Notes Regarding Details

Combination Buck and Jamb—For gauges see cuts. Can be made as heavy as 10-gauge except Type HH1. Wall thickness and reveal variable. Regular 3x10-in. x 18-gauge corrugated adjustable anchors shown on Types B2 and HH1 for brick and tile walls. Perforated strap anchors for concrete walls shown on Type C2. Anchors required for frames taking Underwriters' Labels shown on Type E1. All types shown meet requirements for Underwriters' labeling.

Note: Frames which are to go in fire walls must have stops ¾ in. high, all others ⅝ in. high. Temporary wood spreaders regular with 2x2x⅛-in. angle at bottom for bolting to floor construction.

Permanent steel channel spreaders 2x¾ in. x .0625 gauge furnished where required.

Combination Buck and Jamb with Integral Trim—These frames available in following gauges. Type F2 and G2 in 14 or 16 gauge. Type RF2 in 16 gauge only, wall thickness 4½ and 5½ in. Type H2 in any gauge with spotwelded moulding. Moulding profile variable (see moulding catalog) for other suitable mouldings. Dimensions where shown are fixed, others are variable. Regular adjustable anchors shown; other anchors as shown above may be used. Corners are mitred and welded. Spreaders as noted above. These types all permit labeling by Underwriters.

Rough Buck—Cabinet Jamb—Trim—Rough bucks 16 to 10 gauge. Cabinet jambs 18 or 16 gauge. Optional clipped on casing and scribe. See moulding catalog for complete section with or without metal plinths. All dimensions variable. Rough buck to be either knock down or welded in frame. Steel or wood spreaders.

Swing Doors—Fire Underwriters' Requirements

Class "A"—Units in division walls between separate buildings or sections of building.

Limitations—swinging type—single doors for openings not to exceed 4x8 ft. and doors in pairs not to exceed 5x8 ft., all-steel with approved hardware.

Class A doors are to be provided with listed and labeled three-point locks for doors mounted singly. Doors designed to be mounted in pairs to have a listed and labeled three-point locking mechanism in the active door of the pair and a listed and labeled two-point lock in the inactive door of the pair for attachment to sill and head jamb.

Class "B"—Units in enclosure to vertical communications through building.

Limitations—swinging type—single doors for openings not to exceed 4x10 ft. and doors in pairs not to exceed 8x10 ft., all-steel with approved hardware.

Doors exceeding 8 ft. in height to be provided with three-point locking mechanism same as described for Class "A." Glass area not to exceed 100 sq. in.

Class "C"—Units in corridor and room partitions.

Limitations—swinging type—single door for openings not to exceed 4x10 ft. and doors in pairs not to exceed 8x10 ft., steel or ¼-in. wired glass panels with approved hardware.

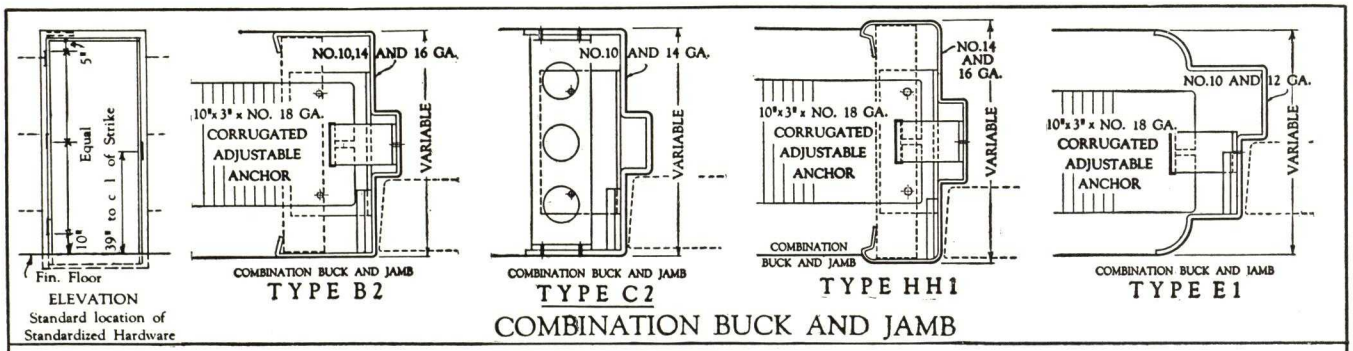
Doors exceeding 8 ft. in height to be provided with three-point locking mechanism as described for Class "A." Glass area not to exceed 1296 sq. in.

Class "D" and "E"—Openings in exterior walls and to fire escapes.

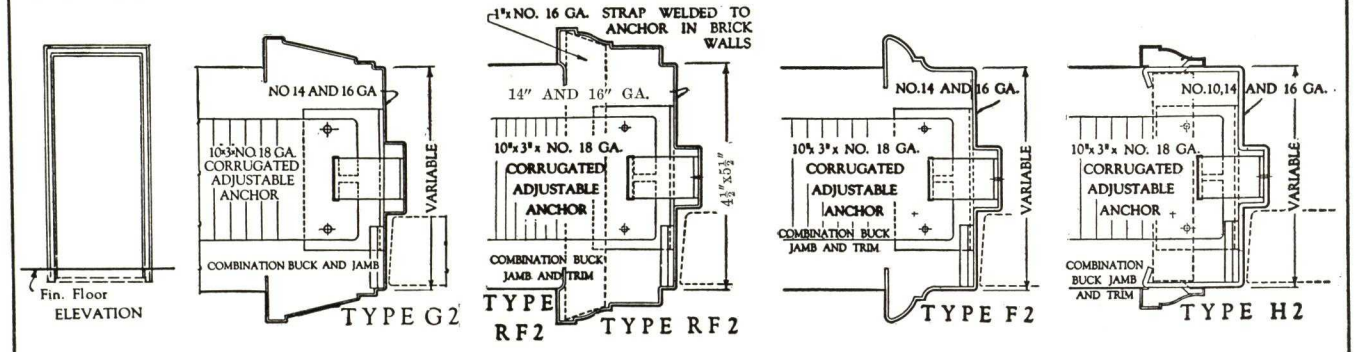
Limitations—swinging type—single doors not to exceed 4x10 ft., pairs of doors not to exceed 8x10 ft., except for fire escape which cannot exceed 6x10 ft.

Doors exceeding 8 ft. in height to be provided with three-point locking mechanism as described for Class "A." Glass area not to exceed 720 sq. in.

Locks for fire escape doors to be such that doors can be opened out from inside by single operation and cannot be locked against a person wishing to leave the building.



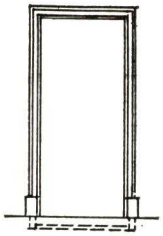
COMBINATION BUCK AND JAMB



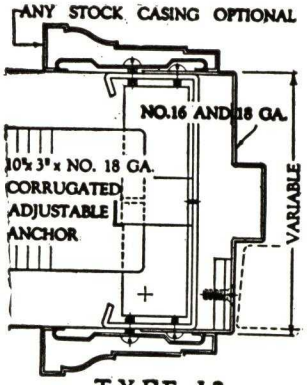
COMBINATION BUCK AND JAMB WITH INTEGRAL TRIM

• DOORS • Art Metal Jamestown, New York U.S.A. FRAMES

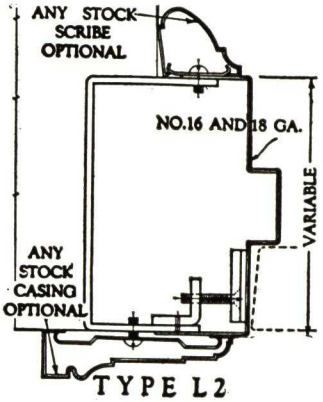
ROUGH BUCK CABINET JAMB TRIM



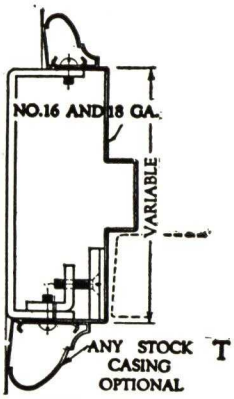
ELEVATION



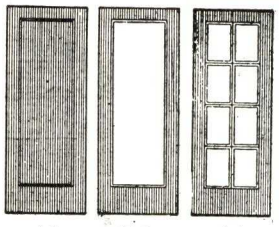
TYPE J2



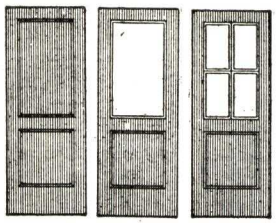
TYPE L2



TYPE N2



•A1• •A2• •A4•



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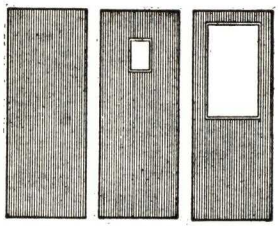

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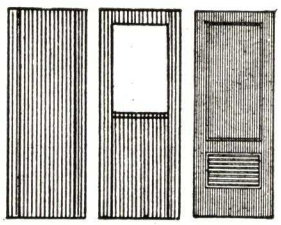
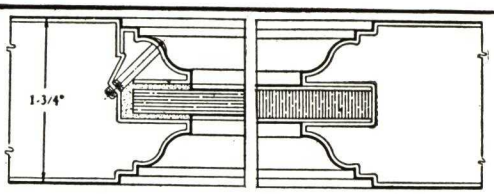


A26C• •A27B• •A32•

STYLES OF DOORS



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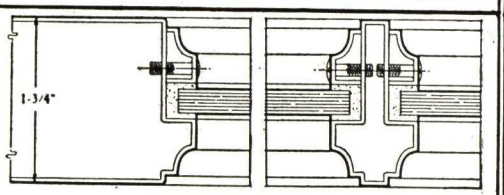

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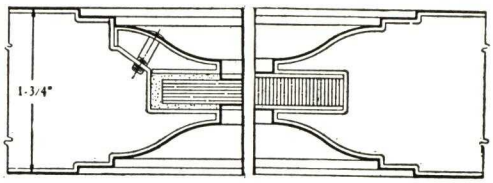

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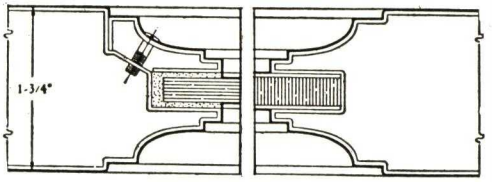

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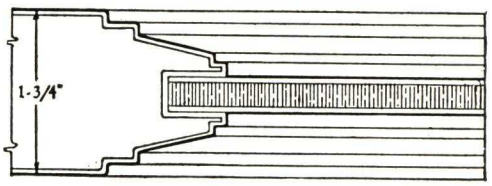

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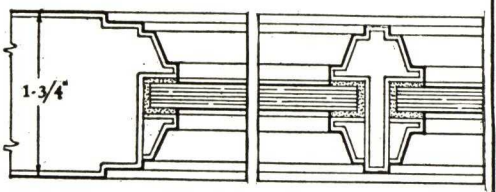
WITH STEEL PANELS



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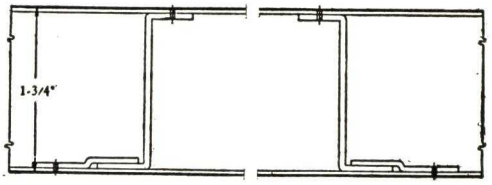
WITH GLASS PANELS



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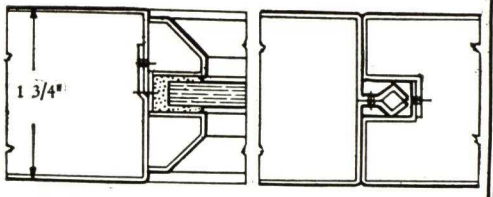

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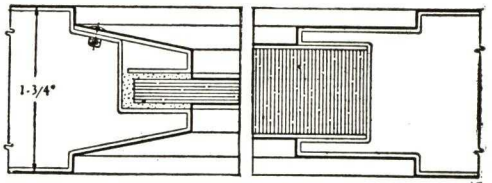

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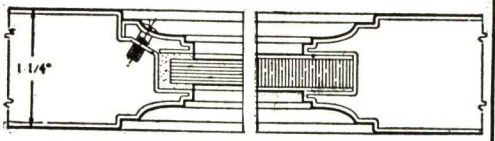

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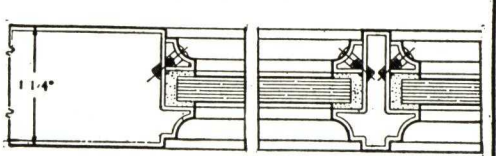


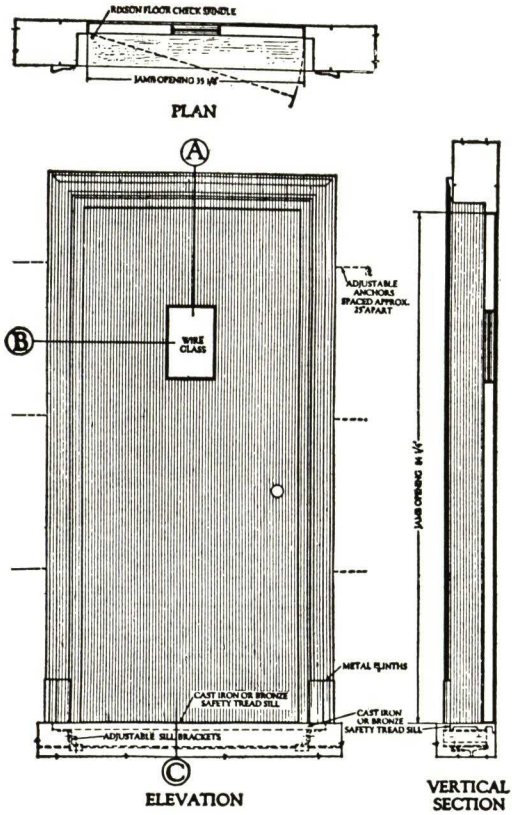
•TYPE• 59•

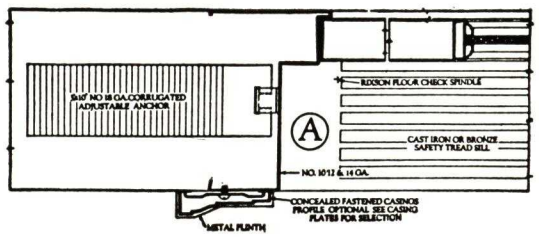
TYPES OF DOORS

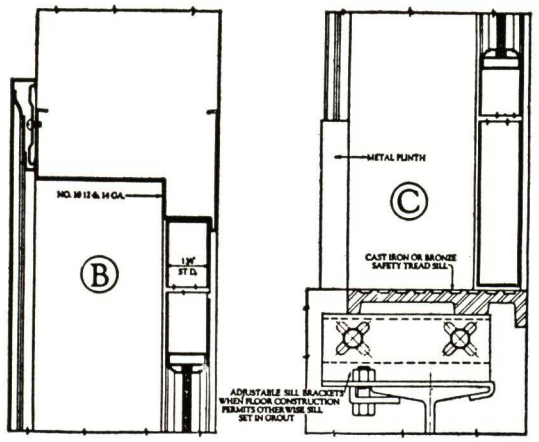
ELEVATOR ENCLOSURES

Art Metal
Jamestown, New York
U.S.A.

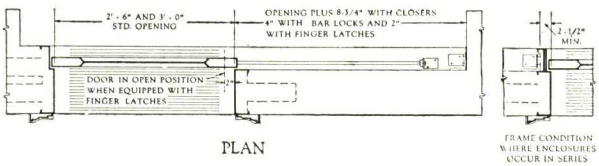
SINGLE SWING UNIT

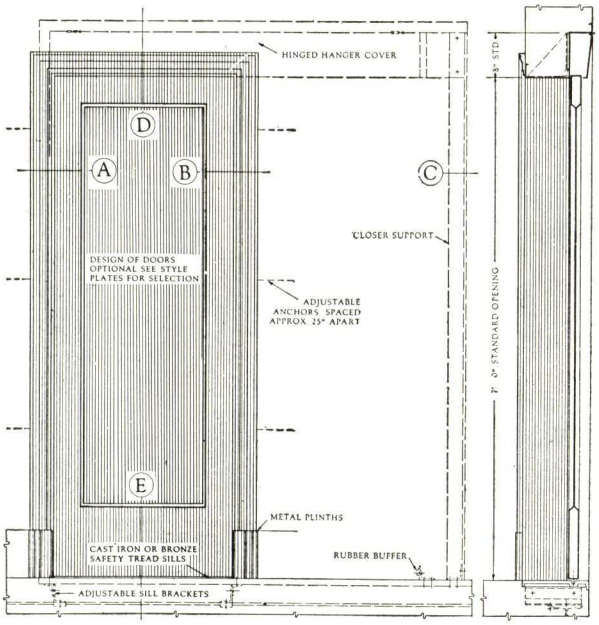


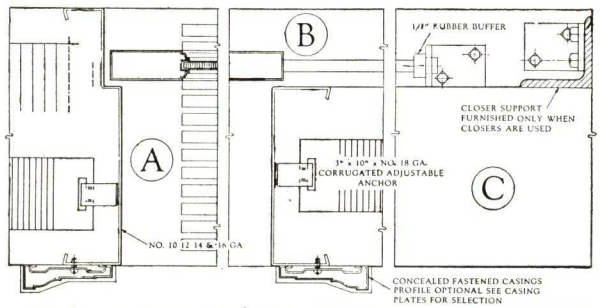


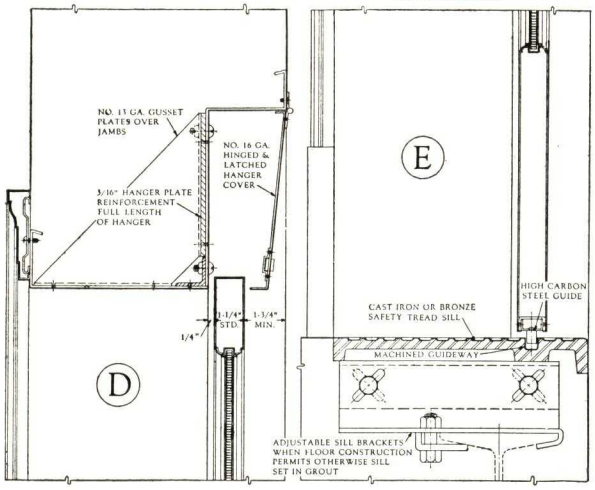


SINGLE SLIDING UNIT









ART METAL ELEVATOR AND DUMB WAITER ENCLOSURES

The plate illustrations cover all the styles of elevator enclosures in general use and are shown with combination buck and jamb frames.

Any of these styles can be furnished in rough buck or structural buck and finished jambs with casings or scribe mouldings as required.

Dumb Waiter Enclosures—Dumb waiter enclosures of any size, with frames of either combination buck and jambs or buck and finished jambs, with or without casings can be supplied.

Unless otherwise specified the pulleys, weights and chains will be furnished with the units.

Bronze Work—The foregoing description covers our standard products in steel. Bronze work is executed similarly, except that materials are two gauges heavier, joints are made by riveting, screwing and brazing, and finish is produced in accordance with standard methods for durability and desired effects.

Finish—Material is thoroughly cleaned, primed and filled, followed by subsequent coats as required to produce a durable finish of color required. Each coat is uniformly applied, baked and sanded with final coat rubbed to an eggshell gloss. Prime finish consists of ground-coat filler and dipped or sprayed finish coat.

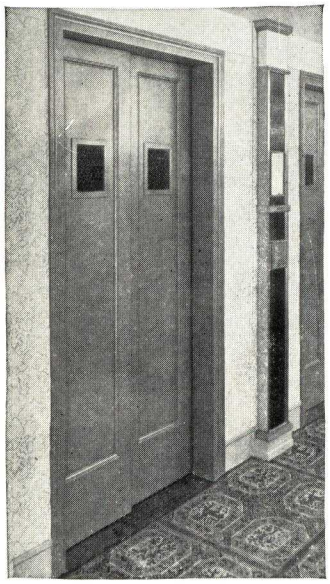
SLIDING ELEVATOR DOORS—Fire Underwriters' Requirements

Class "B" and "C"—Horizontally sliding doors for elevator shafts or room partitions of any of the following arrangements:

Maximum size 8x8 ft.
Two-speed
Center parting

Single-speed—maximum size 4x8 ft.
Two-speed and stationary panel

Two-speed center parting
Single-speed and stationary panel
Three-speed



Hollow Metal Elevator Doors
Pittsburgher Hotel, Pittsburgh, Pa.
H. L. Stevens Co., Architects

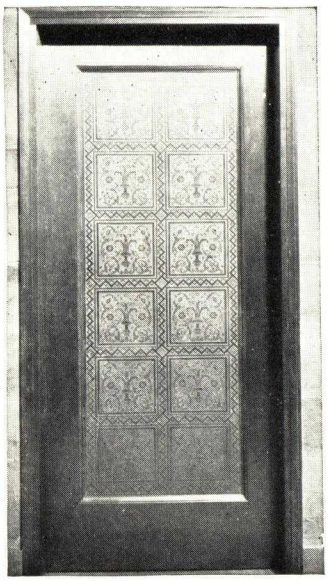
The doors when closed have engaging interlocking members at the sides and head and are operated by arms which hold them in a closed position. Sill may be cast iron or bronze, not less than ½-in. thick.

Class "B" may have vision panel ¼-in. wire glass, exposed area not to exceed 12 ins. Where two lights of glass are used, the combined exposed area not to exceed 100 sq. ins. and neither dimension to exceed 12 ins.

Class "C" may have ¼-in. wired glass panels, the total exposed area of any individual light not to exceed 1,296 sq. ins. Where peep hole is cut in a recessed panel door with Class "C" label, the exposed area of any individual cutout not to exceed 144 sq. ins. and neither dimension to exceed 12 ins.

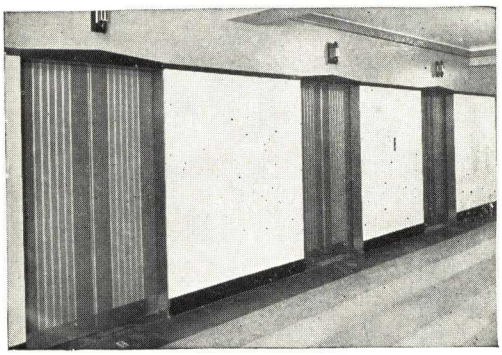
Any standard arrangement of steel and glass panels may be used for Class "C." Class "B" must be all-steel, except limited peep hole as described above.

Hardware—Hangers and closers to be of approved type.

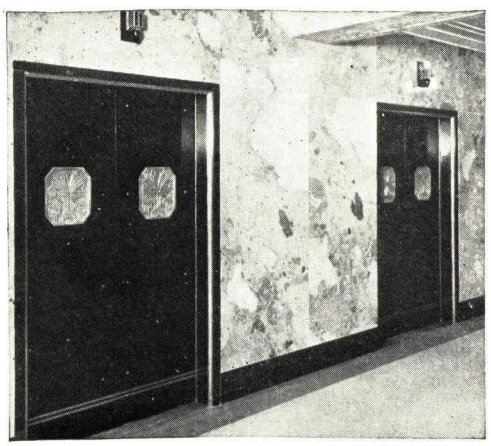


Steel Door with Etched Bronze Panel
Chateau Crillon, Philadelphia, Pa.
Horace Trumbauer, Architect

Art Metal
Jamestown, New York
U.S.A.



Steel Doors with Painted Decoration
Board of Trade Building,
Chicago, Ill.
Holabird and Root, Architects



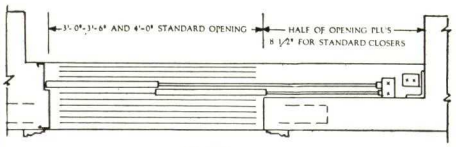
Flush Panel Steel Doors with Nickel Silver Medallion and Rivet Heads
Board of Trade Building,
Chicago, Ill.
Holabird and Root, Architects

ELEVATOR ENCLOSURES

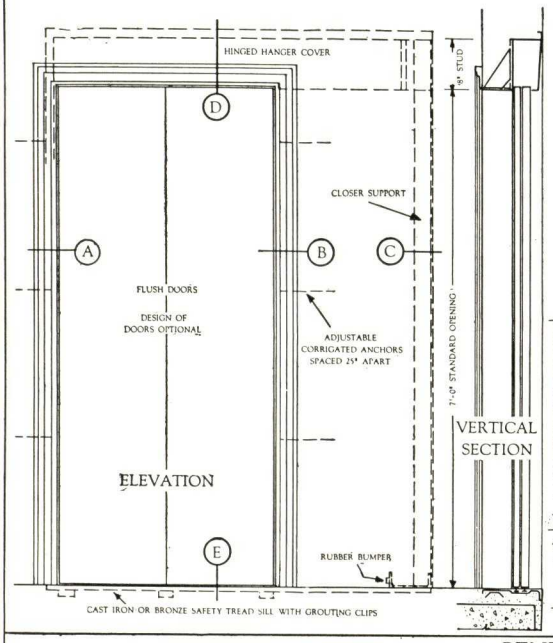
Art Metal
Jamestown, New York
U.S.A.

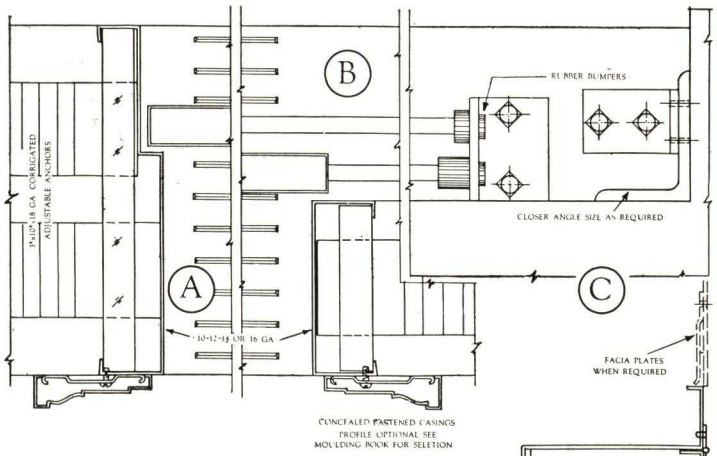
TWO SPEED UNIT

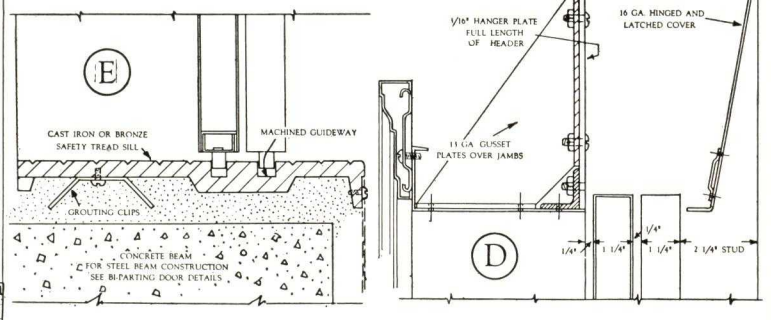
DETAILS FOR CONCRETE BEAM CONSTRUCTION



PLAN

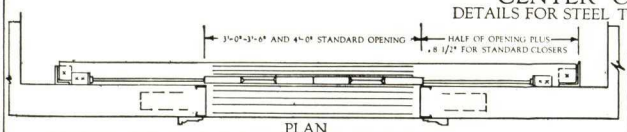




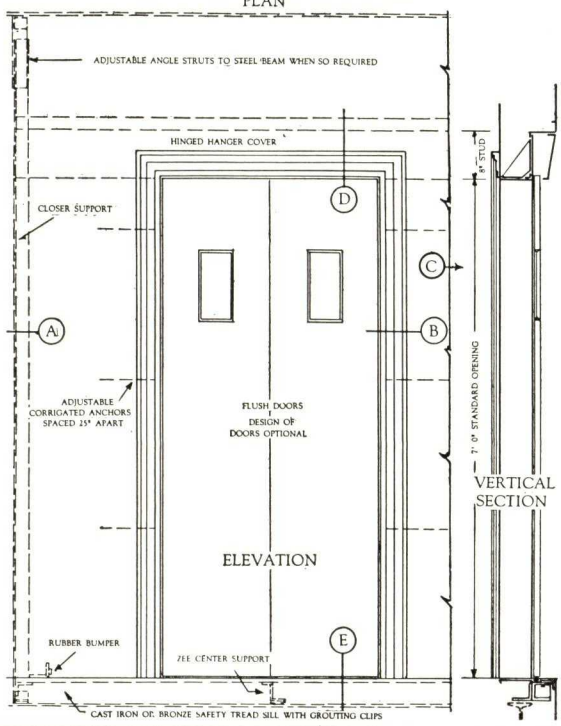


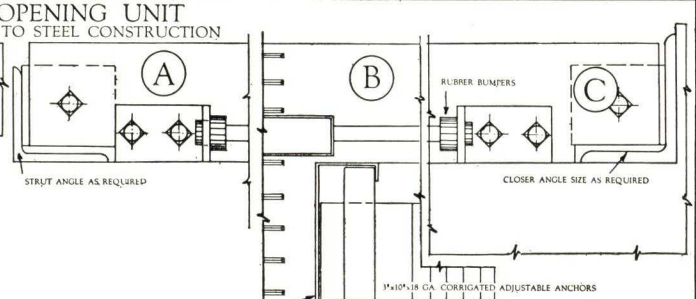
CENTER OPENING UNIT

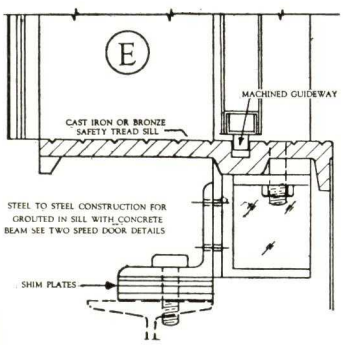
DETAILS FOR STEEL TO STEEL CONSTRUCTION

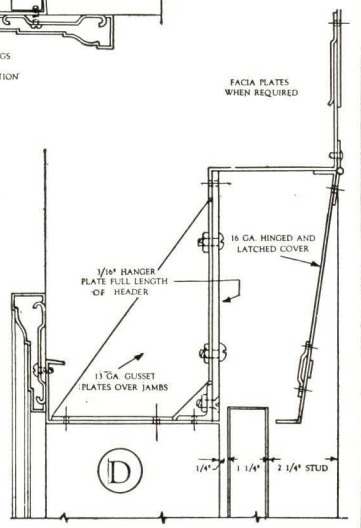


PLAN









DAHLSTROM METALLIC DOOR COMPANY

EXECUTIVE OFFICES AND FACTORIES

JAMESTOWN, N. Y.

NEW YORK OFFICE: 475 FIFTH AVENUE

REPRESENTATIVES IN PRINCIPAL CITIES

For Dahlstrom Adjustable Steel Partitions and Conduo Base, see File Index

Products

Manufacturers of METAL ELEVATOR ENTRANCES, METAL DOORS and METAL TRIM.

Also Insulated Metal Walls and Partitions, and General Trim for office buildings, hotels, apartments, schools, banks and theatres; Hose Cabinets, Switch Box Panels and Specialty Work; Conduo Base.

Metal Doors were originated by the founder of this company. Thirty-one years of designing and manufacturing metal doors and trim have given Dahlstrom Products the title of "The Specified Standard".

SHORT FORM SPECIFICATIONS FOR DAHLSTROM ELEVATOR ENTRANCES

The elevator entrances are to be Dahlstrom Standard Construction and with stock design mouldings. This contractor is to assume complete and undivided responsibility for the complete elevator entrances which consist of doors, frames, strut angles, closer support angles, headers, hanger cover plates, sills, facia plates, glass, glazing, hangers and erection.

Unit Frames — The unit frames shall be made from 14-USS gauge best grade furniture steel, and to conform to details shown. The header shall be formed from $\frac{3}{16}$-in. thick steel. Component members, constituting the unit frame, consist of header with hanger cover plate, closer support angle, strut angle and frame of door opening. Suitable structural angles for closer support and struts are to be provided, which are to be secured to sill and structural beam. Header is to be secured to closer and strut angles. Frames are to be secured to sill and header.

Sills—The sills shall be cast iron or bronze as required, with approved non-slip surface. The sills shall have machine groove slots to receive door guides. Clearance between guides and side of slots not to exceed .005 in.

Doors—The doors shall be made in accordance with design indicated on plans. Stiles and rails of paneled doors shall be formed from 18-USS gauge furniture steel. Joints at intersections shall be welded full length. Panels shall be made from two plates of furniture steel, separated by insulations of the proper dimensions to make the over-all thickness of panel ¼ in. The bottom of door shall be provided with proper guides to work in slots in sill with clearance as specified under "Sills."

Casings — The casings shall be steel, and may be integral with the frame or applied to frame with concealed fastenings. Casing miters shall be neatly welded and all miters ground perfectly smooth.

Hanger Covers — Hanger covers shall be made from 14-USS gauge furniture steel and shall be constructed so as to permit access for servicing hangers.

Facia Plates—The facia plates shall be made from 14-USS gauge steel and shall extend from top of hanger to sill above. Facia plates shall be properly reinforced and shall be designed to conform to details shown on plans. Provide all necessary supports required to secure facia plates in place.

Glass — Glass (state whether clear wire or obscure wire) shall be furnished and installed by this contractor. Glass shall be set in rubber channels and held in place with glazing moulding, secured with oval head machine screws.

Hangers—Hangers shall be of approved type as manufactured by manufacturer furnishing the door operating equipment. Hangers shall be furnished and erected by the door contractor. Heavy duty hangers for power operation and light duty hangers for manual operation.

Finish — All structural parts shall be coated with rust-inhibiting paint. Doors, frames, casings and other exposed parts are to have baked enamel finish. Specify whether to be plain enamel, stippled or grained.

Erection—The erection of this work shall be done by this contractor. All work is to be set in perfect alignment with elevator car opening and platform. Frames and headers to be fastened to structural supports which in turn shall be securely fastened to floor beams.

SHORT FORM SPECIFICATIONS FOR DAHLSTROM STEEL SWING DOORS

The work embraced under this heading shall be furnished strictly in accordance with the specifications herein outlined.

Materials—All steel used in the construction of the doors and trim shall be of the best grade open hearth full cold rolled, full pickled, double annealed, patent leveled sheet steel entirely free from scale and pits, of the United States standard gauges specified herein under the various headings.

Workmanship—All work shall be executed and finished to conform to the generally accepted standards established by the DAHLSTROM METALLIC DOOR COMPANY of Jamestown, N. Y. The finished work in all cases shall be neat in appearance and free from defects. All surfaces shall be smooth and free from warps and buckles; all moulded members shall be clean cut, straight and true; all miters shall be well formed and in true alignment; all welded joints shall be neatly made and cleaned off flush.

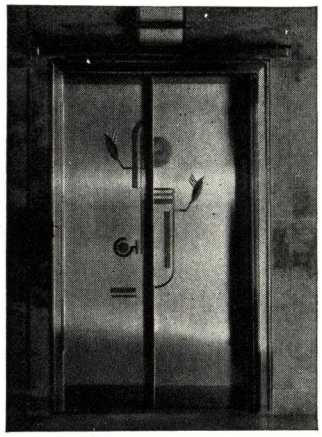
Construction—All doors, rough bucks, jambs, casings, borrowed light and transom sash, base mouldings, picture mouldings, wire mouldings, metal partitions and railings shall be constructed in accordance with the standard practices established by the DAHLSTROM METALLIC DOOR COMPANY (complete specifications furnished on request).

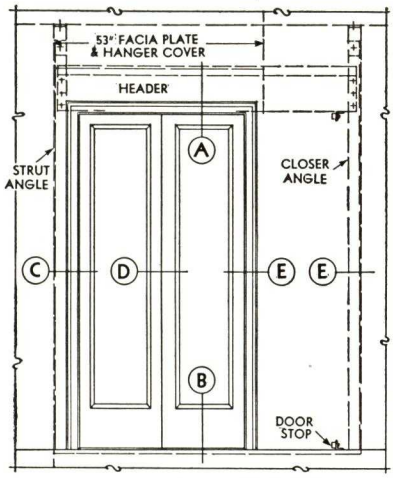
Finish—All preparations for finishing, all prime coating and final finishing shall be done in accordance with the standard practices of DAHLSTROM METALLIC DOOR COMPANY (complete specifications on request).

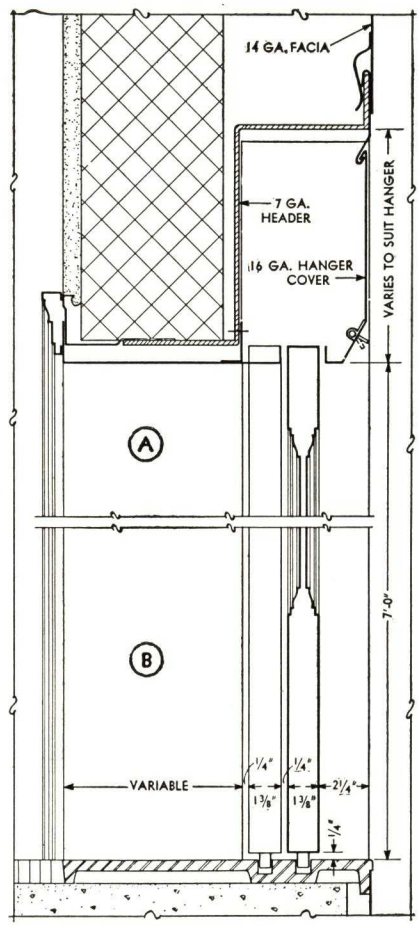
Erection—The materials embraced in this specification shall be set in place at locations designated on the Architect's plans and to levels established by the General Contractor or Architect's superintendent. Bucks and frames shall be plumb and true to insure satisfactory operations of the doors.

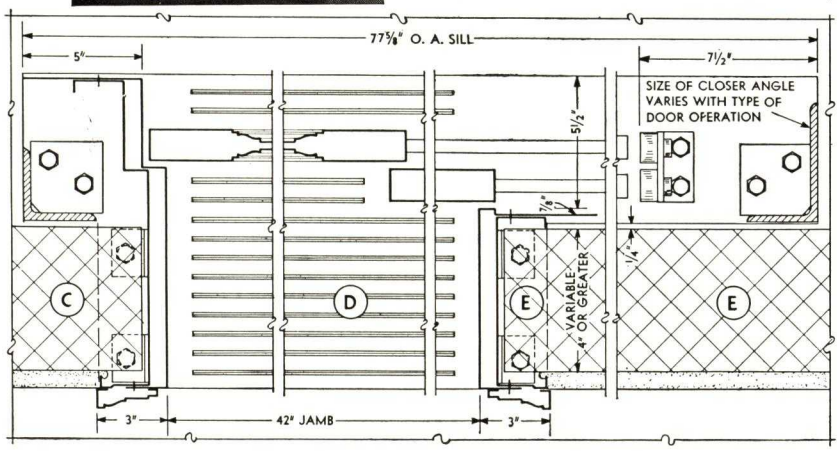
Cleaning and Final Finishing — The Erection Contractor who is in charge of setting this material shall leave the finished material clean and in condition satisfactory to the Architect. The Painting Contractor shall clean and finish in a manner satisfactory to the Architect only such portions of this material as are furnished by this contractor in prime finish.

TWO SPEED SLIDING ELEVATOR ENTRANCE UNIT – CABINET JAMBS & ROUGH BUCKS

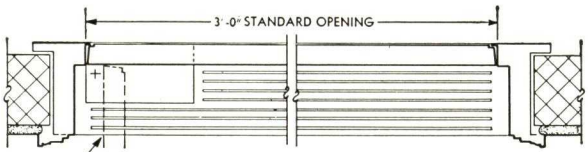




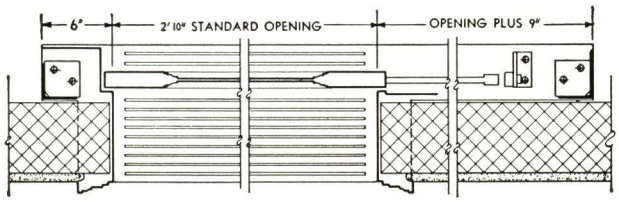




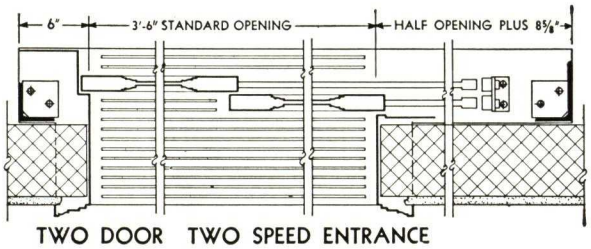
ELEVATOR ENTRANCE TYPES



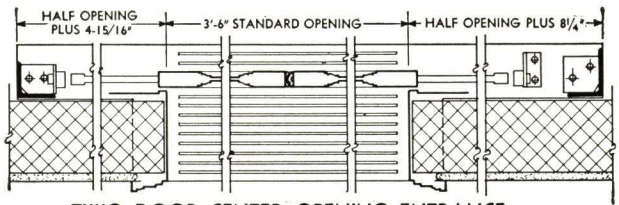
FLUSH TYPE SWING ENTRANCE



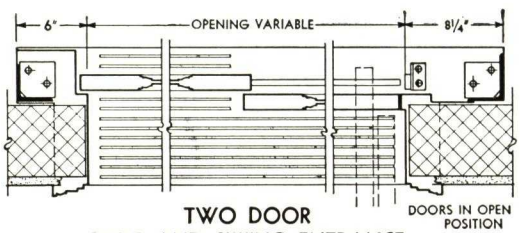
SINGLE SLIDE ENTRANCE



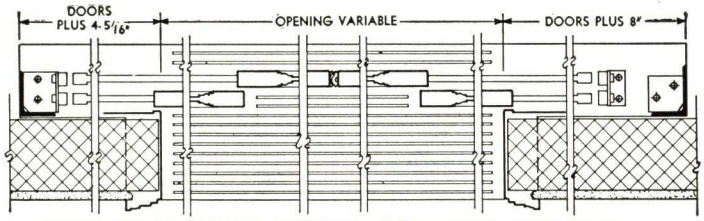
TWO DOOR TWO SPEED ENTRANCE



TWO DOOR CENTER OPENING ENTRANCE



TWO DOOR SLIDE AND SWING ENTRANCE

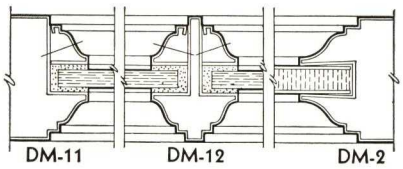


FOUR DOOR CENTER OPENING TWO SPEED ENTRANCE

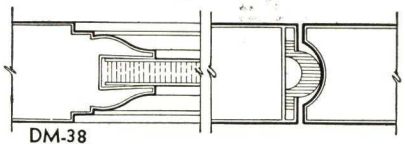
Standard sliding elevator door thickness: 1⅜ in.; standard swing elevator door thickness: 1¾ in.

DAHLSTROM METALLIC DOOR COMPANY

DOOR TYPES

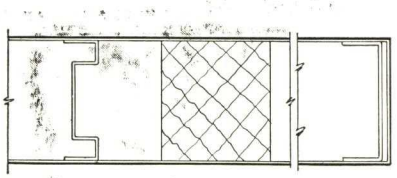


PANELED SWING DOOR 1¾" THICK



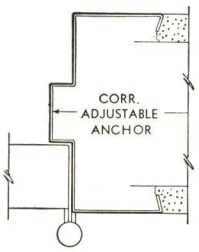
PANELED ELEVATOR DOOR 1⅜" THICK

STANDARD ASTRAGAL • CENTER OPENING ELEVATOR DOORS •

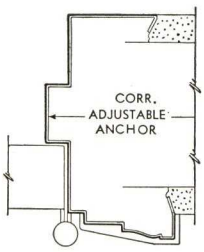


FLUSH SWING DOOR 1¾" THICK • FLUSH ELEVATOR DOOR 1⅜" THICK

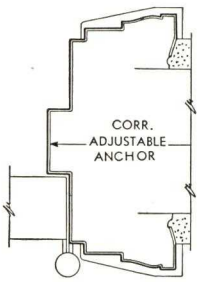
TYPICAL DOOR FRAMES



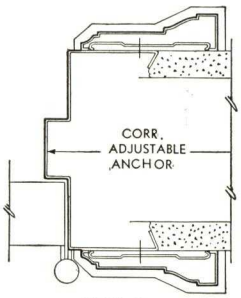
TYPE D1



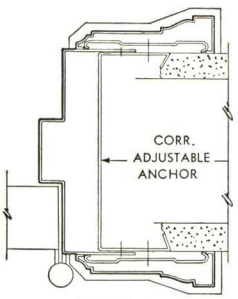
TYPE W2



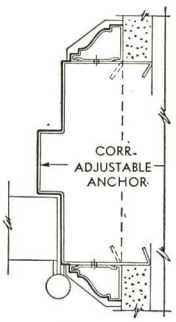
TYPE W1



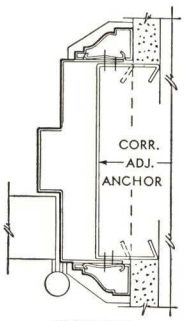
TYPE D4



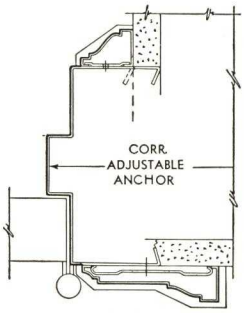
TYPE Q1



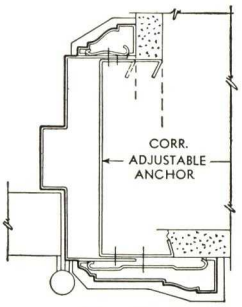
TYPE D6



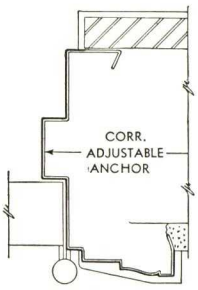
TYPE Q3



TYPE D5



TYPE Q2

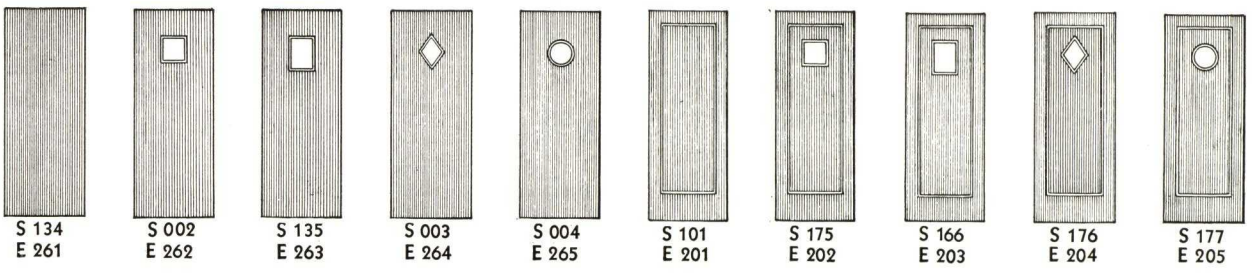


TYPE W6

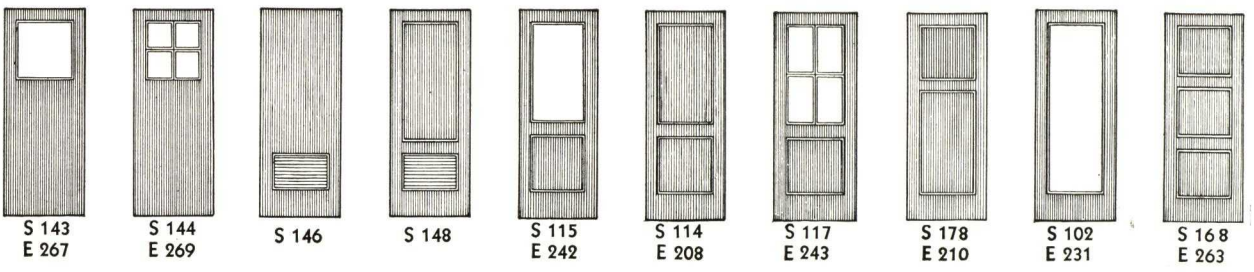
IN ADDITION TO THE ABOVE TYPICAL DOOR FRAMES, SPECIAL SHAPES ARE ALSO MADE TO MEET ALMOST ANY ORNAMENTAL REQUIREMENT. THE CATALOG OF "DAHLSTROM METAL MOULDINGS AND SHAPES" IS A VALUABLE AID IN DESIGNING HOLLOW METAL DOORS AND TRIM. SEND FOR YOUR COPY.

STANDARD DOOR DESIGNS

S = SWING DOOR E = ELEVATOR DOOR



S 134 E 261 | S 002 E 262 | S 135 E 263 | S 003 E 264 | S 004 E 265 | S 101 E 201 | S 175 E 202 | S 166 E 203 | S 176 E 204 | S 177 E 205



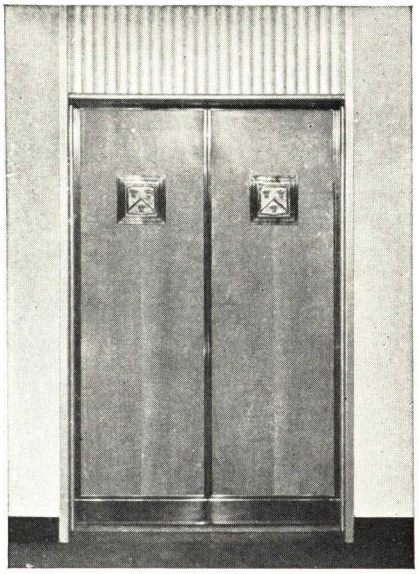
S 143 E 267 | S 144 E 269 | S 146 | S 148 | S 115 E 242 | S 114 E 208 | S 117 E 243 | S 178 E 210 | S 102 E 231 | S 168 E 263

DAHLSTROM STANDARD DOOR DESIGNS OFFER ALMOST UNLIMITED PANEL ARRANGEMENTS WITH EITHER METAL OR GLASS. SPECIAL DESIGNS ARE MADE IN VARIOUS METALS IN CAST, ETCHED, STRIPED AND WOOD GRAINED DESIGNS, AND ALSO WITH DECORATIVE, FORMED METAL INSERTS, COLOR AND WOOD INLAYS.

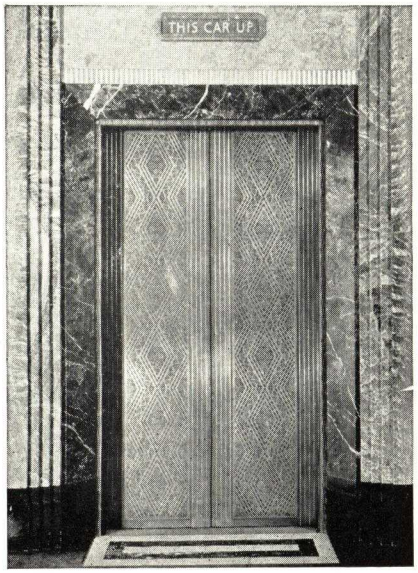
DAHLSTROM INSTALLATIONS

These illustrations of Dahlstrom Elevator Entrances emphasize the range of design and construction available to architects and elevator companies.

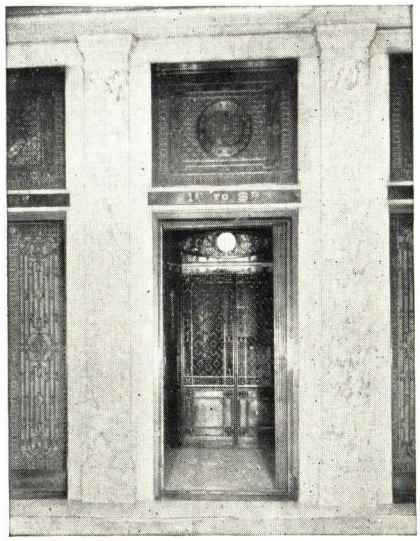
More than two thousand elevator entrances installed in the famous Rockefeller Center in New York City are also convincing testimony to Dahlstrom construction.

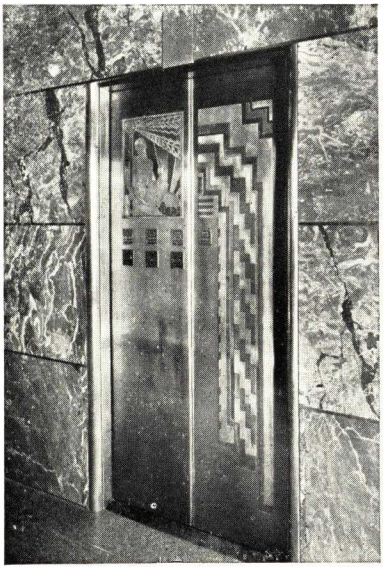


Marshall Field Co., Chicago, Ill.
GRAHAM, ANDERSON, PROBST & WHITE, Architects



New Center Building, Detroit, Mich.
ALBERT KAHN, INC., Architects
J. A. UTLEY CONSTRUCTION CO.





W.C.A.U. Studio Building, Philadelphia, Pa.
G. B. ROTH, Architect
WARK CO., Contractors

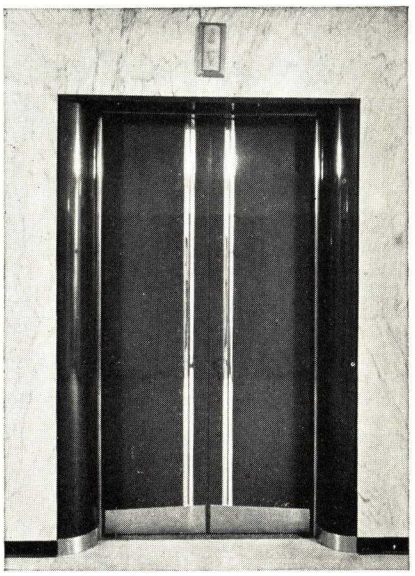
Wiltshire Tower, Los Angeles, Cal.
GILBERT STANLEY UNDERWOOD, Architect

DAHLSTROM MODERNIZATIONS

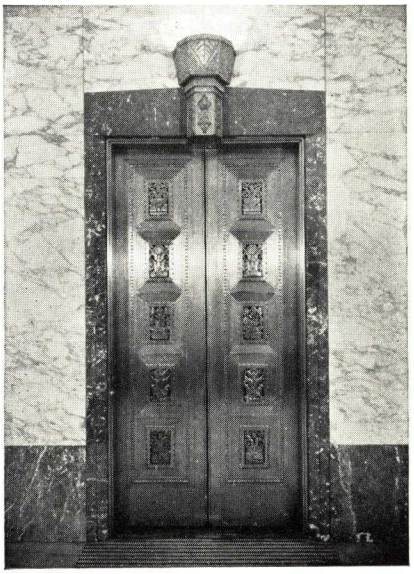
Dahlstrom engineering and designing personnel offer complete construction and designing service to owners, architects and elevator companies for modernizing old elevator entrances.

The accompanying "before" and "after" illustrations show the contrasting change made for the building at 49 Wall Street, New York City.

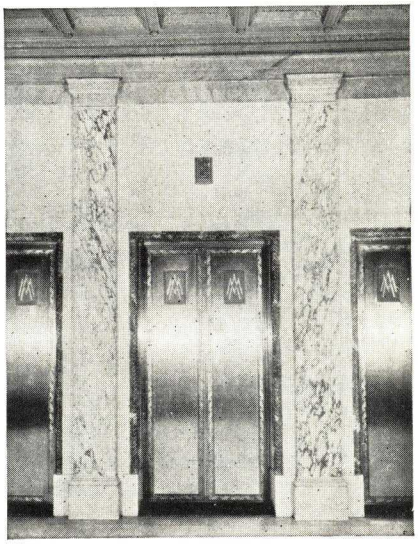
• Before



Nemours Building, Wilmington, Del.
DU PONT CO., Architects and Contractors



Metropolitan Life Insurance Co., New York, N. Y.
WAID & CORBETT, Architects
STARRETT BROS. and EKEN INC., Contractors



After •

DUSING & HUNT, INC.

Manufacturers of Metal Clad Doors, Pressed and Rolled Steel Frames

1927 Elmwood Avenue, BUFFALO, N. Y.

Products

Underwriters Labeled Tin Clad and Kalamein Doors; Rolled and Pressed Steel Frames; Counter-balanced Dumbwaiter Door Units.

Also Automatic Self-closing Ventilating Louvres and Projection Booth Shutters.

Facilities and Service

Thirty-five years of manufacturing Underwriters' fireproof doors and other fireproof retardants with modern plant and machinery enables our engineering staff to work out special problems in our line of manufactured products. We are especially set up for producing a high grade product for unusual prompt delivery.

Specifications for Kalamein Doors (Standard or Underwriters Types)

All kalamein doors to be as manufactured by Dusing & Hunt, Inc., Buffalo, N. Y. (Underwriters' Label) (Standard non-labeled construction) (1¾ in. thick) (2¼ in. thick.)

Cores—Wood cores for stiles and rails to be kiln dried, clear white pine solid pieces extending full height of stiles full mortised and tennoned joints.

Metal Covering — (Furniture Steel) (Galvanized Steel) (Zinc Coated Steel) 20-oz. Copper. Draw over wood cores through steel dies to insure close adhesion of metal to wood core. All joints interlocked, filled with metal flux to produce an invisible joint.

Panels—(¼-in. Composition board for standard doors) (¼-in. Asbestos Board for Underwriters' Doors) covered with same gauge and material as mentioned above and glued to same under high pressure. Stiles and rails plowed ¾-in. deep to receive panels (metal covering on stiles and rails for labeled doors secured to panel with 3/16-in. rivets 10-in. on centers).

Panel Moulds — To be hollow drawn .035-gauge mitred, welded at corners and secured to door with special oval head screws.

Priming — All doors to be given a shop coat of metallic primer sprayed on free from runs or blisters.

Application of Hardware — All hardware to be applied at door manufacturer's plant, except surface hardware.

Frames—See specifications under pressed and rolled steel frames.

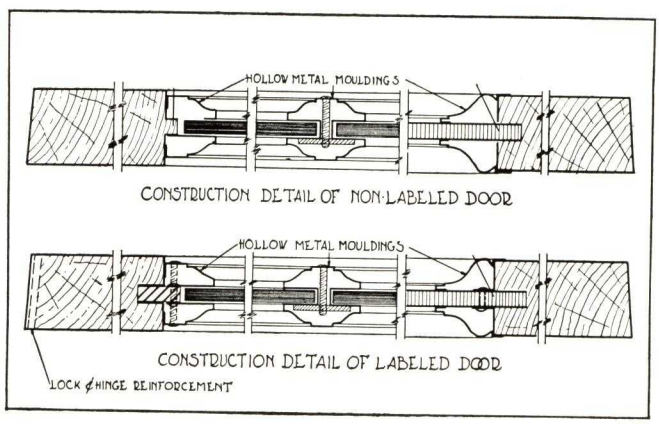
Underwriters Requirements and Limitations — *Class "B"* labels for openings in vertical shaft (Stair Wells or Elevator Shaft.)

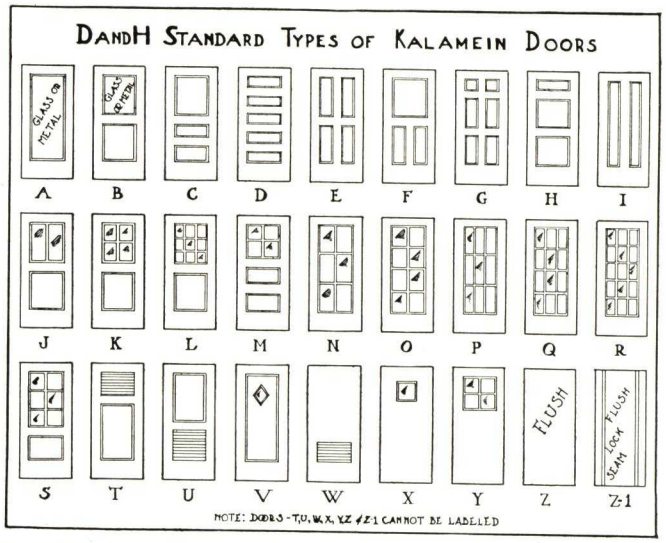
Single door up to 48 in. wide, pair of doors up to 96 in. high. No glass panels permitted.

Class "C" labels for openings in corridor or room partition size limitations same as above. Door can be constructed to receive 9 sq. ft. wire glass.

Class "D" labels for openings to fire escape. Size limitations as above. 5 sq. ft. of wire glass permitted.

All doors must be erected in "Underwriters' Inspected" steel frames to obtain highest credit rating.





Specifications for Swing and Sliding Underwriters Doors

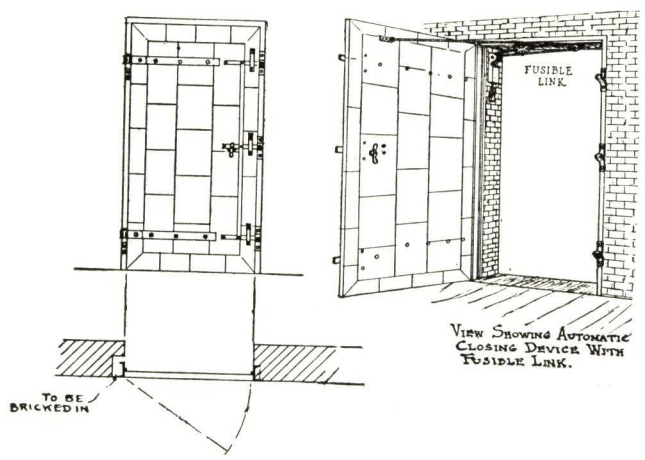
All tin clad doors to be as manufactured by Dusing & Hunt, Inc., Buffalo, N. Y. All to be constructed in accordance with rules of National Board of Fire Underwriters and to bear their label.

Swing doors to be equipped with Underwriters labeled approved type hardware, including cast steel hinge pintles, hinge straps, approved type latches with mallable iron keepers and fused automatic closing devices (all erected in Underwriters labeled or inspected structural channel frames), except for lap type doors where frames are not required.

All sliding doors to bear label of National Board of Fire Underwriters. To be proper thickness as required and to be installed complete with Underwriters labeled hardware, including track, hangers, door hardware, binder, guide rollers, counterweights, combustible cord and fuse links. All wall hardware through bolted to wall.

Underwriters Requirements and Limitations — *Class "A"* label issued for openings in fire walls 2⅝ in. or 3-ply doors. Single sliding door not exceeding 120 sq. ft., width or height not exceeding 12 ft. Single swing doors lap type or mounted in Underwriters inspected frames not exceeding 6 ft. in width or 12 ft. in height. Swinging doors in pairs not exceeding 10 ft. in width or 12 ft. in height. Glass panels not permitted. Double sliding doors cannot be labeled.

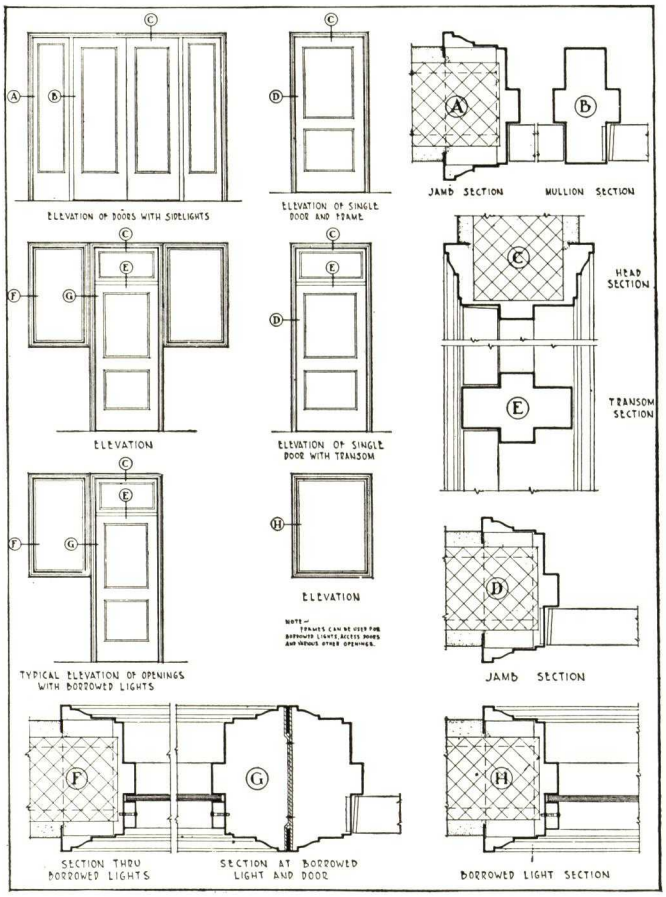
Class "B" labels for vertical shaft openings. *Class "C"* labels for corridor or room partitions. *Class "D" and "E"* for fire escape or exterior wall shutters. All 1¾ in. thick. Glass panels not exceeding 100 sq. in. in "B" doors, 1,296 sq. in. in "C" doors, 720 sq. in. in "D" and "E" doors.

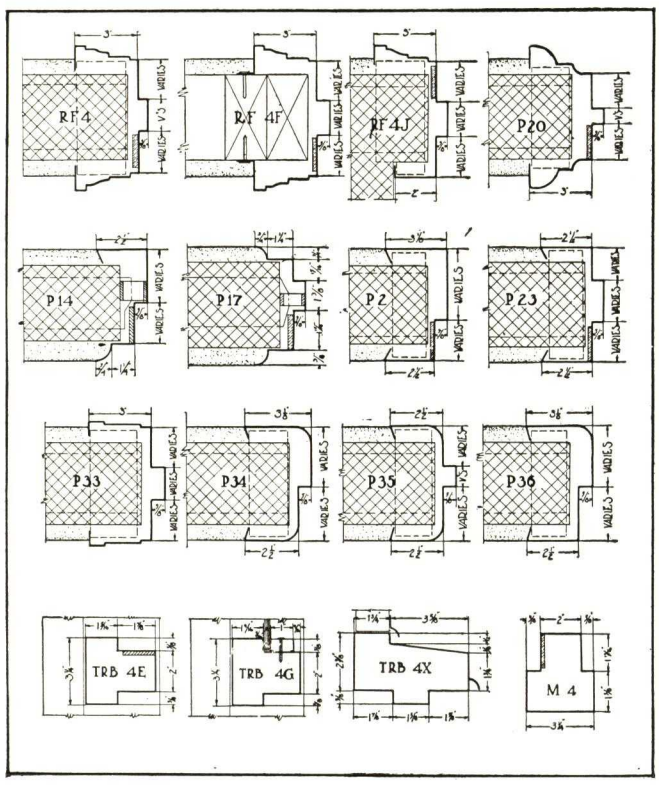


Special Steel Frames for Wood or Metal Doors

Combination Buck, Jamb and Trim Unit Type, Rolled or Pressed Types

Rolled types can be furnished in 14, 16 or 18-gauge, pressed types in 10 and 12, 14, 16 or 18-gauge cold rolled steel. Frames can be made to require wall thickness and are cut, reinforced, drilled and tapped for all mortised hardware and reinforced for all surface applied hardware. Drilling and tapping for same to be done in field by erection contractor. Side and head frames are mitre sawed at top and ground to a perfect joint and continuously arc welded from back side of frame.





Anchors of 16-gauge adjustable corrugated type extending 12 in. into masonry, steel channel spreaders at bottom when frames extend through to rough floor and bottom angles. When frame stops on finished floor, special anchors are provided for stud walls, plaster or simplex partitions.

Glass Panels and Side Lights — Sash are retained by removable cold rolled steel stops secured to frames by oval head machine screws. Transom bars and mullions are formed from same grade and gauge of steel as frames and arc welded to frames, or concealed clip angles and screws are used as conditions warrant.

Prime Finish — After Assembling, all foreign material is removed, all exposed surfaces are filled where required and given one coat of asphaltum base primer sprayed on and baked for two hours at 250°.

Fire Underwriters Labels — Our frames have passed the Underwriters' Laboratories, Inc. and will carry B-C-D and E labels where required.

Frames can be supplied with Underwriters Label when furnished with metal doors if required.

Specifications for Dumbwaiters Doors

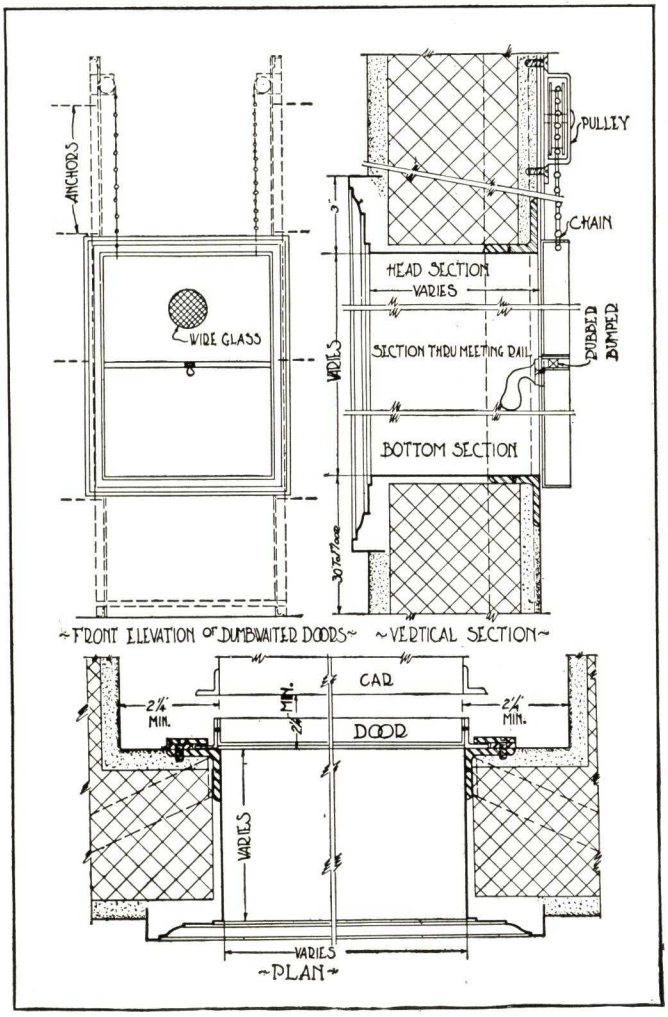
Furnish for openings to dumbwaiter, DUSING & HUNT, INC. counterbalanced dumbwaiter door units.

The door shall be bi-parting horizontal sliding type construction of 16-gauge steel, complete with guide shoes to operate in continuous steel guides and counterbalanced and hung on suitable flexible chain, running over ball-bearing sheaves.

Each door to be provided with a vision panel of clear wire glass set in suitable frame.

Furnish for each opening an intrical frame and trim to fit masonry wall and secured to a rough structural frame which is to extend from floor to beam or floor construction above.

The entire unit to be completely assembled before shipment to job and set in masonry walls by contractor. The assembled unit to have a prime coat of paint before shipment. Electric interlocks to be furnished by door contractor when doors are supplied with electric dumbwaiter.



EMPIRE DOOR COMPANY, INC.

Manufacturers of Hollow Metal and Kalamein Doors and Frames Elevator Fronts

226 East 144th Street, NEW YORK, N. Y.
AGENTS IN PRINCIPAL CITIES

The Company

Our Company has been engaged in the manufacture of high grade fireproof doors for almost forty years and has furnished material for architects all over the United States and Canada. Resident agents in all important centers will be glad to submit samples and details of our products to any inquirer.

Our Engineering and Layout Department is complete in every detail. We will be glad to submit suggestions and details, giving the benefit of our experience in the fireproof door field to anyone with an unusual problem.

SPECIFICATIONS FOR EMPIRE PRODUCTS

Empire Hollow Metal Doors

To be furnished by the EMPIRE DOOR COMPANY, 266 East 144th Street, New York, N. Y., per the following specifications:

Material—Best grade, full pickled, patent leveled sheet metal, free from scale and pits, of 18 U.S. gauge for paneled doors, and 16 U.S. gauge for flush doors.

Workmanship—Surfaces shall be smooth and free from warps and buckles, moulded members to be straight and true with sharp, distinct arrises. Joints to be continuously, electrically welded. Stiles, rails and panels insulated with insulite, cork or asbestos. Doors to be cut, reinforced, drilled and tapped for hardware. Panels and panel mouldings fully interlocked, with the metal of stiles and rails forming one integral unit of steel.

Finish—Material finished with a baked-on shop coat or seven-coat baked enamel finish of solid color; stippled; or grained as selected, each coat to be rubbed and sanded thoroughly.

Empire Elevator Fronts

To be built in accordance with requirements of Municipal Departments having jurisdiction.

Material—Standard Empire Doors, cut out, reinforced and fully prepared for hangers, closers, interlocks and all other hardware. Frames are 14 U.S. gauge, prepared in the factory for all hardware including automatic or manual closing and opening mechanism. Elevator openings furnished complete with hanger covers, closer supports, non-slip Feralun sills, facias, hangers and all hardware not customarily furnished by elevator contractor. Shipped ready to install.

Empire Combination Jambs and Trim

Combination jambs and trim rolled or pressed of 16 U.S. gauge or 14 U.S. gauge as desired by the architect. Miters and joints continuously welded. Jambs furnished with wall anchors suitable for the partition in which they are set. Jambs cut, reinforced, drilled and tapped for hardware. Sufficient spreaders furnished with each unit to keep same square and true.

Empire Kalamein Doors and Windows

Material to be manufactured by EMPIRE DOOR COMPANY, 226 East 144th Street, New York, N. Y.

Cores—Kiln-dried white pine, milled in one piece, free from loose knots, shakes and blue sap, sanded and finished accurately.

Panels—Three-ply laminated wood with 26-gauge sheets cemented to both sides under pressure of 250 lbs. per sq. in.

Covering—Stiles and rails covered with 24-gauge galvanized, long terne or furniture steel.

Assembly—Mortised and tenoned, wedged and glued, or doweled, all joints soldered, scraped and sanded.

Mouldings—Milled to shape, covered with 28-gauge metal drawn through dies.

Kalamein Windows, Transoms, Frames, etc.—Covered in same manner as described above. All members to be entirely covered with metal. All material to receive one coat of metallic primer.

Labeled—If labeled doors are required, specify "doors bear Underwriters' label for proper location."

Empire Bronze and Aluminum Doors

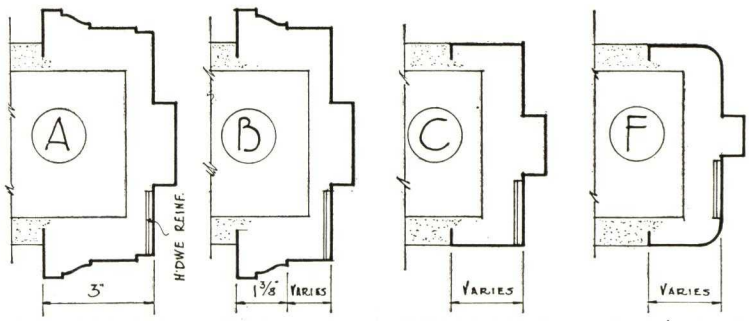
Extruded doors to be manufactured by EMPIRE DOOR COMPANY, 266 East 144th Street, New York, N. Y., as follows:

Stiles and rails of kiln-dried wormy chestnut, milled in one piece, free from loose knots, shakes, and blue sap, sanded and finished accurately. Panels of three-ply laminated wood. Doors covered completely with 18-gauge bronze, cemented to both sides of stiles, rails and panels under pressure of 350 lbs. per sq. in. Extruded ⅛ in. channel shape edge pieces on top, bottom and both sides of doors, with extruded ⅛ in. mouldings for panels, both solid and glass. Channels and mouldings to lap doors on both faces, secured with concealed screws (except on removable side).

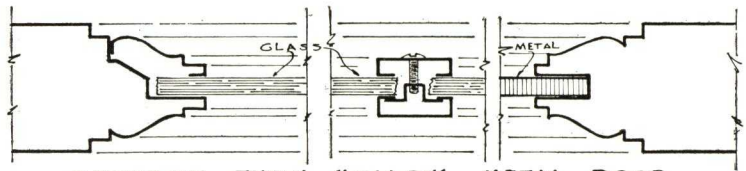
One-eighth in. plate countersunk over seams and joints in cores and brazed to bronze covering.

Jambs and trim kalamein or hollow as requested. All seams hairline.

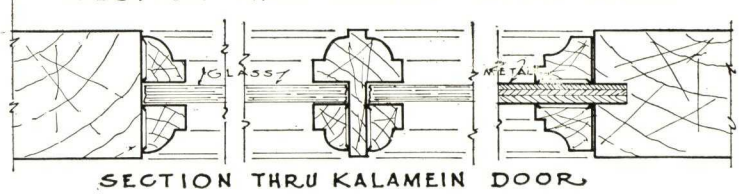
Note: Substitute "18-gauge aluminum" for "bronze" in above when desired.



STANDARD TYPES OF COMBINATION JAMBS & TRIM



SECTION THRU HOLLOW METAL DOOR



SECTION THRU KALAMEIN DOOR

ESTABLISHED 1911

ELLISON BRONZE COMPANY, INC.

Manufacturers of Ellison Balanced Doors

JAMESTOWN, N. Y.

For our pages on Bronze and Aluminum Products, and Louvre Ventilators, see File Index

ELLISON BALANCED DOORS DESIGNED FOR EASY OPENING AGAINST STRONG WIND PRESSURE AND SUCTION

For Entrance or Vestibule Doors in Varied Designs and Metals

This door is designed to meet the demand for an entrance door that can be easily opened against strong wind pressure or suction, or both, from inside and outside, under all conditions.

It is made in bronze, nickel silver, aluminum or steel for use at entrances and vestibules of office and public buildings, banks, schools, libraries, department stores, etc.

Principle of Operation

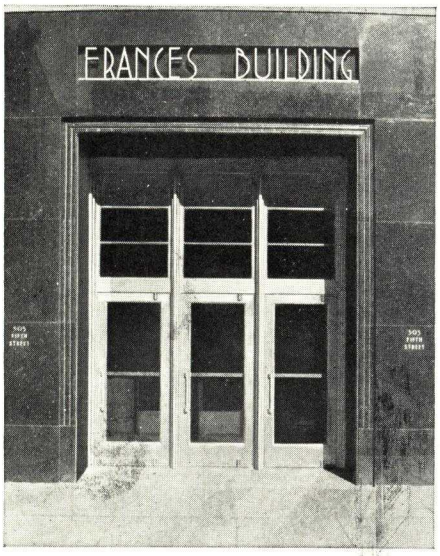
When the door is being opened, the pull handle edge of door swings outward *against* the wind and opposite edge swings inward *with* the wind and the entire door moves easily and quickly to one side of the door opening.

The surface of this door is subjected to the same wind pressure as the ordinary hinged type, but due to the fact that the two edges swing in opposite directions, the pressure on the swinging surface counterbalances the pressure on the outswinging surface.

Counterbalancing of the door makes necessary only a slight spring action in the closing device and door can be opened under any condition of weather with a minimum of effort.

Quick Closing Minimizes Heat Losses

Because of this balancing action, this door when released closes quickly, without slamming, and stays closed, preventing heat losses occasioned by the slow closing of ordinary hinged or pivoted door against pressure or suction.



Frances Building, Sioux City, Iowa
L. R. Solomon & Associates, Architects

Facilitates the Handling of Large Crowds

The easy opening and quick closing of this door permits an uninterrupted flow of traffic, in any wind and weather condition.

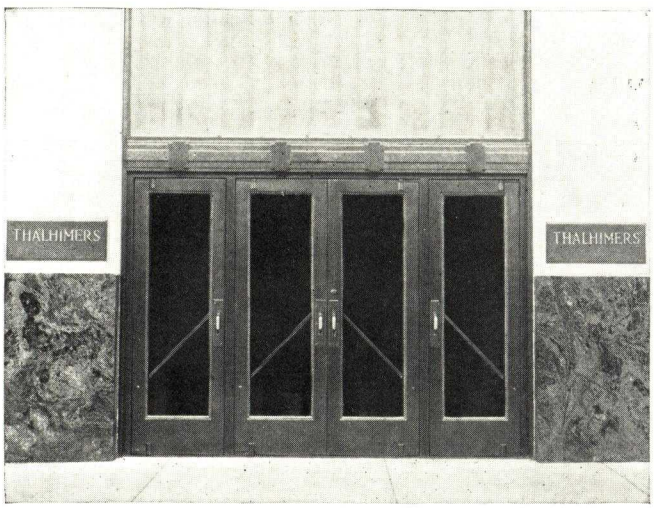
Construction Features of Ellison Balanced Doors

These doors are the regular Ellison welded bronze, nickel silver or aluminum doors with extruded moulding and trim. Steel doors and jambs are made of 16-gauge chrome nickel steel or copper bearing steel with baked enamel finish.

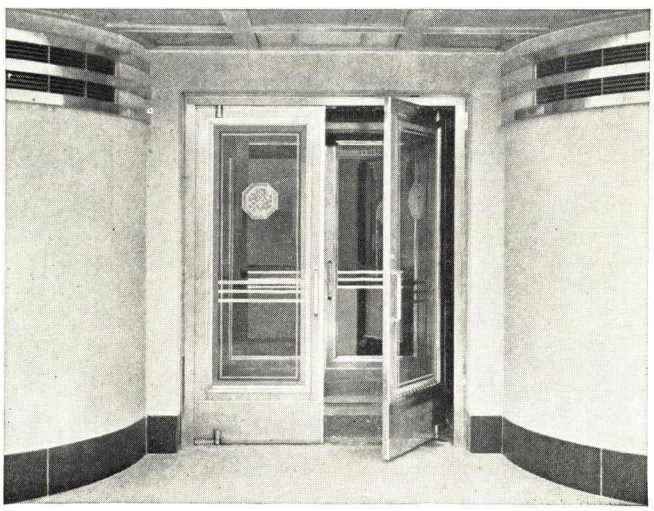
Doors Supplied as a Self-contained Unit

These doors are furnished by us complete as self-contained unit, including frames, mullions, trim, saddles, and all necessary hardware—door checks, pivots, door holders, locks, bolts, pulls, etc.

Hardware is not sold separately and can not be applied to wood doors. Special designs and sizes of doors can be made to the architect's details. Each unit is made to be built into the architectural treatment surrounding the doors. Other metal work, in connection with the entrance and vestibule, can be furnished and installed by others, although we are equipped to bid on any ornamental work (see our page on bronze, nickel silver and aluminum products).



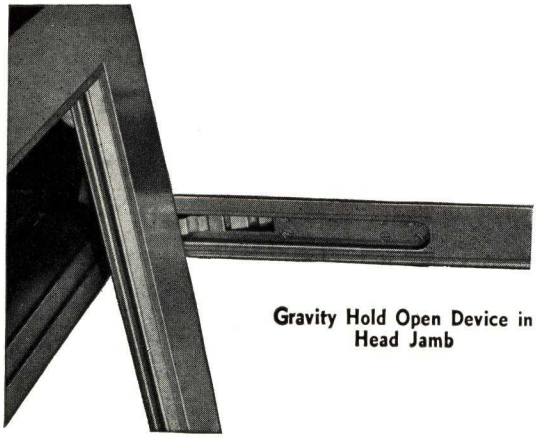
Thalhimer Bros. Department Store, Richmond, Va.
Carneal, Johnston & Wright, Architects



Educational Printing Company, Columbus, Ohio
Richards, McCarty & Bulford, Architects

ELLISON BRONZE COMPANY, INC.

OPERATING HARDWARE FOR ELLISON BALANCED DOORS



Gravity Hold Open Device in Head Jamb

Top Door Holder

Doors can be held in open position by a simple and easily operated gravity device located in the head jamb.

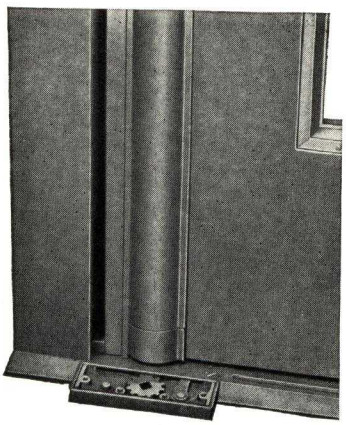
Closer Spring

Closer spring is located inside of the vertical shaft connecting top and bottom arm and tension is adjusted with a simple device located on saddle.

Saddle

Saddles rest on top of finished floor, no cutting required, except for fastening bolts. Saddles regularly furnished in cast bronze, or abrasive materials.

Top Pivot and Concealed Door Closer in Top Rail of Door



Closer Spring Adjustment in Saddle with Cover Plate Removed

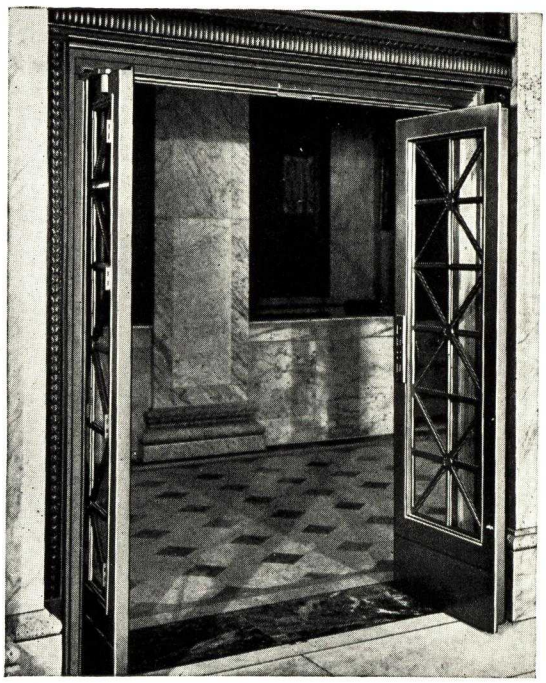
Other Hardware

Any standard locks, flush bolts, handles and push bars, to match other hardware in the building, can be used with these doors and are furnished and installed by us. Large choice of pulls and push bar designs available in stock patterns or we can furnish special work made to detail.

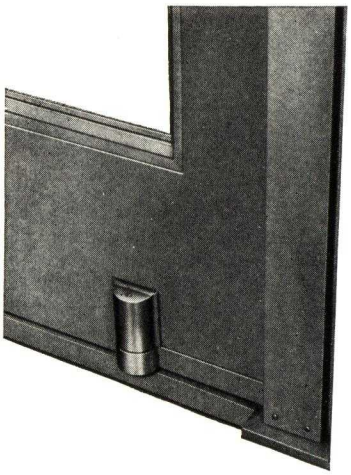
Pivots and Door Check

The operating hardware consists of top and bottom arms connected by a substantial vertical shaft inside the jamb; both ends of shaft are on ball bearings. The lower arm carries weight of the door and is connected with bottom pivot which also contains a spring bumper to prevent door from striking the jamb when opened. Upper arm acts as a guide and is connected with the door check.

Door check is of the liquid type operated with rack and pinion, adjustable for various speeds; solid cast bronze material; ball bearing guide roller.



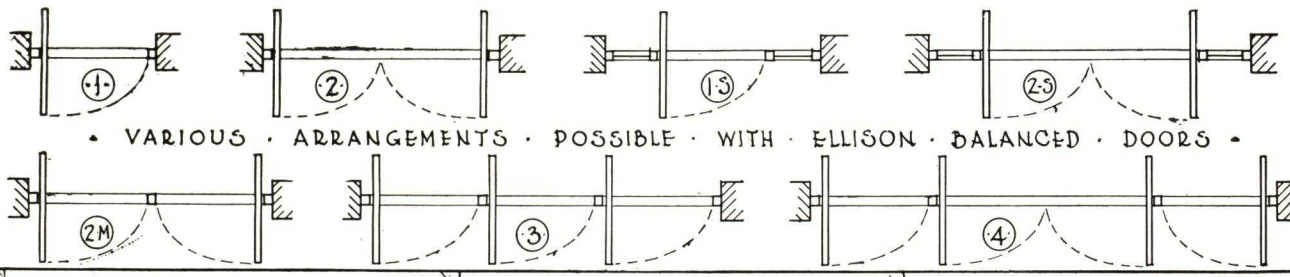
Note the free head room without projecting check brackets or door holders. No saddle used on unit illustrated above.



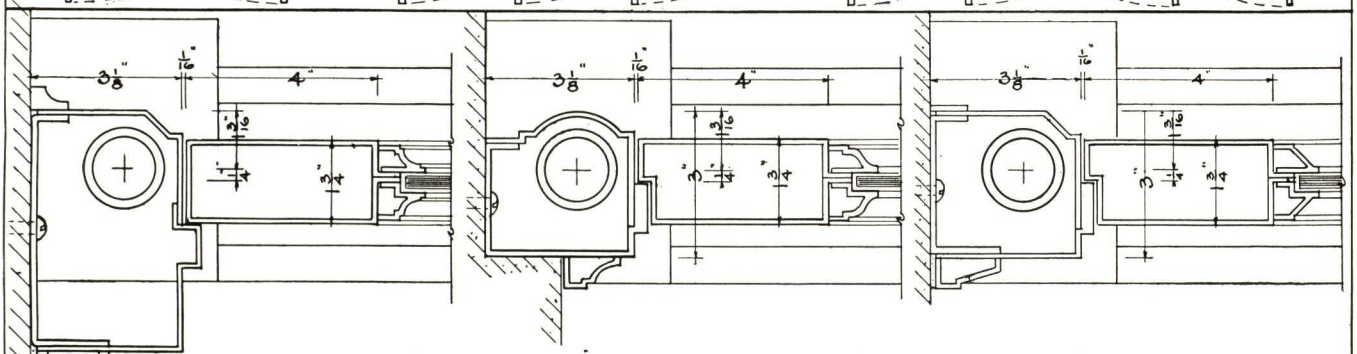
Bottom Pivot and Concealed Door Bumper in Bottom Rail of Door

A FEW INSTALLATIONS

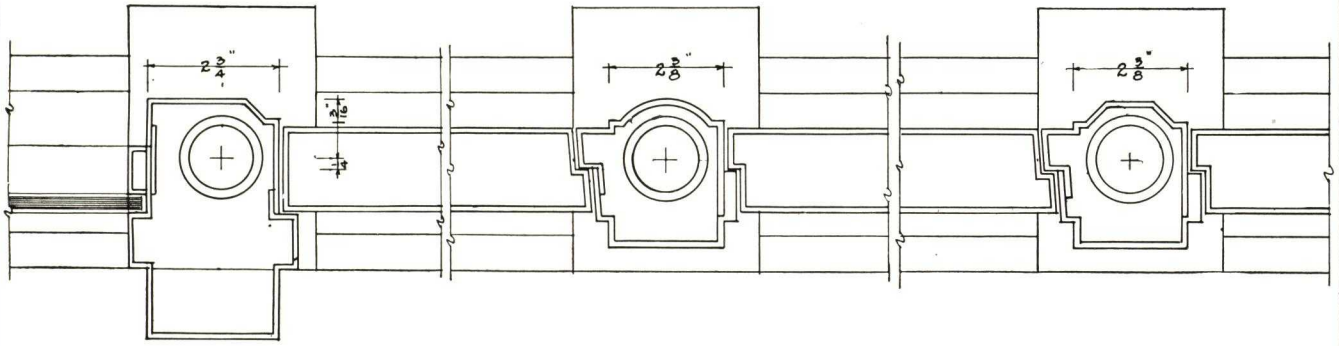
Buildings	Location	Architect
Rockefeller Center Buildings	New York, N. Y.	Reinhard & Hofmeister, Corbett-Harrison & MacMurray, Hood & Foulihoux
G. Fox & Company	Hartford, Conn.	Taussig & Flesch
Thalhimer Bros., Inc.	Richmond. Va.	Carneal, Johnston & Wright
Lockwood Library, University of Buffalo	Buffalo, N. Y.	Edward B. Green & Sons
Hume Mansur Building	Indianapolis, Ind.	Vonnegut, Bohn & Mueller
Boston Automatic Fire Alarm Co.	Boston, Mass.	Blackall, Clapp, Whittemore & Clark
City Hall	Kansas City, Mo.	Wight & Wight
City Hall	Torrington, Conn.	Carl Victor Johnson
Municipal Building	Kenmore, N. Y.	Green & James
Central School	Stamford, N. Y.	H. O. Fullerton
Educational Printing Company	Columbus, Ohio	Richards, McCarty & Bulford
Union National Bank	Pittsburgh, Pa.	
S. W. Bell Telephone Company	Houston, Tex.	I. R. Timlin
Lea County Courthouse	Lovington, N. M.	O. R. Walker
Frances Building	Sioux City, Iowa	L. R. Solomon & Associates



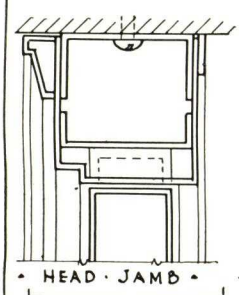
• VARIOUS · ARRANGEMENTS · POSSIBLE · WITH · ELLISON · BALANCED · DOORS •



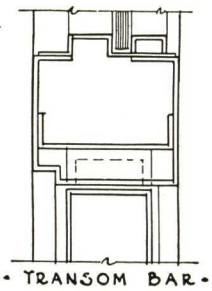
• A · FEW · OF · THE · MANY · TYPES · OF · JAMBS · POSSIBLE · WITH •
• THE · ELLISON · BALANCED · DOOR •



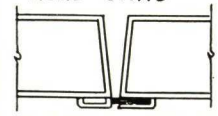
• A FEW OF · THE · MANY · TYPES OF · MULLIONS · POSSIBLE WITH •
• THE · ELLISON · BALANCED · DOORS •



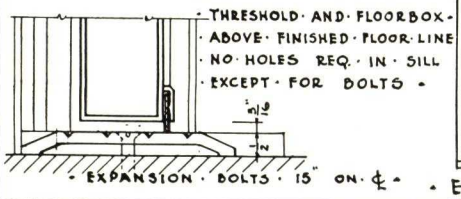
• HEAD · JAMB •



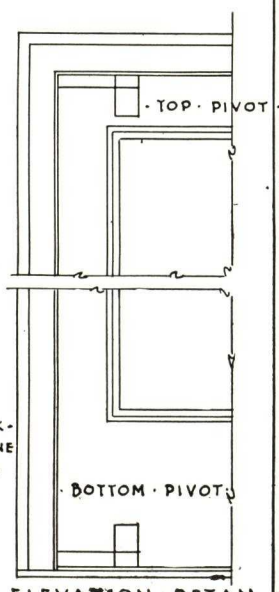
• TRANSOM BAR •



• MEETING · STILES •

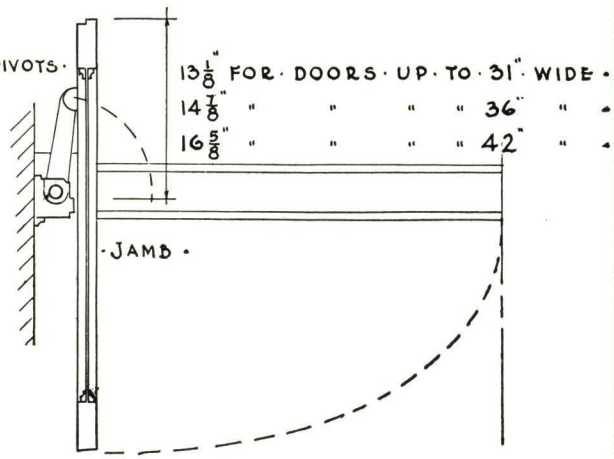


• EXPANSION · BOLTS · 15" ON · ℄ •



• ELEVATION · DETAIL •

• PLAN · SHOWING ELLISON BALANCED •
• DOOR · IN · OPEN · POSITION •



· DETAILS · OF · ELLISON BALANCED DOORS ·	· ELLISON · BRONZE · CO., INC. · JAMESTOWN NEW · YORK ·	A

FIRECRAFT DOOR COMPANY

Manufacturers of Steel, Aluminum, Bronze and White Metal Doors, Frames, Trim, Hardware and Metal Specialties

OFFICE AND FACTORY
3319 Wallace Street, CHICAGO, ILLINOIS
REPRESENTATIVES IN PRINCIPAL CITIES

Products

HOLLOW METAL DOORS, JAMBS and TRIM.
"UNIMETAL" COMBINATION BUCKS and FRAMES.
PASSENGER ELEVATOR ENCLOSURES.
FREIGHT ELEVATOR COUNTERBALANCED DOORS.
DUMB-WAITER DOORS, FRAMES and TRIM.
NON-FERROUS and WHITE METAL OPENINGS.
"ALSTELE" SWINGING and SLIDING FIRE DOORS.
COLLAPSING GATES and INDUSTRIAL DOORS.

Emblem of "Delivery on Time"

Plant Facilities and Service

Manufacturers of sheet steel products including Underwriters' labeled doors and frames for the past twenty-eight years is your assurance of experienced service. Modern machinery and a trained engineering staff enable us to efficiently handle large or small orders. We have originated and developed many standardizations which have resulted in speedier deliveries. Look for the Firecraft Emblem on doors or frames arriving at scheduled time.

Hollow Metal Doors and Frames

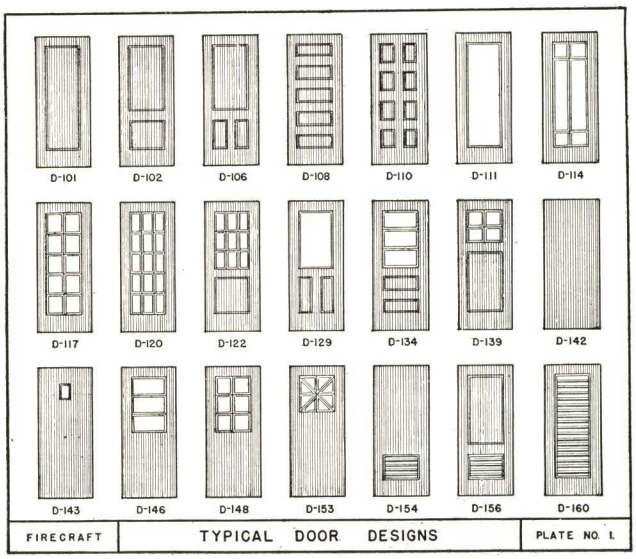
Description—Stiles and rails formed of 18-gauge patent leveled, cold rolled furniture steel. Asbestos air cell blocks are inserted in all stiles and rails so as to prevent metallic sound. Panels are constructed of two sheets of 18-gauge steel separated by ¼-in. asbestos millboard. Drawn or pressed 20-gauge mouldings are carefully mitered and fitted. Panels and cross rails are locked into the stiles with lock strips and welded so as to make doors rigid and strong. All joints and seams are made perfectly smooth and invisible. Heavy hardware reinforcements are invisibly welded in position. All hardware is carefully fitted before doors are inspected and shipped.

Door frames, consisting of rough bucks, cabinet jambs and trim or integral frames are formed from 12 to 16-gauge steel, depending on service required and size of openings.

This construction meets the requirements of the National Board of Fire Underwriters' and Factory Mutuals and doors and frames bear their labels when so specified.

Materials are finished with shop coat of air dried primer, baked prime or baked enamel in plain color or grained to meet individual requirements. Before painting, all materials are thoroughly cleaned of grease and foreign material. Each coating is baked and sanded, final coats of baked enamel being rubbed to an eggshell gloss. Plain colors and grained finishes are carefully matched with approved samples.

A few of the Firecraft standard door designs are illustrated below. An almost unlimited variety of glass and metal panel arrangements are available. Specially designed doors with circular heads or raised panels may be furnished to harmonize with building architecture.



"Unimetal" Combination Bucks, Jambs and Trim

Firecraft "Unimetal" frames, consisting of buck, jamb, and trim are formed integrally from single steel plates. Suitable for all interior openings, they are fireproof, free from warping or sagging and are economical to install. They offer the builder a completely finished frame incorporating sharp profiles and accurate fitting which harmonize with modern architecture.

Unimetal frames are custom built to meet the special requirements of each project. They can be fabricated to cover the entire thickness of tile, brick and concrete walls or narrower to finish inside plaster reveals. A number of types are also available for use in 2-in. plaster partitions.

Construction—Frames are formed in 10, 12, 14, 16, or 18-gauge cold rolled steel according to type of profile desired and service to which frame will be subjected. Head and jamb sections are carefully mitred, fitted and continuously arc welded from the back side of frame. Provision is made for all mortised and surface hardware by means of cutouts, reinforcing plates, drilling and tapping. Jamb members are rigidly held in alignment by means of angle or channel spreaders.

An angle lug is provided at bottom of each jamb for fastening to rough or finished floor. Anchorage in masonry or concrete walls is accomplished by means of corrugated 16-gauge adjustable anchors 12 in. long, three to each jamb. When frames are to be used in plaster walls lugs are welded into position for easy application of lather's channels.

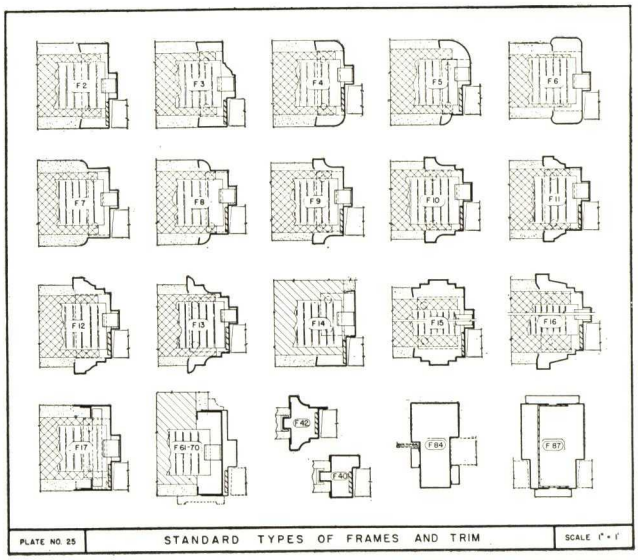
Transom bars and mullions of the same gauge steel used in frames are integrally formed so that no joints are visible. They are welded to frame members and ground off smooth. Borrowed lights, sidelights, and transoms are provided with removable stops fastened with oval head machine screws.

Underwriters' Labels—Unimetal frames have been tested by the Underwriters' Laboratories and when so desired can be labeled for B, C, D, or E openings.

Finish—After assembly frames are carefully cleaned of all grease and foreign material, they are then sprayed with one coat of rust-inhibiting primer. If desired, baked enamel finishes may be applied. All baked enamel finished frames are protected from plaster and other erection hazards by means of a protective covering applied before crating and shipment.

Service—Since progress of building operations is often dependent upon prompt delivery of frames, we have made special provisions in the frame department to facilitate quick, efficient handling. An example of this service is the fact that orders of 70 frames or less are usually shipped within 10 days after receipt of approved drawings and hardware templates.

The most frequently used standard types of frames detailed below indicate the wide range of Unimetal profiles available.



Freight Elevator "Balanced" Doors

Freight elevator counterbalanced doors are constructed in two sections which move vertically in opposite directions in guides secured to the hatch face of the wall. Each panel is constructed of corrugated steel securely fastened to rigid angle iron frame. A sturdy truckable sill is built into the top of the lower half of the door, thus providing a smooth level trucking surface between floor landing and elevator platform. Truckable sill is constructed to suit the particular loading requirements of each installation to assure continuous satisfactory operation under the severest service requirements.

Ball bearing sheaves, guide shoes, and latches are all designed to keep friction at a minimum resulting in ease of operation.

Doors furnished with or without vision panels and with latches accessible from either hatch or corridor side. Doors available in pass-type construction where floor heights are not sufficient to permit installation of regular type.

Sanitary Dumb-Waiter Doors

Firecraft "Sanitary" Dumb-waiter doors are furnished in either single swing, vertical slide or counterbalanced units. Each unit includes pressed steel frame, door panel, struts, guides, and sheaves. Vision panels and extended tray rest or sill shelf furnished when desired.

Smooth flush panel surfaces entirely free of exposed joints and crevices make an attractive "Sanitary" unit especially desirable for handling foodstuffs in hospitals, restaurants and hotels. Pressed steel frames are fabricated with standard trim profiles on room side. Doors are furnished either of single steel plates adequately stiffened with angle framework or flush panel hollow metal construction. Door panels and frame are suitably reinforced for any electrical interlocks or mechanical latching devices being furnished and installed by the dumbwaiter contractor.

Provision is made to facilitate the installation and maintenance of the dumb-waiter car at the bottom landing with a larger size door in the sliding type and with a removable or hinged panel in the swinging type.

"Sanitary" dumb-waiter units are shipped completely assembled ready to install, finished with a grey metallic primer. When so specified, units are finished in baked enamel of color as selected.

Dumb-waiter units fabricated from sheet aluminum, bronze, or stainless steel may also be furnished.

"Alstele" Patented Fire Doors (Labeled)

The Alstele fire door is a modern door development, offering architects and engineers a door which is entirely fire-resistant and at the same time durable, sturdy, and neat appearing.

Operating on standard fire door hardware the Alstele doors are comparatively light in weight and easy to operate. They are constructed throughout with galvanized steel and are free from dry rot and rusting even under the most adverse operating and climatic conditions.

Uses—Alstele doors used in fire walls, corridor and room partitions, stairhalls, or exterior wall openings offer the greatest possible safeguard to life and property by preventing the spread of fire, smoke and heat. These doors quickly pay for themselves in insurance rate savings.

Types—When required with fire door hardware Alstele sliding doors may be furnished in either the level or gravity slide design. Swinging doors of the lap type where the hardware fastens directly to the wall can be furnished, or the rabbetted type can be fabricated complete with hardware and channel or angle iron frames.

An economical, lighter weight Alstele swinging door is also manufactured in which the stiles and rails are similar to those of hollow metal doors. The use of standard mortised locks and butts complete with pressed steel frames make this an ideal stairhall, storeroom or fire escape door.

Labels—When erected with standard fire door hardware the Alstele doors are given the highest rating of Underwriters' Laboratories of Chicago and Factory Mutual Laboratories of Boston and bear their labels.

Construction—Door stiles and rails are constructed of 18-gauge galvanized steel tubular shapes having projecting members for fastening panels. Panels are built up from two layers of crosslaid corrugated galvanized steel, interlined throughout with asbestos sheeting, and riveted to stiles and rails. This construction, while eliminating unsightly angles and cross braces, produces a rigid door of neat appearance.

Advantages—Attractive appearance, light weight, freedom from dry rot, galvanized protection against rust, and labeled for greatest fire resistance.

For best results specify "Firecraft Alstele" Doors.

Passenger Elevator Enclosures

Complete elevator entrance units are furnished, including hollow metal doors, frames, non-slip machine grooved sills, facia plates and angle iron struts. All doors are rigidly constructed in either flush or panel designs. Flush doors are fabricated from two sheets of patent leveled steel separated by channels welded the entire length of doors and cross-braced at top and bottom. Glass for vision panels is set in rubber channels and held in place by means of cast frame or removable mouldings. Paneled doors are manufactured as specified for hollow metal doors.

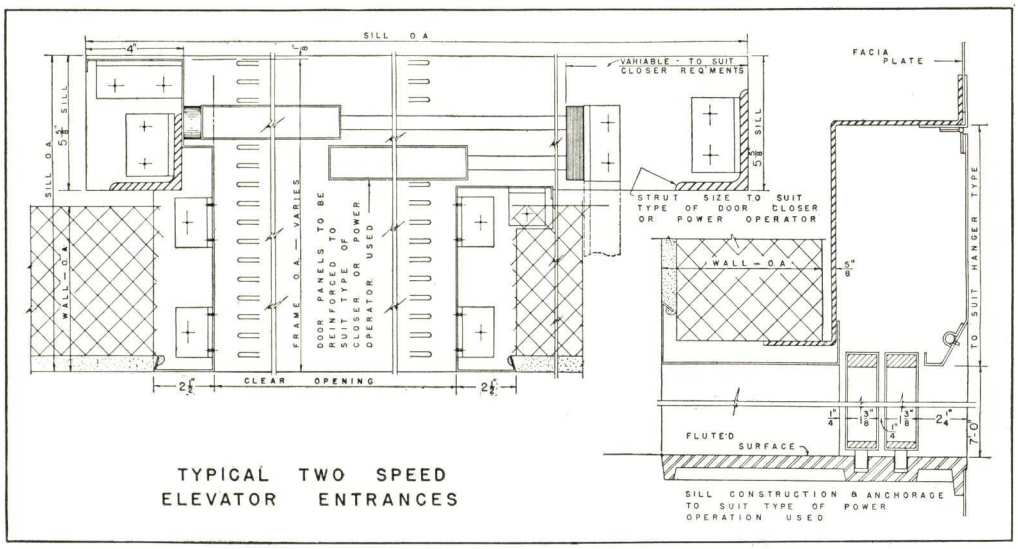
Frames are available in either the integral type or with rough bucks, loose jambs and trim. Sills are furnished in cast iron, feralun, bronzalun or alumilum. Angle iron struts extend from top of sill to underside of beam on floor above. Facia plates extending from door head or top of hanger pocket to sill on floor above, are furnished properly reinforced to present a smooth unbroken vertical surface.

All structural parts are coated with rust inhibiting paint. Doors, frames, casings, facia plates and hanger covers have baked enamel finish of color or graining desired.

Swing Units—Constructed so that hatch face of door is flush with sill nosing, thus eliminating a hazardous ledge from existing between hatch door and elevator car gate or door. Doors may be equipped with overhead or floor checks. Door panels are suitably recessed and reinforced for elevator interlocks.

Sliding Units—Furnished in single, two-speed or center-opening types. Sills are accurately machine grooved to allow minimum running clearance for silent self-aligning removable composition door guides. Hanger housings and covers are constructed to suit type of hanger used. All sliding elevator door units are carefully built to fulfill any power operation requirements for sills, door reinforcements, hanger pockets and struts.

A typical standard two-speed elevator entrance layout is illustrated below.



TYPICAL TWO SPEED ELEVATOR ENTRANCES

E. H. FRIEDRICH COMPANY

Metal Covered Doors, Windows, Partitions and Trim; Combination Steel Door Frames, Tin Clad Fire Doors and Hardware

HOLYOKE, MASS.

REPRESENTATIVES

ALBANY, N. Y., Harding Building Specialties Co.
ATLANTA, GA., J. M. Van Harlingen
BALTIMORE, MD., Consolidated Supply Co.
BOSTON, MASS., Rubin Burke Co.
DETROIT, MICH., Detroit Fire Door Co.
HARRISBURG, PA., Metal Building Products Co.
HARTFORD, CONN., Scherer Steel Co.
MILWAUKEE, WIS., Jos. C. Millman
NEW HAVEN, CONN., A. R. Kirschner Co.
PHILADELPHIA, PA., M. O. Sundelius
PITTSBURGH, PA., J. F. Haldeman
WASHINGTON, D. C., Zimmer Sales Co.

Products

HIGH GRADE METAL COVERED WOOD DOORS, FRAMES and TRIM, METAL COVERED DOUBLE HUNG WINDOWS, PARTITIONS, ENTRANCES, etc., furnished in Kalamein Iron, Steel, Copper and Bronze.

Kalamein and Tin Clad Fire Doors, furnished with Underwriters' label when required.

FIREPROOF HOLLOW METAL WINDOWS with Underwriters' label.

TRADE-MARK

Facilities and Workmanship

Our factory is especially well equipped to produce any design in metal covered work, such as is used for bank entrances, office buildings and schools.

This work is done by craftsmen well skilled in their trade who are capable of producing finished material to suit any architectural conditions relative to design and exacting workmanship.

FRIEDRICH CONSTRUCTION SPECIFICATIONS

Metal Covered Work

Wood Cores—The cores of all metal covered work are made up from clear kiln-dried white pine, free from large or loose knots, sap and dry rot.

All cores are milled true to form through moulding machines.

When stiles and rails are more than 6 ins. wide, they are made of strips glued together with waterproof glue.

Metal Covering—All woodwork is covered by drawing through steel dies.

Panels are of composition, wood or asbetos and are covered by gluing metal to surface under pressure.

Metal covering may be kalamein iron, furniture steel, copper or bronze.

Kalamein iron or furniture steel can be furnished in gauges from 28 to 20; copper from 14 to 48 oz., and bronze from 24 to 16 gauge.

Unless otherwise specified, standard manufacture is based on 26-gauge kalamein iron; 24-gauge furniture steel; 16-oz copper and 20-gauge bronze.

Assembly—All doors are assembled with mortise and tenon joints glued together and nailed.

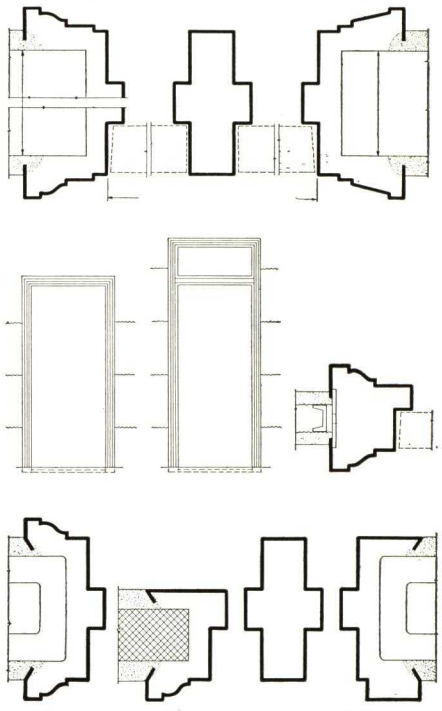
All joints between metal are soldered flush and scraped smooth, making an even surface throughout.

Joints in bronze doors are made by locking the metal and sweating to a plate fastened on the wood core, making a hairline joint when finished.

Muntin bars are completely covered with metal, and all coped to fit contour of moulding and joints soldered and scraped smooth.

Finish—Copper cleaned and oiled, or oxidized when specified. Bronze cleaned and oiled or finished statuary.

All kalamein material is furnished with a prime coat of paint.



Combination Steel Door Bucks

Hollow Metal Windows

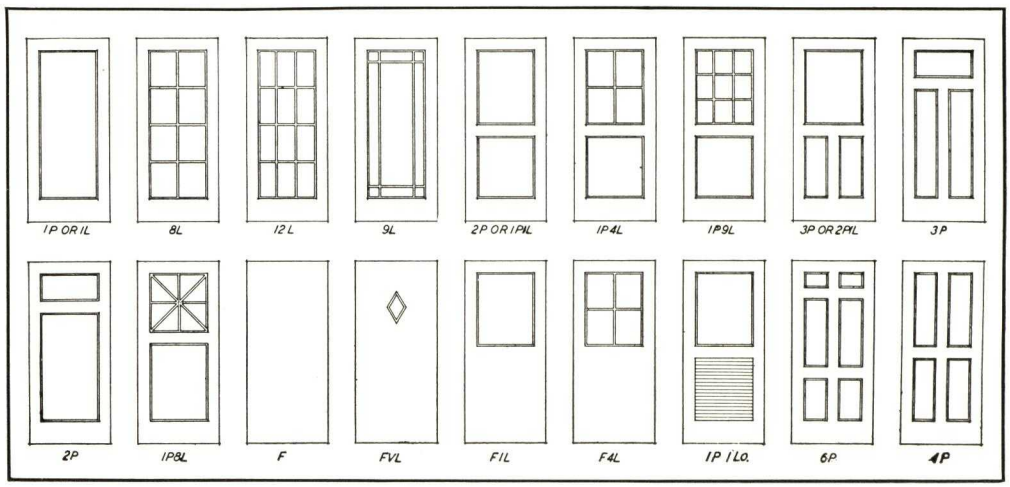
A complete line of all types of hollow metal windows, Underwriters' labeled, is manufactured by this company.

This includes double hung, stationary, pivoted and combinations of these types.

All windows are made with cutting and forming dies which insure the fitting of every member when assembled and a perfect operating window. Made in standard 24-gauge, also heavy type 20-gauge. Specifications and details sent on request.

Combination Steel Bucks

Made of 16 and 14-gauge steel with integral moulded or flat trim. Miters have full continuous weld. Bucks are reinforced, drilled and tapped for all mortise hardware and reinforced only for surface hardware. Bucks can be made of 12-gauge steel with flat trim.



Representative Door Types

JAMESTOWN METAL CORPORATION

FORMERLY JAMESTOWN METAL DESK COMPANY, INC.

Elevator Enclosures—Metal Doors and Jambs—Partitions and Interior Trim—Steel Office Furniture—Filing Equipment

EXECUTIVE OFFICES AND FACTORY

JAMESTOWN, NEW YORK

SALES OFFICES

ATLANTA, GA., Harry E. Lindley, 323A Mortgage & Guarantee Bldg.
BOSTON, MASS., E. A. Richards, 115 Federal St.
BUFFALO, N. Y., Shults Engineering Co., Morgan Bldg.
CLEVELAND, OHIO, J. W. Loeb, 304 Empire Bldg.
DALLAS, TEX., S. A. Ellsberry, 2308-10 Griffin St.
DES MOINES, IOWA, Hansen Metalkraft Co., 3905 Amick Ave.
DETROIT, MICH., Robbie Robinson, 226 Murphy Bldg.
NEW HAVEN, CONN., A. R. Kirschner Co., 30 Whitney St.
NEW YORK, N. Y., Farber Brandin, Grand Central Terminal
PHILADELPHIA, PA., R. R. Mackay, 2206 Chestnut St.
PITTSBURGH, PA., E. W. Lauschke, 207 Fulton Bldg.
RICHMOND, VA., Henry W. O'Grady, P. O. Box 933
SAN FRANCISCO, CAL., Gleason Steel Products, 1310 63rd St.
SCRANTON, PA., Lebar & Evans, 711 Linden St.
WASHINGTON, D. C., H. G. Garlock, 405 Southern Bldg.

REPRESENTATIVES IN MOST PRINCIPAL CITIES

Hollow Metal Doors and Jambs

A special engineering section is maintained to analyze building requirements and prepare the necessary drawings to meet the architect's most exacting ideas.

Elevator Enclosures

A fireproof labeled elevator landing unit installation will obtain certain insurance credits that will greatly offset the slightly higher original construction cost. Investigate the advantage of hollow metal from an insurance standpoint very carefully.

Partitions and Interior Trim

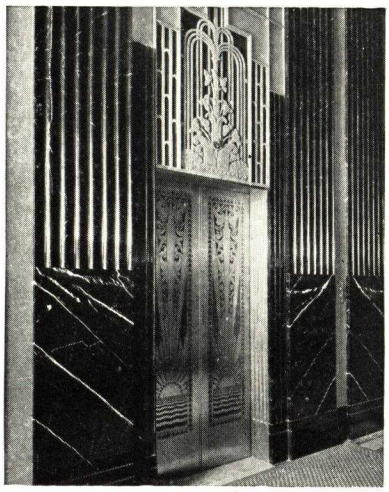
When hollow metal construction is used, the units can be taken down and rearranged to suit individual tenant requirements. There is no waste and little depreciation.

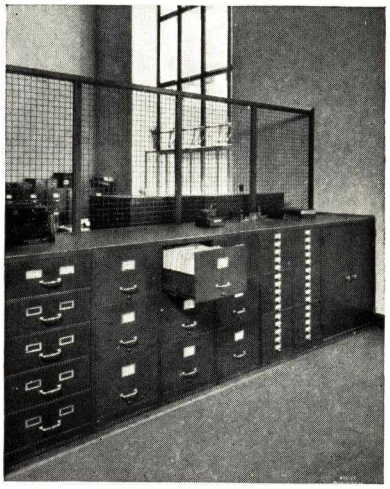
Steel Office Furniture

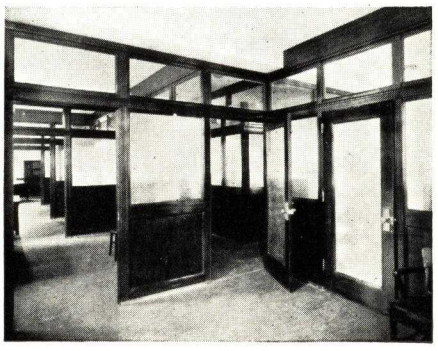
This company is one of the pioneers in the manufacture of steel office furniture of the better quality. Desks with drawers that always slide easily, panels properly soundproofed, large selection of models.

Filing Equipment

This department is a natural development of the desk business. Our various lines of Filing Equipment have all the fine features of our desks plus many added developments.







THE R. C. MAHON COMPANY

Manufacturers of Kalamein and Tin Clad Doors

DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

MAHON KALAMEIN and TIN CLAD DOORS; TRANSOMS, JAMBS, TRIM and MOULDING SECTIONS.

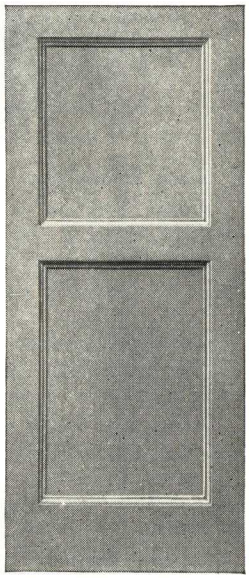
For Mahon Steel Roof Deck, Rolling Steel Doors, and Cast Iron Roof Sumps, see File Index.

MAHON
KALAMEIN & TIN CLAD DOORS
-UNDERWRITERS LABELED-

MAHON KALAMEIN DOORS

Underwriters' Labeled Doors—Mahon Underwriters' Labeled Kalamein Doors are manufactured from the finest selected kiln-dried pine, covered with 24-gauge sheet steel. All joints are welded, making a sturdy, fire safe, fine appearing door.

Standard Kalamein Doors—Mahon Standard Kalamein Doors embody the same high quality materials and fine workmanship as Mahon Underwriters' Labeled Doors. These doors are manufactured for use in locations where quality fire doors are desirable when labeled doors are not specified.



Type 1 Kalamein Door

Standard Types and Sizes—Mahon Underwriters' Labeled and Standard Kalamein Doors are available in 12 distinctive designs in 16 standard sizes. These doors, with their sharp, clearly defined lines, are masterpieces of fine workmanship—fit companions for the finest materials that can go into any building.

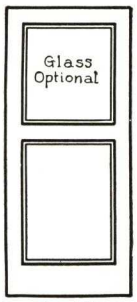
Service—Mahon designers are available and will co-operate on special conditions where standard size doors cannot be used.

MAHON TIN CLAD DOORS

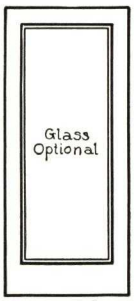
THE R. C. MAHON COMPANY also manufactures tin clad doors (Underwriters' labeled) to meet every requirement.

STANDARD SIZES—MAHON KALAMEIN DOORS

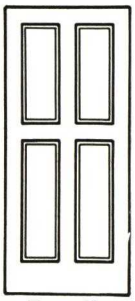
2'6"x6' 6"	2'8"x6' 6"	2'10"x6' 6"	3'0"x6' 6"
2'6"x6' 8"	2'8"x6' 8"	2'10"x6' 8"	3'0"x6' 8"
2'6"x6'10"	2'8"x6'10"	2'10"x6'10"	3'0"x6'10"
2'6"x7' 0"	2'8"x7' 0"	2'10"x7' 0"	3'0"x7' 0"



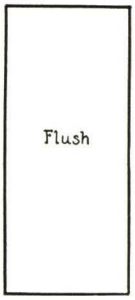
Type 1



Type 2

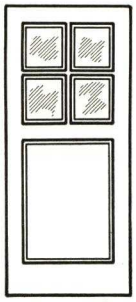


Type 11

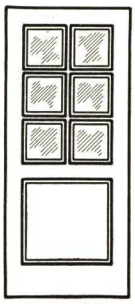


Type 12

Type 3



Type 4G



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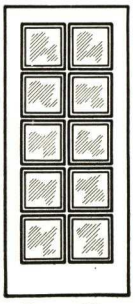
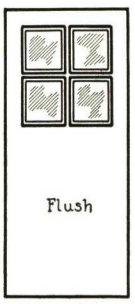
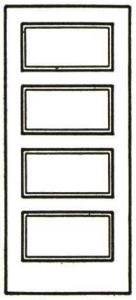


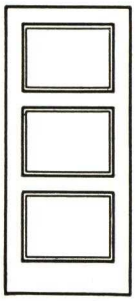
Type 6G



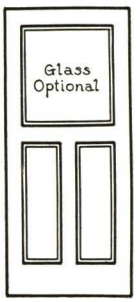
Type 7G



Type 8



Type 9



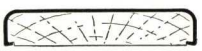
Type 10

STANDARD FIREPROOFED JAMBS, TRIM AND MOULDING

Transoms, jambs and many attractively designed trim and moulding sections, manufactured from the same high quality materials and fireproofed in the same manner as Mahon Kalamein Doors, are carried in stock for immediate delivery.

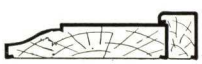
No. 101
Standard 5½-in. Jamb

No. 200



No. 201

No. 203



Nos. 204 and 206

No. 205

Standard Trim Sections

No. 100

No. 101

No. 102

Standard Stop Sections

No. 300

No. 301

No. 305

No. 307

Nos. 309 and 308

No. 310

No. 311

Standard Moulding Sections

METAL CLAD DOORS, INC.

675 Concord Avenue, CAMBRIDGE, MASS.

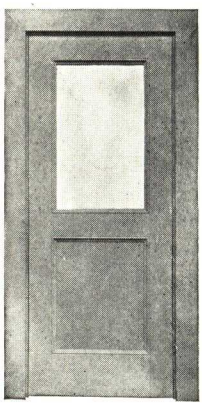
METCLA

Products

METAL COVERED DOORS, FRAMES, TRIM and ENTRANCES; TIN CLAD FIRE DOORS and SHUTTERS; PRESSED STEEL DOOR FRAMES; METAL TOILET PARTITIONS and Specialties.

Doors and Frames are furnished with or without Underwriters' label.

Metcla Metal Covered Doors, Frames and Trim



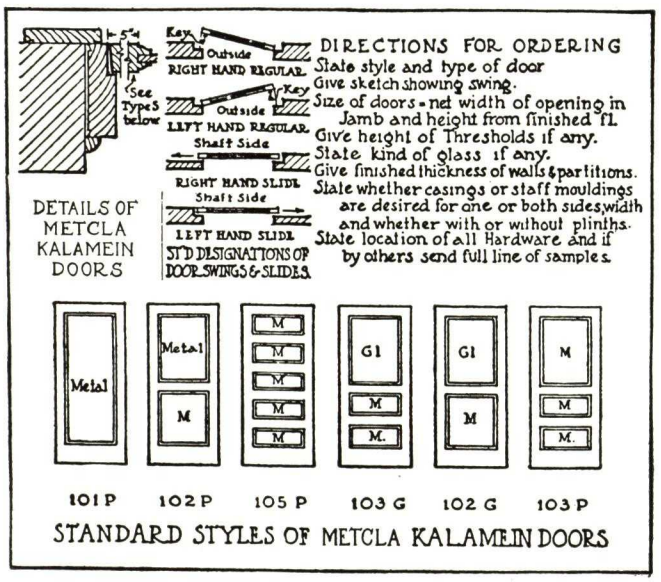
No. 102G
Metcla Metal Covered Door

Made by drawing sheet metal through steel dies over a wood core of white pine. This process practically welds the metal covering to its core, eliminates buckles and brings out all moulding members in clear relief.

Made in kalamein iron, galvanized steel, copper or low brass; in sections, tongued, grooved and pinned together, and finished with a priming coat of paint. Glass is not furnished by us.

Standard styles in kalamein iron are illustrated. Special styles and sizes will be furnished on short notice.

Metcla metal covered doors, frames and trim are approved by leading architects and engineers, and have been used under the most severe conditions. In specifying Metcla doors, frames and trim the architect is assured of the utmost in quality, workmanship and durability, upheld by continuous service and a high reputation for materials and workmanship.



Metcla Kalamein Elevator Fronts

Metcla kalamein elevator fronts are specified for durability, ease of operation and appearance, where sheet steel doors are not desired, or where hollow metal doors would be too expensive.

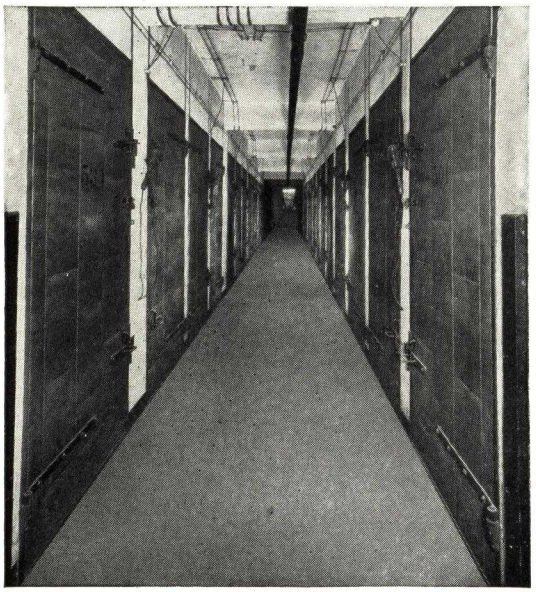
Metcla Metal Covered Entrances

Metcla entrances of copper, bronze or kalamein are made in accordance with the architect's details to meet every requirement. They are a striking feature of many prominent public and private buildings and have all the advantages of the appearance of cast metal doors, without their extreme weight or cost.

Mill Entrance—Metcla Copper Kalamein

Tin Clad Doors and Shutters

These are made in any style and size, and are furnished with or without hardware f.o.b. Boston or installed with or without Underwriters' labels.



Storage Warehouse Equipment
Tin clad doors, iron frames, special hardware

Pressed Steel Door Frames

Our combination frames are fabricated in any gauge from No. 10 to No. 18 with plain or moulded trim as an integral part of frame. Head and jamb are continuously welded and anchors are provided to bond frames rigidly to walls. Frames are provided with cutouts to receive finished hardware. Steel spreader bars are welded to frames at bottom to insure parallel alignment, and the finished product is primed with one shop coat of metallic paint.

Metal Toilet Partitions

Metal toilet partitions are of the flush filled type. Hardware is of brass, chromium plated, and partitions come complete with all necessary fittings. Finish is of baked enamel in any standard color.

THE MOESCHL-EDWARDS CORRUGATING CO., INC.

Manufacturers of Kalamein and Tin Clad Doors

CINCINNATI, OHIO

For "Mecco" Rolling Steel Doors, see File Index

"MECCO" KALAMEIN DOORS—JAMBS, TRIM, TRANSOMS AND MOULDING SECTIONS

TRADE-MARK

Facilities

A long established firm with a modern plant and ample facilities to execute orders of any size, for high grade metal covered woodwork in steel, copper or bronze. Also hollow metal frames, kalamein trim and moulding.

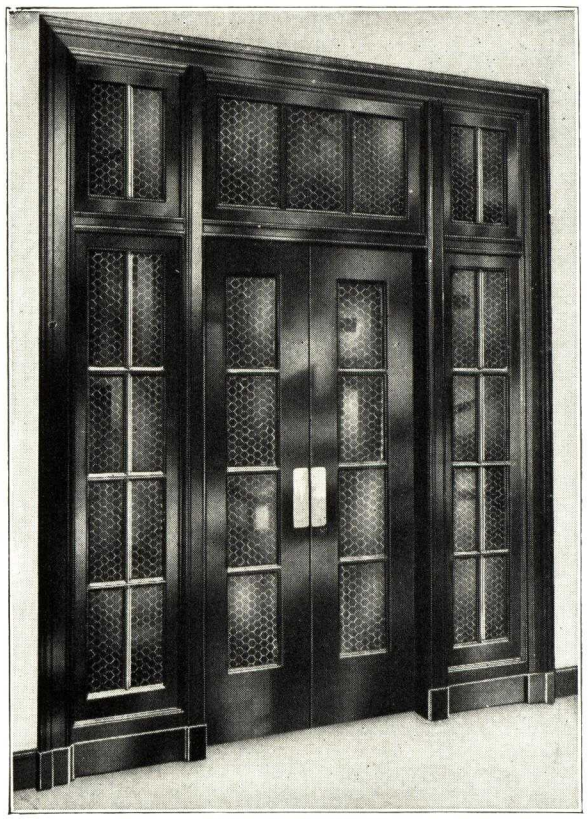
Labeled Products

Kalamein doors are Underwriters' labeled for class "B," "C," "D" and "E" openings. Frames to be labeled must be hollow metal. Mecco labeled doors and frames will give you the best possible rating obtainable.

A circular giving complete details will be mailed upon request.

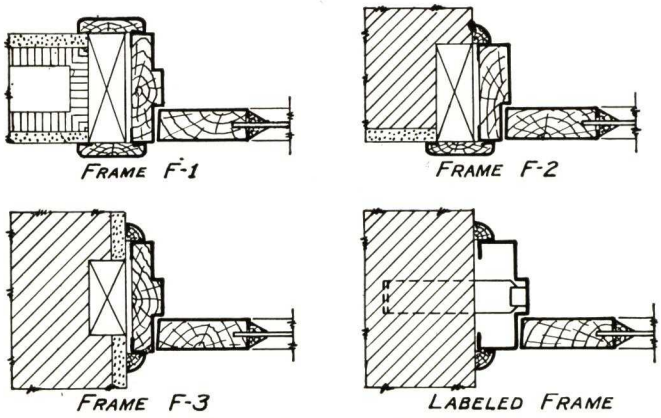
Construction and Materials

"Mecco" Kalamein products are manufactured of only high grade materials throughout. Construction used is that proven by time and experience to be best for every condition. Wood work is kiln dried and only stretcher leveled sheets of proper gauges are used.



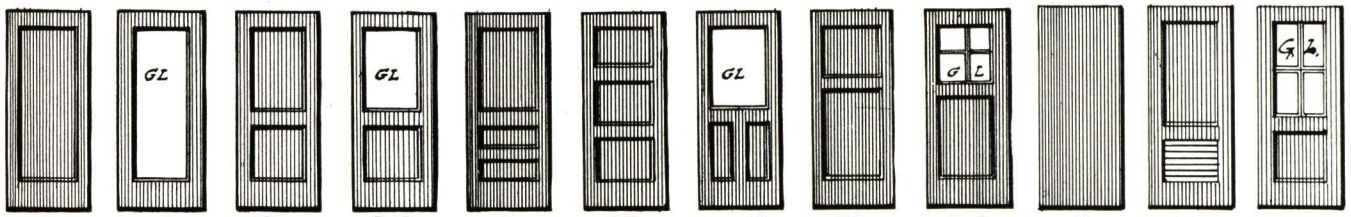
Kalamein Partitions

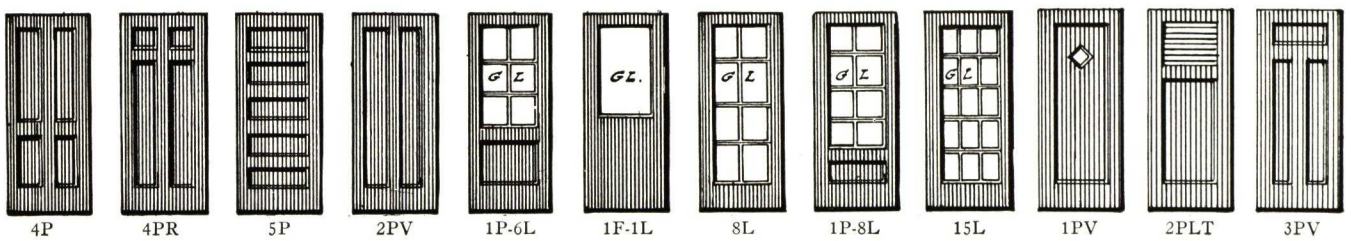
Made to any design for protection of stairways and similar exposures



Frames, Casings and Moulds

Ample designs and profiles carried in stock to meet various architectural requirements. Any frame width and trim combination can be had





Kalamein Door Designs

If design you require is not shown send us a sketch

Specifications for Kalamein Doors

Underwriters' Labeled—Where specified or marked "Kalamein Doors" shall be metal covered with wood cores and labeled by the National Board of Underwriters and all to be as manufactured by THE MOESCHL-EDWARDS CORRUGATING CO., INC., of Cincinnati, Ohio.

Cores shall be built of non-resinous wood assembled with mortise and tenon joints. Panels to be ¼ in. thick formed of asbestos mill board and two thicknesses of 24-gauge galvanized steel. Covering for rails and stiles shall be not less than 24-gauge galvanized steel applied to fit cores snugly and edges of covering to be riveted through the panels, all in neat and workmanlike manner.

Where stiles and rails meet, they shall be joined by a lock joint. Panel moulds to be hollow metal or wood core, drawn metal construction with members sharp and true. Glass moulds to be drawn hollow metal, joined as approved by the Underwriters. Doors shall receive one prime coat of paint at factory.

Commercial Non-labeled—Where specified or marked "Kalamein Doors" shall be metal covered with wood cores, as manufactured by THE MOESCHL-EDWARDS CORRUGATING CO., INC., of Cincinnati, Ohio.

Cores shall be of non-resinous wood with mortise and tenon joints, thoroughly glued and nailed.

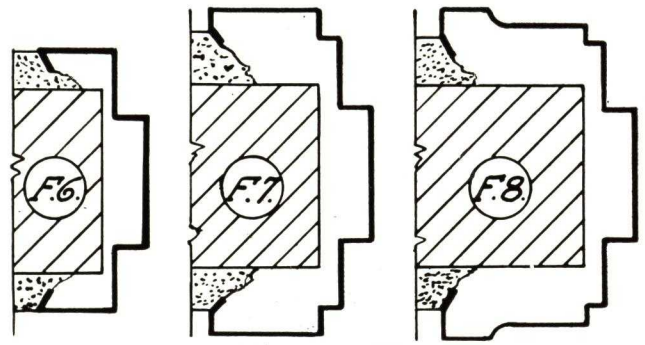
Covering shall be not less than 25-gauge stretcher leveled kalamein iron for interior doors and 24-gauge galvanized steel for exterior doors, applied to fit cores snugly, in the most approved and workmanlike manner.

Panel and glass moulds may have wood cores with metal covering drawn tightly on by means of steel dies, or they may be hollow metal. All members must be sharp and true; no pressed moulds will be permitted.

Doors must receive one prime coat of paint at the factory.

Frames, casing and staff moulds for doors, where required, to be wood core, metal covered of equal workmanship.

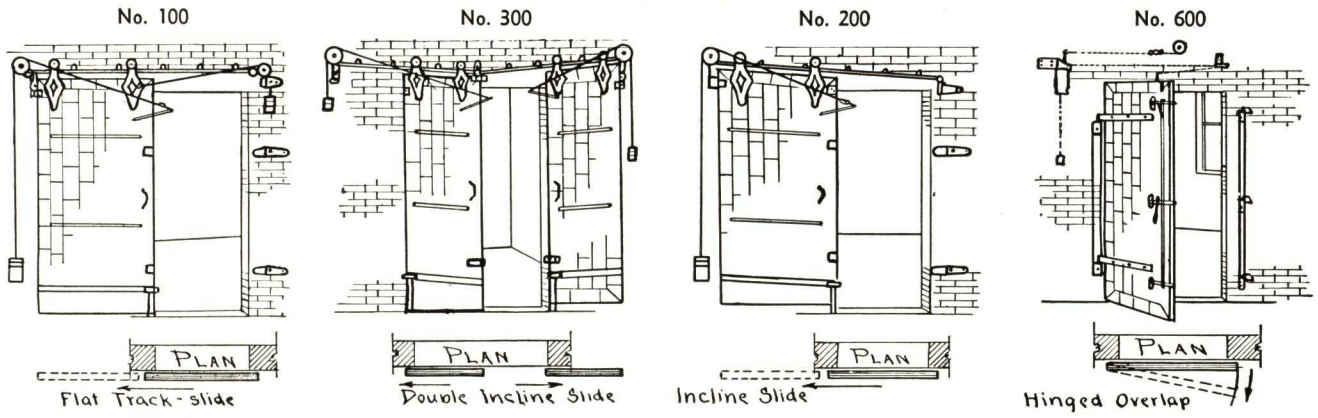
Hardware is furnished by others, but must be mortised for by door manufacturer at the factory.



Hollow Metal Frames
Made of 16 and 14-gauge material in designs as illustrated, other designs can be supplied

Entrance Doors
May be had in copper, bronze, stainless steel or aluminum. Kalamein construction

TIN CLAD DOORS



Tin Clad Fire Doors and Hardware

All types of Underwriters' labeled and non-labeled two-ply and three-ply tin clad fire doors and shutters, together with complete fire door hardware, to fill conditions imposed by insurance and building requirements. An installation of Underwriters' labeled fire doors and hardware makes a first-class fire retardant, and in many cases, will lower insurance rates considerably.

Specifications for Tin Clad Fire Doors and Hardware

Core to be well seasoned, or spruce, tongue and grooved, dressed both sides to $\frac{25}{32}$-in. two or three-ply as indicated by the plans, assembled with standard cut iron nails.

Covering to be standard I. C. 20-lb. fire door terne plate laid flat to core. All seams locked. All in accordance with Underwriters' standards.

Doors to be manufactured by THE MOESCHL-EDWARDS CORRUGATING CO., INC., of Cincinnati, Ohio, and bear the Underwriters' label.

OVERLY MANUFACTURING COMPANY

Kalamein and Tin Clad Doors and Metal Bucks

GREENSBURG, PA.

For pages on Skylights and Metal Roof Construction, see File Index

STANDARD SPECIFICATIONS—OVERLY KALAMEIN DOORS, FRAMES AND TRIM

(Under this heading furnish all kalamein work as shown on drawings or door schedule)

Wood Core

All kalamein doors, frames, and trim shall have thoroughly seasoned kiln dried white pine wood cores. Each member shall be made independently and completely covered with metal as hereinafter specified. All members shall be machined straight and true, and free from loose or unsound knots, shakes, or other imperfections.

Panels shall be of ¼ in. thick and either

(a) 3-ply laminated fir (for non-labeled)

(b) Composition asbestos board (for labeled)

and covered with metal as hereinafter specified, glued under pressure with suitable compound to assure permanent adhesion.

Metal Covering

Shall be formed from: 24-gauge galvanized tight coated steel. *(Overly Doors of special design and construction may be covered with various metals as desired (bronze, brass, aluminum, monel metal, everdur metal, etc.) and furnished with rolled, extruded or cast mouldings.)*

Metal shall be die formed to insure uniformity and made to completely encase each member of the door and with projecting flanges to provide means of attaching panels and to provide bearing for glass. Metal covered panels shall be electrically spot welded to flanges of metal coverings of stiles and rails with spots not over 8-in. centers.

Mouldings shall be of rolled type, 18-gauge, die mitered and acetylene welded at corners to form a single unit for each panel and secured with 1¾-in. oval head wood screws. Glass muntins when used shall be of same material as moulding with all intersections welded into a complete unit with moulding frame. Muntins in labeled doors shall be of solid section steel per Underwriters' standard requirement.

Doors shall be assembled in a manner to allow for unequal expansion and contraction of wood and metal.

Face joints shall be soldered and sanded smooth so as to be imperceptible after painting.

Kalamein transoms, side lights, and sash (cannot be labeled) shall be made similar to doors in material and construction.

Casings, staff moulds, back bands, etc., shall be drawn through steel dies and made with wood cores and metal coverings as specified for doors. Shall be of manufacturer's stock profiles as selected.

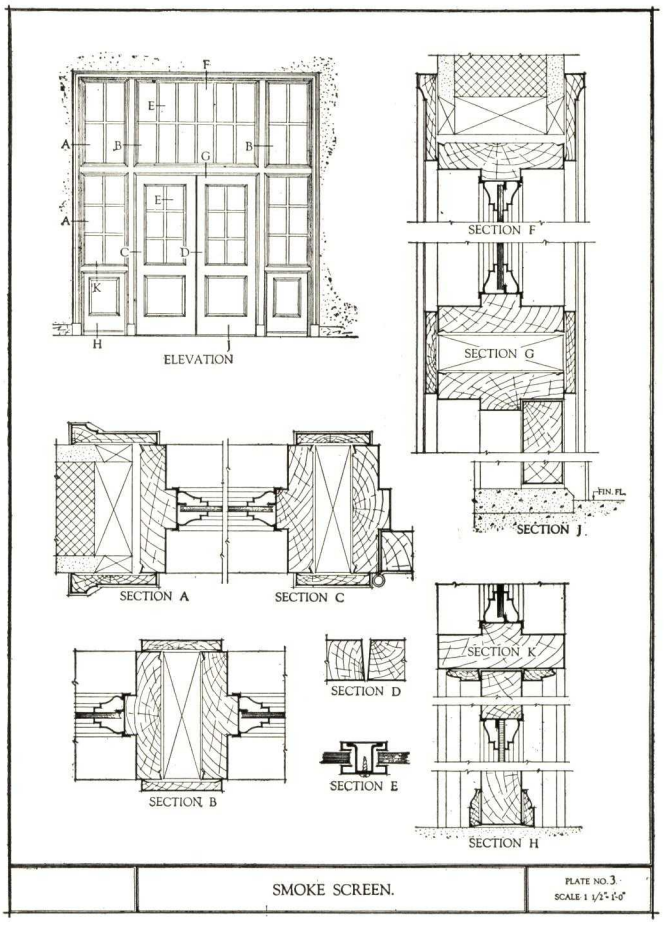
Kalamein frames, transom bars and mullions (cannot be labeled, use pressed steel for labeled) shall have wood cores and metal coverings as specified for doors.

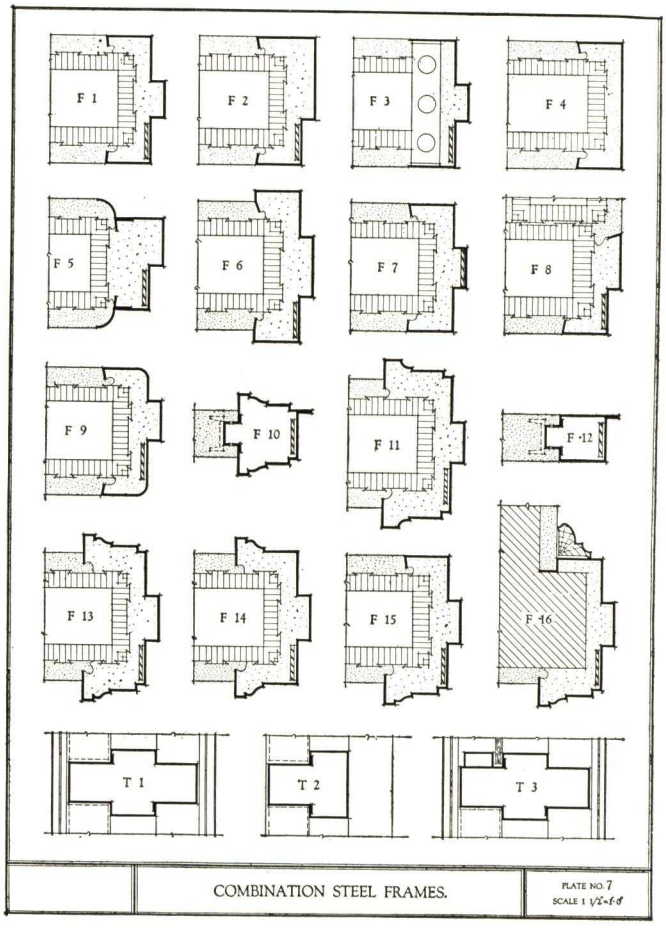
All material shall be finished at the factory with grey metallic primer.

This contractor shall make provision for all mortise hardware, templates and schedule of which, shall be furnished him by the hardware contractor.

All doors shall bear the label of the Underwriters' Laboratories, Inc. securing the lowest rate of insurance for opening in question.

All material under this heading shall be as manufactured by Overly Manufacturing Company, Greensburg, Pa.





PETERSON AND NEVILLE, INC.

BUILDING PRODUCTS DIVISION

Manufacturers of Hollow Metal Door Frames and Metal Trim

MAIN OFFICE AND FACTORY

365 Dorchester Avenue, BOSTON, MASS

For Metal Trim, see File Index

Steelweld Hollow Metal Door Frames

The majority of sections below are for 1¾-in. door, 4-in. rough wall, with ¾-in. plaster, but, with the exceptions of B2, F1 and H1, may be used in glazed tile or brick walls. Dimensions may be varied to suit any door, wall or plaster thickness. For walls 8 in. or over, we recommend K2. Plain trim or cove may be used on one side with any moulded trim on the other. B2 is shown in wood stud partition and all sections may be so adapted. F1 has special anchor bolt that may be tightened after wall is built, tying frame firmly to wall. K3 and L are designed for erection after wall is built. Any section may be furnished with single rebate, if so desired. Trim may be adapted to take standard electrical switch boxes.

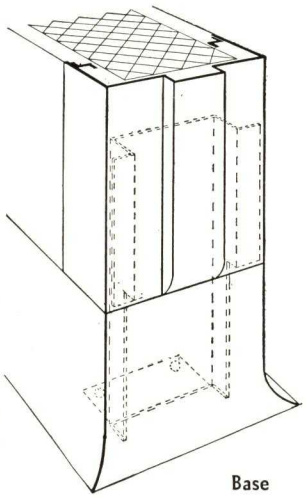
Section "O" shows rough buck which eliminates wood grounds and provides solid nailing for back of trim.

We recommend the use of "Lok Tite" anchors. (See specifications, also sections A1 and H1.) They keep the frame from twisting and this, together with improved plaster stop, tends to prevent cracks which sometimes appear with ordinary construction. Welded anchors furnished if desired.

We are equipped to furnish special frames of any size, gauge or design.

Hospital Work

Where frames are to be used on hospital work, this detail shows a very desirable feature. Frame is cut off at top of base, and is supported on a channel leg which extends to rough floor. Thus the base, whether tile, terrazzo, granolithic or composition, may be carried through the doorway, eliminating corners and recesses and making the whole more sanitary and easily cleaned. Furnished when specified on all plain trim sections; also on moulded trim with special fittings.



Base

Specifications

All interior openings, except as noted, shall have Hollow Metal Frames (with hospital type base), Peterson and Neville type ... with *"Lok-Tite"* anchors, or frames of similar construction, as approved by architect.

Frames formed to suit the various wall conditions from ... gauge annealed and pickled first quality sheets, and painted with one coat of metal primer.

Anchors not over 2 ft. o.c. extending at least 10 in. into wall, welded to cross ties which fit tightly inside the frame, and lock inside the trim to prevent its spreading.

Heads continuously welded to jambs, with welds ground smooth and even to produce invisible joints.

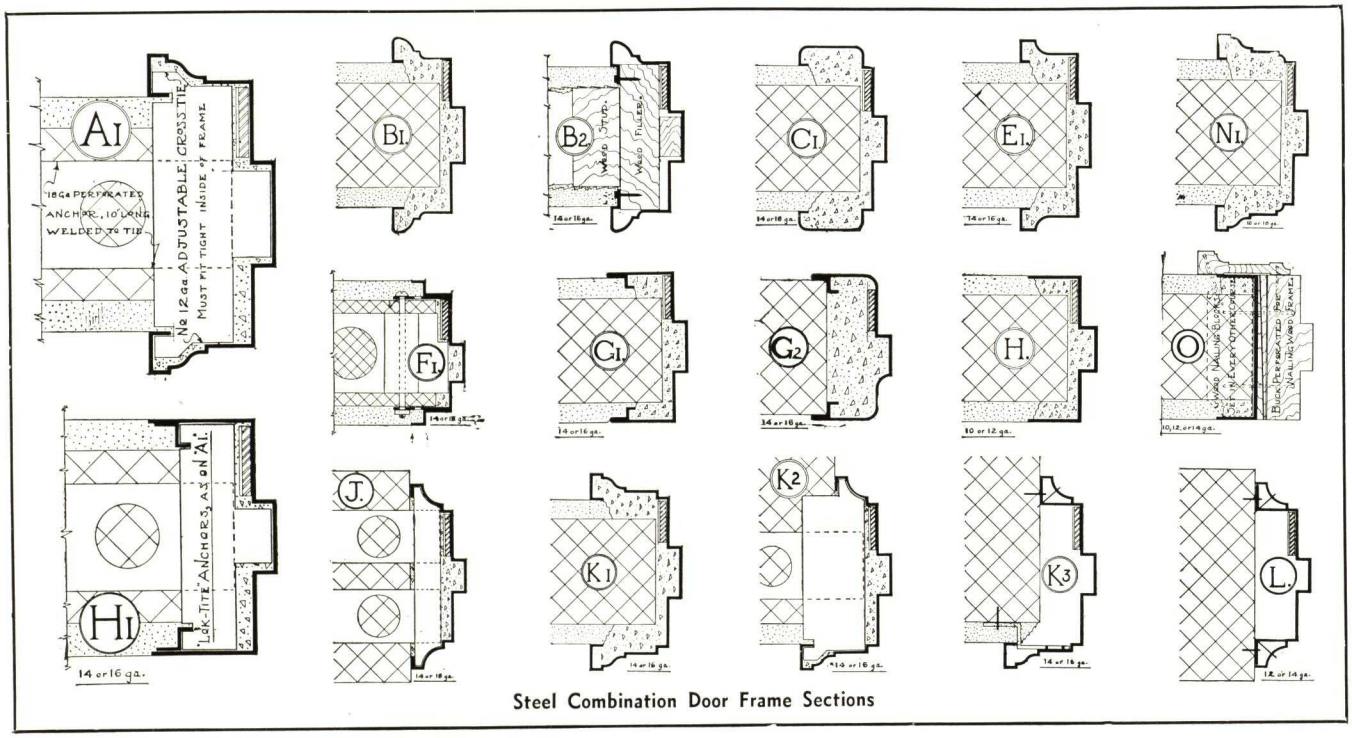
Mortise reinforce, drill and tap for all hardware as per schedule to be furnished by hardware contractor.

Frames shall extend to rough floor, and have 14-gauge angle clips welded to back of jambs for attaching to floor. Mortar guards over butt and strike reinforcing. Spreader bars welded between jambs at bottom, left in place until wall is set.

Transom bars, where transoms are indicated, with frame prepared for hardware on swinging transoms or with removable stops for fixed sash or glass.

General contractor to furnish partition lines and locations of frames, which shall be set plumb and square, braced in such a manner that wall may be built and allowed to set before bracing is removed.

Space between masonry and back of frame shall be filled solid with cement mortar as wall is laid up.



Steel Combination Door Frame Sections

THE PHILIPP MANUFACTURING COMPANY

Manufacturers of Kalamein Doors, Underwriters' Tin Clad Doors, Sliding Door Hardware

EASTHAMPTON, MASS.

Products

METAL COVERED KALAMEIN DOORS, WINDOWS, DOOR FRAMES, TRIM, UNDERWRITER'S LABELED KALAMEIN DOORS; SMOKE SCREENS; ELEVATOR FRONTS; DUMB-WAITER DOORS; BRONZE and COPPER KALAMEIN DOORS; UNDERWRITER'S TIN CLAD DOORS.

Metal Covered Doors

Wood cores are made of No. 1 sound, kiln dried white pine, free from loose or large knots, dry rot, sap or shake. Machine sized to accurate dimensions.

Stiles and rails mortised and tenoned, are glued with waterproof glue, doweled and wedged, grooved to receive panels.

Metal covering for stiles, rails and panels is 26-gauge galvanized or kalamein, 16 to 32-oz. copper, 20-gauge bronze. Door mouldings and trim, 26-gauge kalamein, 14-oz. copper or 24-gauge bronze.

Panels are composition board with metal glued to surfaces with waterproof glue, under pressure.

Special care is taken in assembling to avoid bench marks as much as possible. All joints between metal filled with solder and scraped smooth. All material has shop coat of special metal primer.

Labeled doors in vertical shaft opening must be solid panel.

Labeled doors in corridor or room partition opening may have glass openings not exceeding 1296 sq. in.

Labeled doors in fire escape opening may have glass openings not exceeding 720 sq. in.

Maximum size permitted by Underwriters in all cases is 4 ft. wide by 8 ft. high for single door; and 8 ft. wide by 8 ft. high for pair of doors.

Hardware

We are in position to fit for all mortised hardware on receipt of hardware schedule and samples.

Metal Covered Windows

Double hung or casement type windows are made in our standard design. All metal drawn on core to give neat and serviceable window.

Kalamein Elevator Fronts

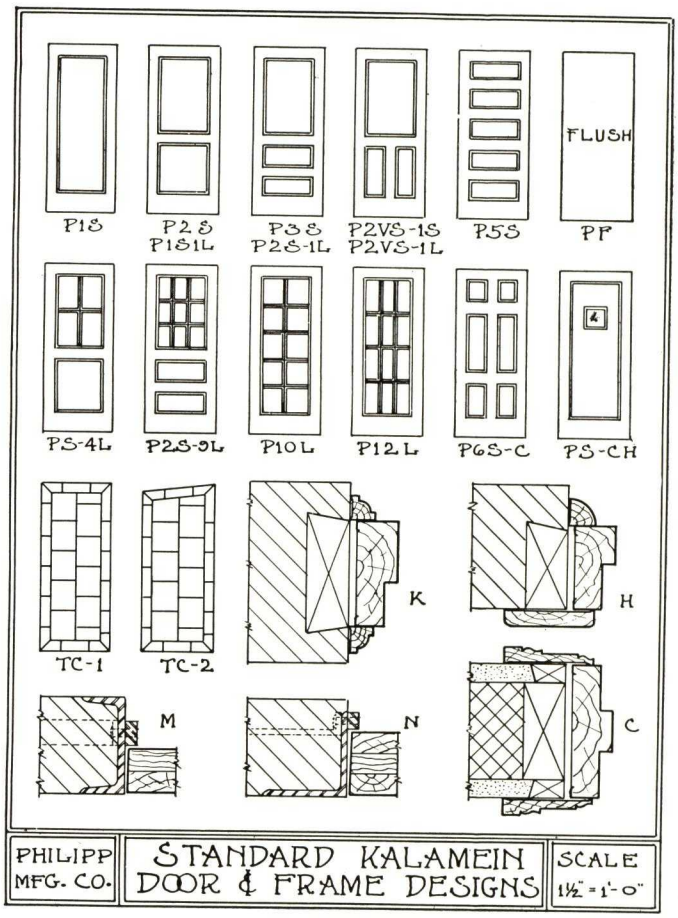
Combined slide and swing, two-speed and three-speed, and standard swing elevator doors are serviceable and noiseless and are extensively used.

Specifications for Underwriters' Labeled Kalamein Doors

Our Underwriters' labeled kalamein doors are built with wood cores of No. 1 sound, kiln dried white pine, free from loose or large knots, dry rot, sap or shake. Machine sized to accurate dimensions.

Stiles and rails mortised and tenoned, are glued with waterproof glue, doweled and wedged. grooved to receive panels. Metal covering for stiles, rails and panels is 24-gauge patent leveled galvanized sheets. All joints between stiles and rails interlocked and filled with solder, which is scraped off to smooth surface.

Panels are ¼-in. asbestos with metal glued to surface with waterproof glue under pressure. Panels grooved into stiles and rails and bolted through stile metal, making metal covering practically one piece. All material to have shop coat of paint.



Kalamein Smoke Screens

We manufacture kalamein covered smoke screens of all types and for all conditions.

Bronze and Copper Kalamein Doors

We also manufacture a high grade line of bronze and copper kalamein doors, etc., for entrances in banks, theatres, public buildings, etc.

Service

Estimates and Drawings—Estimates will be furnished from the architect's plans and specifications. Suggestions and shop drawings will be furnished whenever desired. We solicit your inquiries.

Blue Prints of Mouldings and Casings—We have a series of blue prints of our various stock designs of panel mouldings, stop mouldings, and casings which we will be glad to mail upon request.

RELIANCE BRONZE & STEEL COMPANY, INC.

Manufacturers of Hollow Metal Doors, Frames and Mouldings

GENERAL OFFICES AND FACTORY

95 Dobbin Street, BROOKLYN, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

The Reliance Bronze & Steel Company, Inc. has complete facilities for the production in quantity of Hollow Metal Doors, Door Bucks, Combination Door Frames, Hollow Metal Mouldings and Elevator Enclosures.

Facilities

An up-to-date factory, fully equipped with modern machinery and manned by a staff of skilled artisans, craftsmen, and mechanics, are able to turn out work of superlative quality at minimum cost.

Engineering Service

We maintain an Engineering Staff which has had long experience in its field and will esteem it a pleasure to co-operate with architects and owners to assist them in the solution of problems relating to our products and service.

Specifications have been prepared covering all our various products. We will be pleased to send copies of them to interested architects on request.

DESCRIPTION OF PRODUCTS

HOLLOW STEEL DOORS

Reliance Flush Type Hollow Steel Doors—Fabricated from two sheets of either 16 or 18-gauge straightened and leveled furniture steel, to which are welded on the inside surfaces vertical stiffener sections about 4½ in. apart. The stiffener sections on opposite plates interlock. Horizontal stiffener channels are welded to plates at top and bottom of door. Flush type doors can be made 1¼ or 1¾ in. thick. Elevator doors are made 1¼ in. thick and hinged doors are made 1¾ in. thick. Fillers of Insulite are ordinarily provided for sound deadening.

Stiles and Top Rails of Paneled Doors—Made from 18-gauge cold rolled sheet steel having 20-gauge interlocking panel moulding of same material. Bottom rail is made up of 18-gauge sheet steel welded to a moulding cold rolled to profile similar to stiles. Joints between stiles and rails are welded. Top and bottom rail are each reinforced with two channel sections running full width of door and welded to rail plates and also to stiles.

Solid Panels—Built up from two outside thicknesses of furniture steel cemented on to a ¼-in. thick core of fire retardant material. Steel of 18-gauge thickness is used for panels over 36 in. wide and 20-gauge for those under.

Where greater safety against burglarizing is desired than that afforded by the built-up panel described above, panels are made of ⅜ or ¼-in. thick steel plate.

Glazed Panels—Have glass mouldings of cold drawn steel secured to stationary mouldings by countersunk oval headed screws. All glass mouldings are made into frames with welded joints. When doors are of flush type, mouldings are welded to plates. Muntins where required are of cold drawn interlocking shapes welded to stiles and rails. Mirror doors have panel in back of mirror of 18-gauge steel.

Grilles—Made of 14-gauge perforated metal secured in place in the same manner as are glass panels.

Louvres—Built of 18-gauge metal welded together and are secured to doors either permanently by spot-welding or by means of screws.

Servidors, Ventidoors, Panelouvers, and other Special Features—May be either delivered to our factories to be set by us or they may be delivered to the building and set by the erection contractor. In either case, doors will be properly prepared in the factory to receive them.

Astragal Mouldings—Where necessary, are of cold drawn steel welded or screwed into place as conditions may require.

LABEL SERVICE

Reliance Bronze & Steel Company, Inc. manufactures doors and frames to meet all requirements of the Underwriters' Laboratories, Inc., and the Municipal One-Hour Test.

DOOR BUCKS, JAMBS AND TRIM SEPARATE OR IN COMBINATION

Rough Bucks—Formed of 12 or 14-gauge steel with corners welded. Reinforcements are welded to the head for openings more than 4 ft. 6 in. wide and angle spreaders are placed at the bottom. For knock-down shipment, jambs are provided with clip angles at top for easy assembly to heads.

Cabinet Jambs—Made of 16 or 18-gauge metal and are attached to rough steel bucks by machine screws or to rough wood bucks by wood screws.

Combination Bucks and Jambs—Fabricated from 12, 14 or 16-gauge steel with corners coped or mitred and welded. Anchors, floor clip angles and spreaders are provided as for rough bucks where required. Transom bars are welded to frames or attached by concealed clip angles.

Combination Bucks, Jambs and Trim—Fabricated from 14 or 16-gauge steel rolled cold to the profile required. Trim portion is mitred and welded at corners and side members of jambs are coped and tenoned to heads. Where combination frames are to be used in other than block partition, special anchoring arrangements are provided. Transom bars are welded into place or supported on concealed clip angles.

Scribe Mouldings—Cold drawn of 18 or 20-gauge steel mitred or coped at corners and are attached to construction by countersunk oval headed screws.

ELEVATOR ENCLOSURES

Doors, Bucks and Trim—Built in the same manner as specified above. Other features are described below.

Stationary Panels—Constructed in the same manner as are doors and permanently held in place by attaching to frames with bolts and screws.

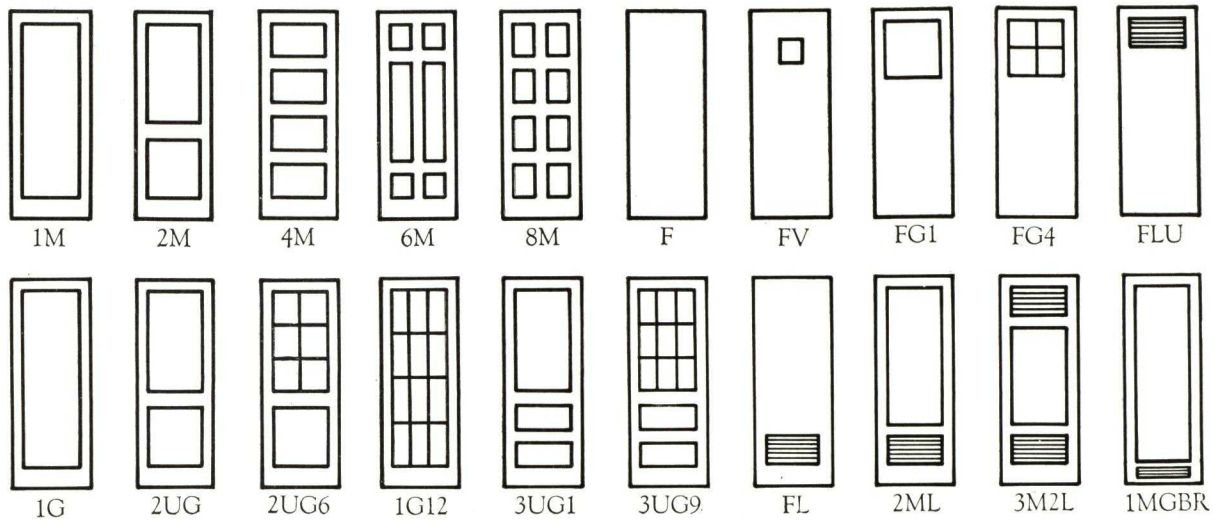
Hanger Housings—Formed of 12-gauge steel plates bent to form required. They are welded to head of door buck and bolted to angle supports.

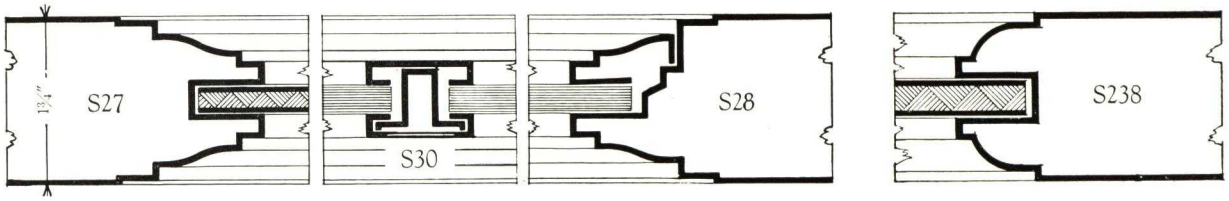
Angle Supports for Supporting Hanger Housings—Built of structural angles extending from floor to floor and attached to the structural steel. Angles act as supports for operators or closers where used.

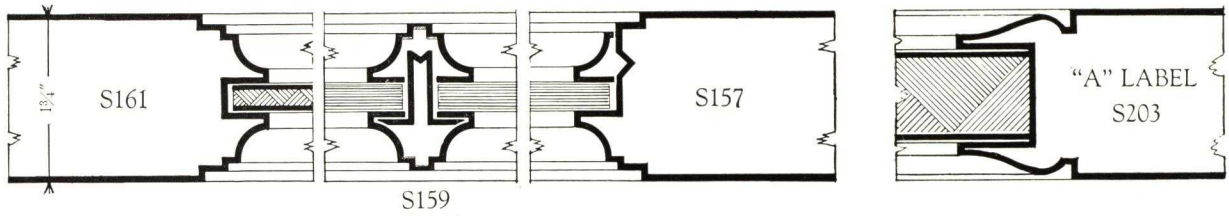
Housing Covers—Made of 16-gauge metal and hinged or otherwise attached to hanger housings in such manner as to make inspection and oiling of hangers an easy matter.

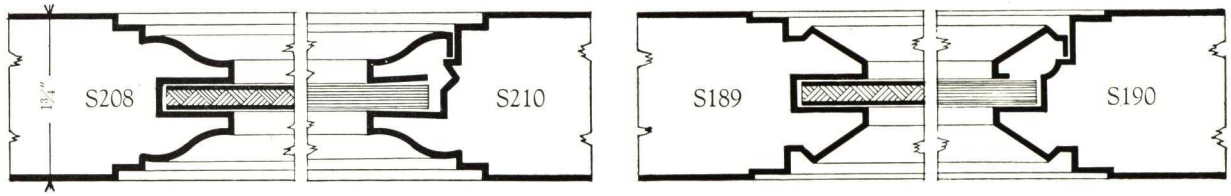
Elevator Enclosure Frames—Either of the rough or finished type, are supported on the sills and attached thereto by clip angles.

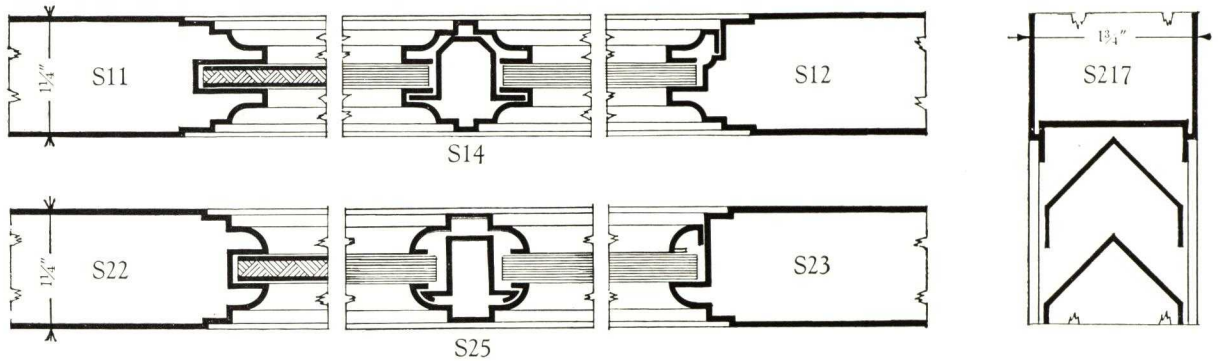
Elevator Enclosure Sills—Iron or bronze castings arranged with a non-slip type of surface and constructed to set upon and be bolted directly to the structural steel. Grooves for door guides are machined. Bumpers will be attached to sills.



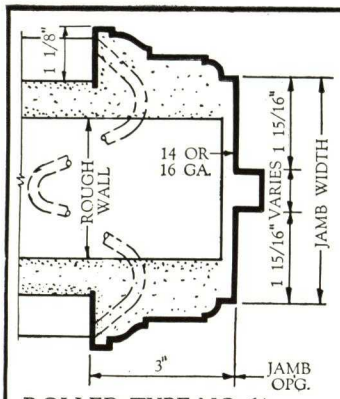




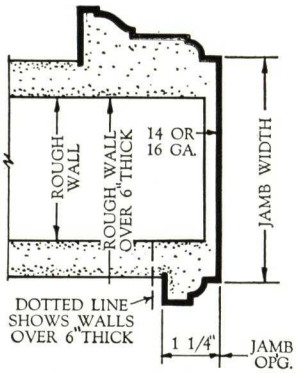




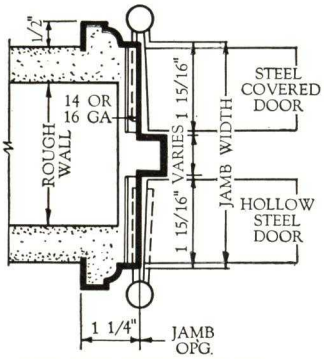
RELIANCE BRONZE & STEEL COMPANY, INC.	STANDARD DOOR DESIGNS AND HOLLOW METAL DOOR MOULDINGS	PLATE NO. 1



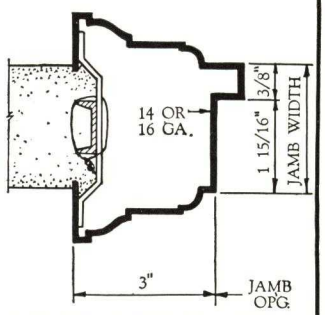
ROLLED TYPE NO. 61
JAMB WIDTH 4 3/4" TO 15 3/4"
STOP VARIES
ROUGH WALL 3" TO 14"



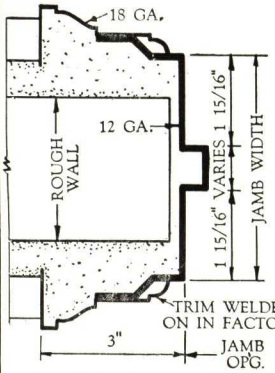
ROLLED TYPE NO. 65
JAMB WIDTH 4 3/4" TO 15 3/4"
ROUGH WALL 3" TO 14"



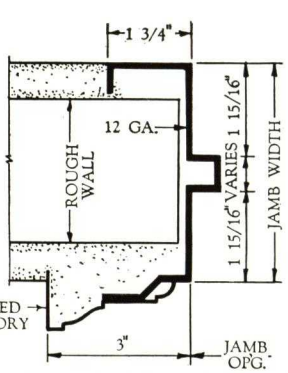
ROLLED TYPE NO. 66
JAMB WIDTH 4 3/4" TO 15 3/4"
STOP VARIES
ROUGH WALL 3" TO 14"



ROLLED TYPE NO. 6102 1/4
FINISHED WALL 2" OR 2 1/2" ONLY
DOOR THICKNESS 1 3/4"



PRESSED TYPE NO. 71
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



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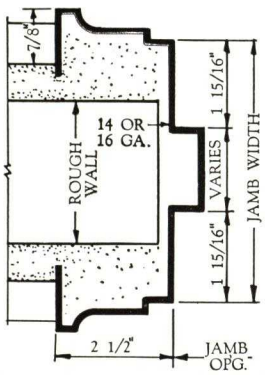
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



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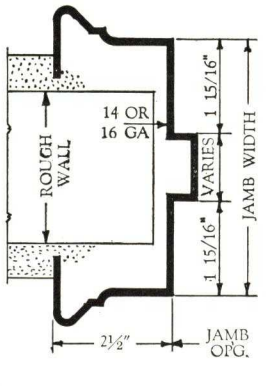
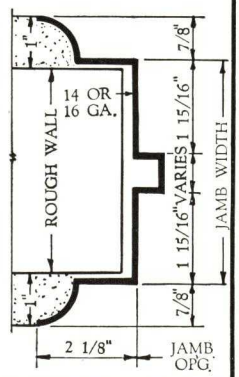
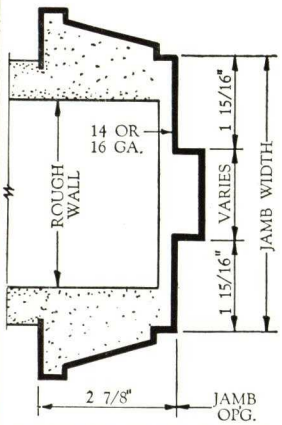
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



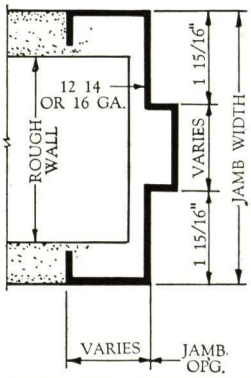
PRESSED TYPE NO. 93
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



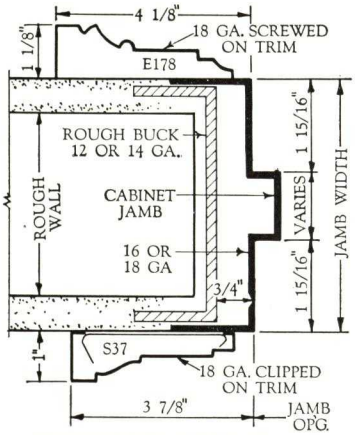
PRESSED TYPE NO. 80
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



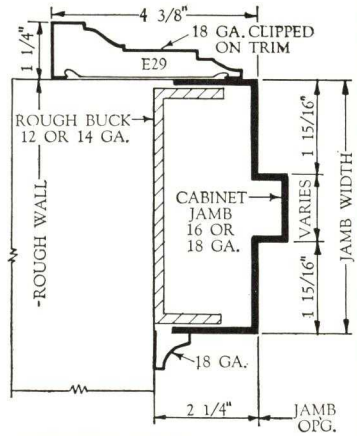
PRESSED TYPE NO. 92
JAMB WIDTH 4 3/4"-5 3/4"-7 3/4"
STOP 7/8"-1 7/8"-2 7/8"
ROUGH WALL 3"-4"-6"



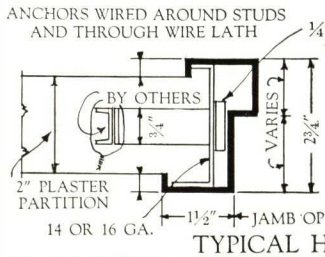
PRESSED TYPE NO. 73
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



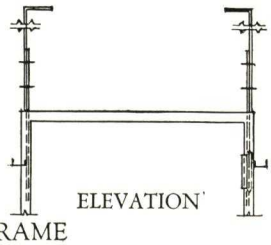
PRESSED TYPE NO. 90
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



PRESSED TYPE NO. 91
JAMB WIDTH VARIES
STOP VARIES
ROUGH WALL 3" & UP



TYPICAL HOUSING FRAME

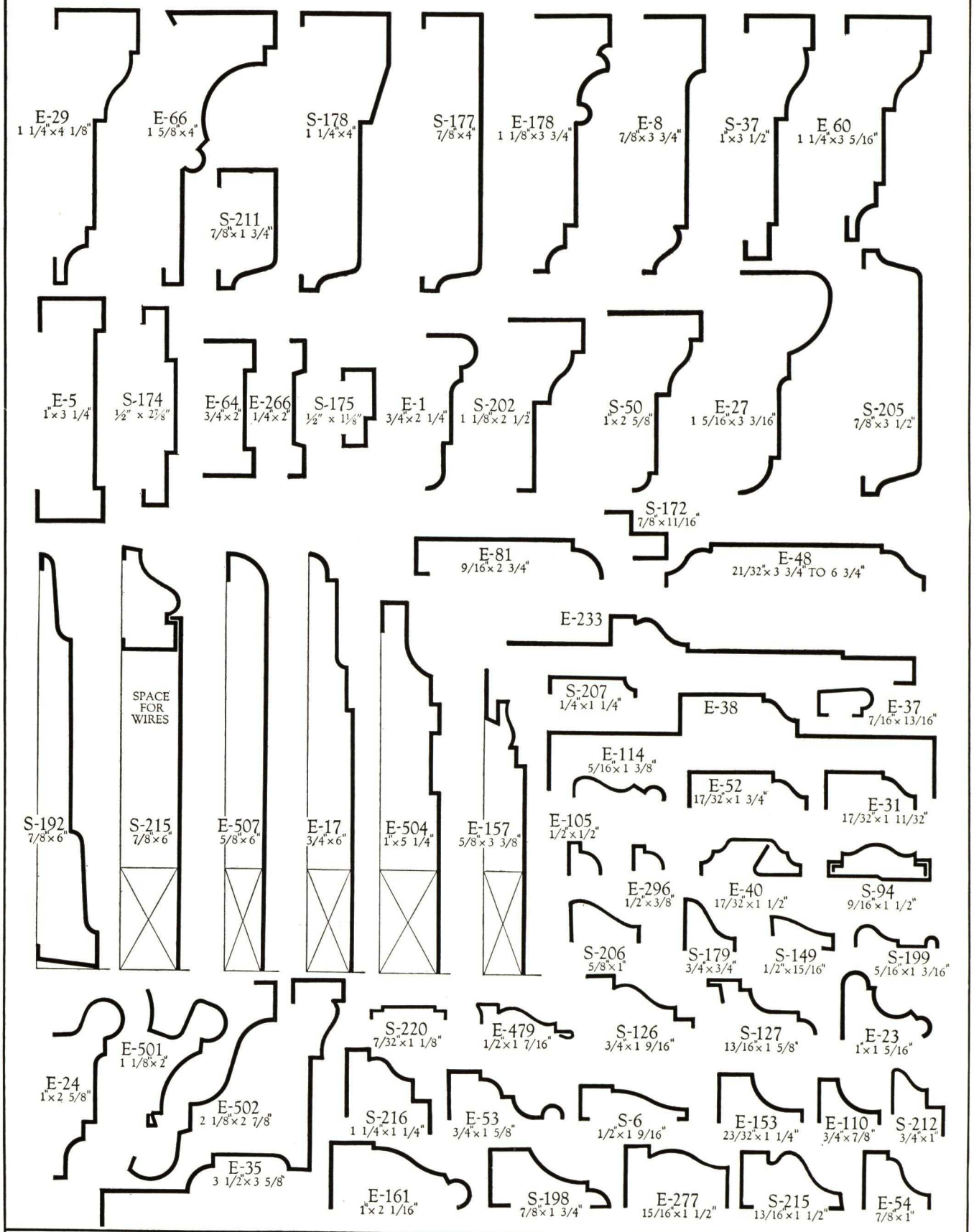


UNLESS OTHERWISE SPECIFIED WE WILL FURNISH ALL BUCKS WITH CLIP ANGLES AT BOTTOM FOR FASTENING TO FLOOR, 3/4" x 3/4" ANGLE SPREADERS AND SIX (6) No. 5 GA. WIRE ANCHORS 9" LONG.

ALL DRILLING AND TAPPING FOR MORTISE HARDWARE WILL BE DONE AT FACTORY.

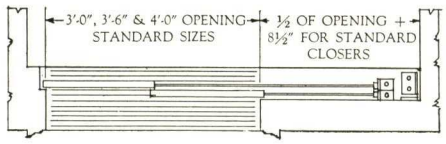
ALL DRILLING & TAPPING FOR DOOR CHECKS, CHECK BRACKETS, TRANSOM ADJUSTERS AND FLUSH BOLTS FOR PAIR OE DOORS TO BE DONE BY ERECTION CONTRACTOR.

RELIANCE BRONZE & STEEL COMPANY, INC.	STANDARD DETAIL OF DOOR FRAMES	PLATE NO. 2

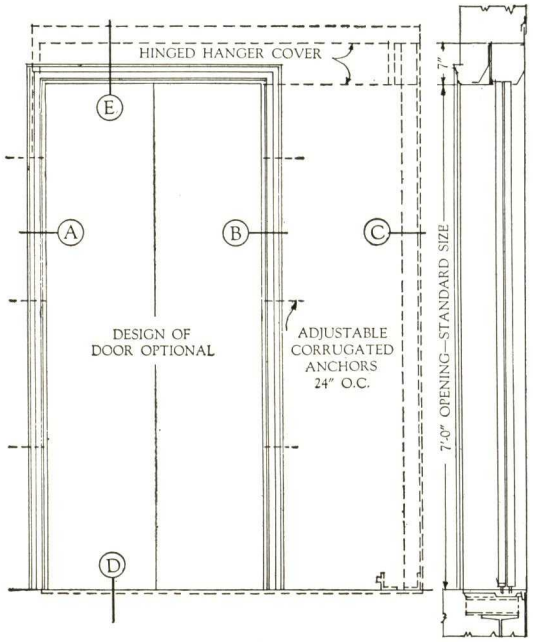


RELIANCE BRONZE & STEEL COMPANY, INC.	DETAILS OF HOLLOW METAL MOULDINGS	PLATE NO. 3

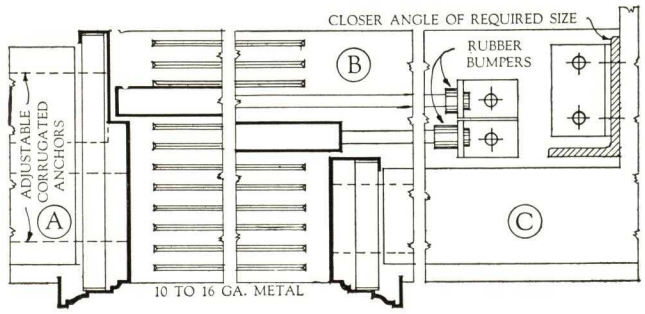
TWO SPEED-TWO LEAF ELEVATOR ENTRANCE



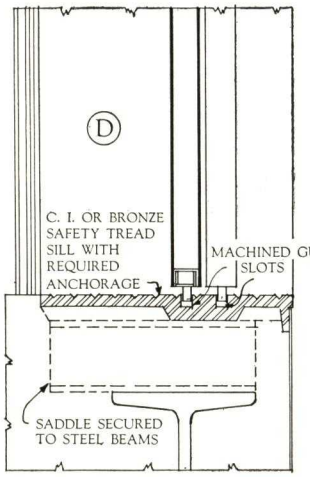
PLAN



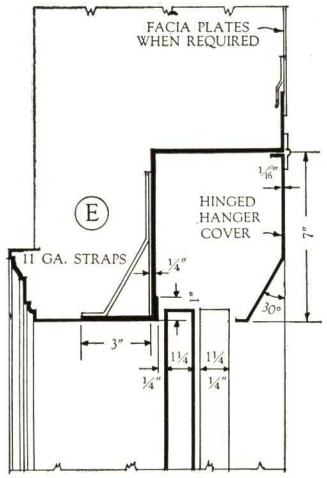
ELEVATION SECTION



PLAN

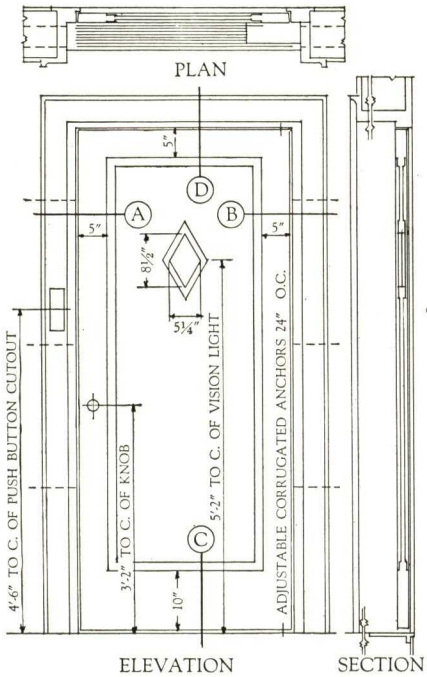


SILL

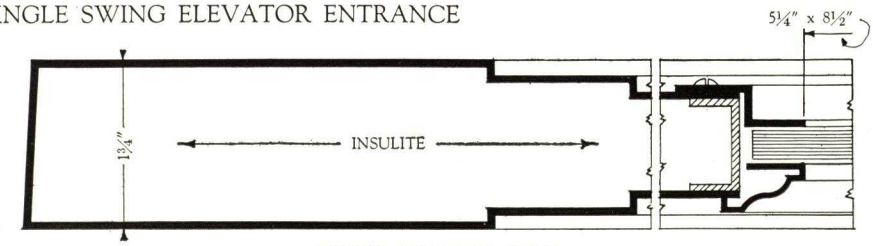


HEAD

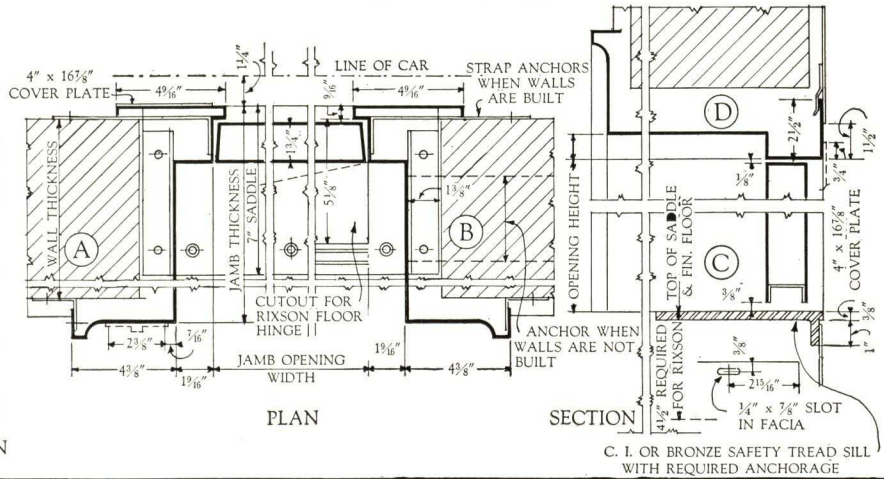
SINGLE SWING ELEVATOR ENTRANCE



ELEVATION SECTION



DETAIL OF DOOR STILE



PLAN SECTION

RELIANCE BRONZE & STEEL COMPANY, INC.	ELEVATOR ENCLOSURES	PLATE NO. 4

SYRACUSE FIRE DOOR CORPORATION

900 Canal Street

SYRACUSE, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

UNDERWRITERS' LABELED and NON-LABELED KALAMEIN DOORS; UNDERWRITERS' LABELED TIN CLAD FIRE DOORS and FIRE DOOR HARDWARE, and UNDERWRITERS' LABELED CHANNEL IRON FRAMES.

Non-labeled Kalamein Jambs, Trim, etc.; Angle Iron Frames.

Custom Kalamein Work in Copper, Bronze, Aluminum, Alumilite, Monel, Stainless Steel, etc.

Syracuse Kalamein Doors

Careful selection of raw materials and the most modern equipment, coupled with a highly trained and efficient factory force, have enabled Syracuse Kalamein Doors to build an enviable reputation for long life and exceptional service. Because of this reputation, a specification calling for Syracuse doors assures the architect of the very best in materials and workmanship.

Specifications For Syracuse Kalamein Doors

Cores—Wood used for cores is sound, kiln-dried California Redwood or Washington Red Cedar, with core members being milled in one piece. Cores are assembled through the use of ¾-in. hardwood dowels and special glue.

Panels—Composition board for non-labeled doors and asbestos board for labeled doors.

Metal Covering—24-gauge galvanized coated roller level copper bearing steel sheets. For non-labeled doors the metal is tightly drawn over the core members through steel dies before the doors are assembled. For labeled doors, the wood cores are first assembled and the metal is then applied with an integral lock seam process. All joints in the metal covering between stiles and rails of both labeled and non-labeled doors are thoroughly soldered and ground flush and smooth. Metal on panels is tightly glued thereto under pressure.

Special Reinforcement—Each Syracuse door, both non-labeled and labeled, contains a special reinforcement at the top and bottom, whereby the stiles are rigidly and securely bound together to prevent any broken joints or warping or twisting. These reinforcements are entirely separate from, and are no part of the rails or the metal covering.

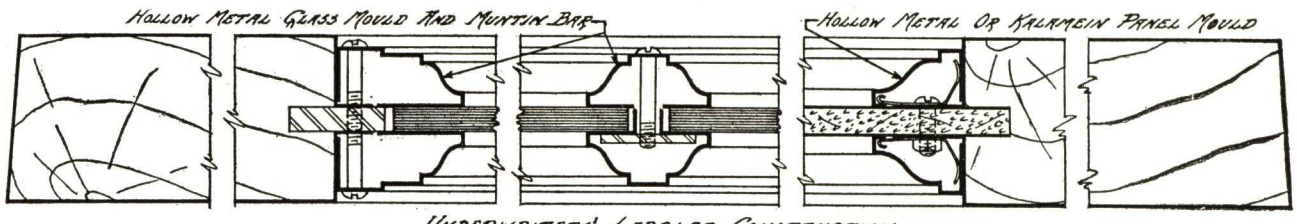
Finishes—Unless otherwise specified, all kalamein work is given one shop coat of special gray metallic primer for galvanized coated steel. Copper and bronze kalamein work finished to individual specification.

Tin Clad Fire Doors and Hardware

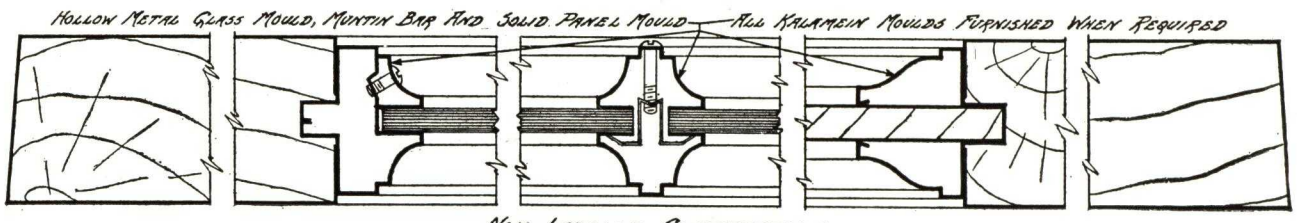
All types of Underwriters' labeled and non-labeled two-ply and three-ply tin clad fire doors and shutters, together with complete fire door hardware, to fill conditions imposed by insurance and building requirements. An installation of Underwriters' labeled fire doors and hardware makes a first-class fire retardant, and in many cases, will lower insurance rates considerably.

Special Services

Our many years of activity have enabled our Engineering Department to gain a wealth of experience in solving special construction and installation problems. This Department is completely at your service, and will be glad to render assistance in solving any such special problems, or in furnishing general information.



UNDERWRITERS' LABELED CONSTRUCTION



NON-LABELED CONSTRUCTION

TYLER

INTERIOR
AND
EXTERIOR
ARCHITECTURAL
METAL WORK

•

ELEVATOR
DOORS
AND
ENTRANCES

•

ELEVATOR
CARS AND
CAR
ACCESSORIES

•

STORE FRONTS,
WINDOW
FRAMES
AND
MARQUEES

•

DISPLAY CASES
AND
STORE
FIXTURES

•

THE W. S. TYLER COMPANY • CLEVELAND, OHIO

TYLER

FACILITIES . . . ORGANIZATION . . . SERVICE

Tyler Elevator Entrances and Cars and architectural metal products are built by an organization which accepts full responsibility for the complete installation.

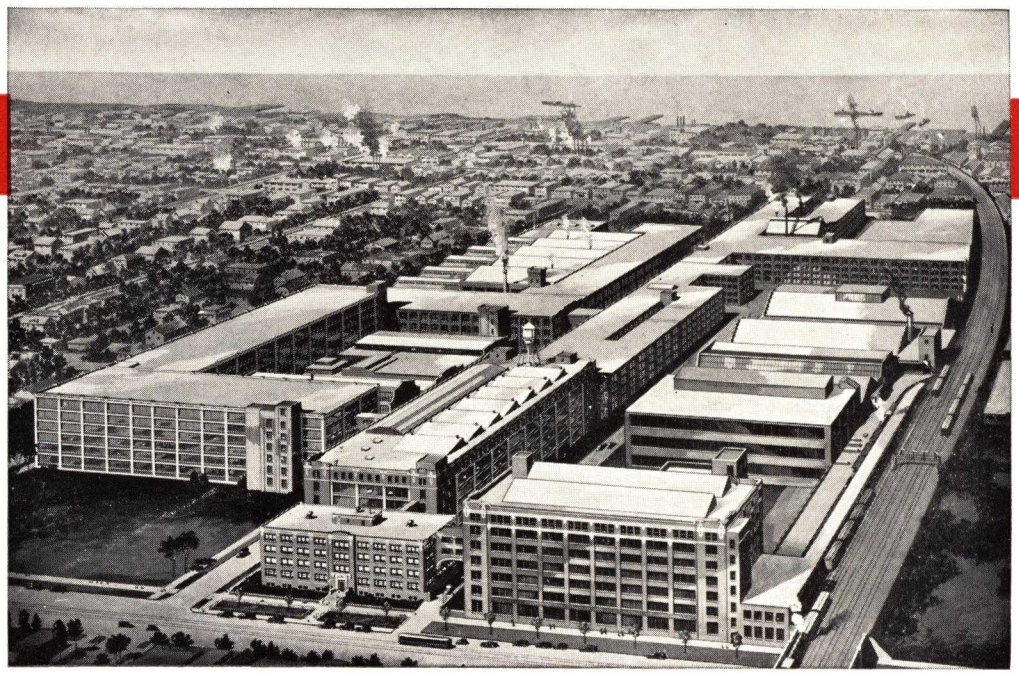
The company's experience in this work dates from the earliest days of the passenger elevator and the facilities developed through these years assure the best of craftsmanship in every operation involved. To the customer, this means unusual values and uniform quality in every part.

Foundries, metal shops, plating and finishing departments and cabinet shops are the most extensive of the kind devoted to this class of work. The craftsmen employed are men of years of experience with the company and are highly skilled in their individual lines.

The company carries this same quality of service into the field in the installation of work — this being of vital importance in producing a satisfactory job. A permanently employed corps of superintendents and erectors handles all construction work.

The company's specialty of elevator entrances and cars and general architectural metal work includes all of the usual accessories.

Tyler engineers and designers welcome inquiries for information and assistance in connection with elevator equipment and architectural metal problems.

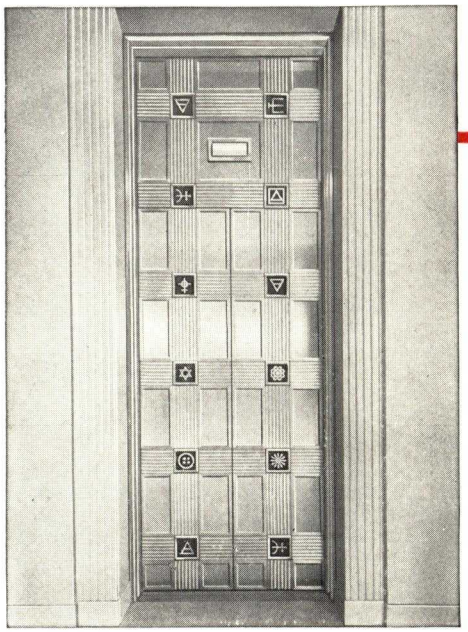


THE W. S. TYLER COMPANY
CLEVELAND, OHIO • U. S. A.

BULLETIN 751

TYLER ELEVATOR CARS AND ENTRANCES

For Specifications on Elevator Cars and Entrances see page 4



Tyler Elevator Entrance
Mellon Institute of
Industrial Research,
Pittsburgh

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Elevator Entrance and Elevator Car Specifications	4
Elevator Entrance Layouts	5
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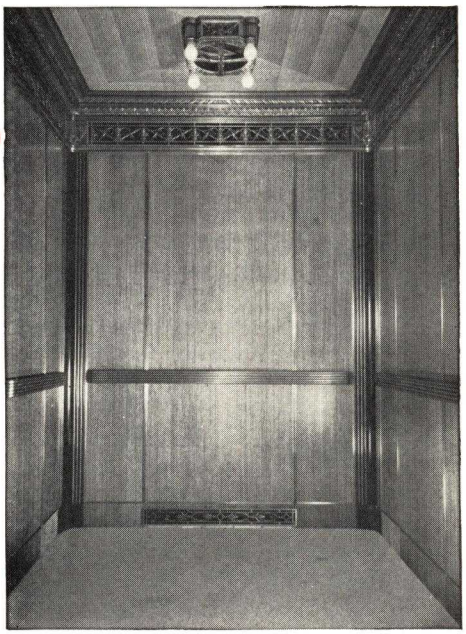
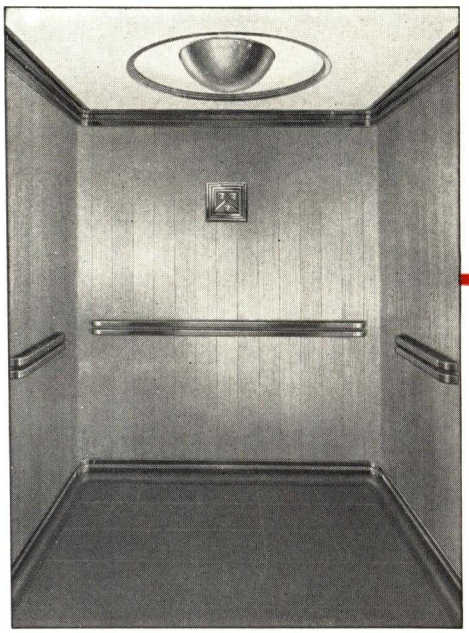
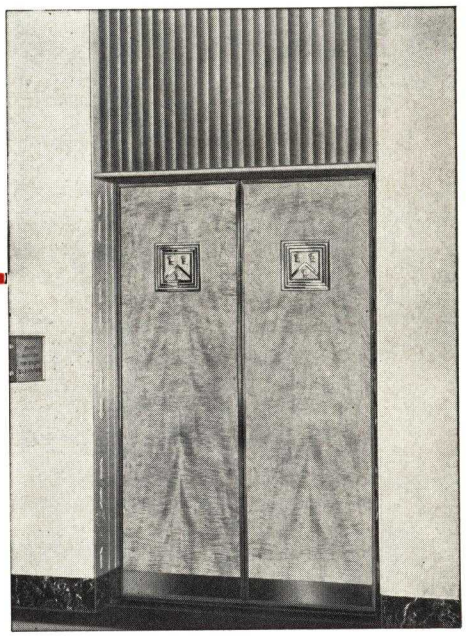
Car Gates and Doors	10
Elevator Lighting and Ventilating Fixtures	11
Elevator Car Accessories	12
Ornamental Iron and Bronze	13
Display Cases	14-15
Building Entrances	16-17
Architectural Metal Work	18-19



Tyler Elevator Car
Chase National Bank of the
City of New York,
15 Broad Street,
New York City



Tyler Elevator Car
Marshall Field & Co.,
Chicago



Tyler Elevator Entrance
Marshall Field & Co.,
Chicago

TYLER ELEVATOR CARS AND ENTRANCES

Tyler Elevator Cars and Entrances are noted for their high standard of quality in both design and workmanship. While serving many of the finest buildings both in this country and abroad, Tyler equipment is equally adaptable to the modest building where the utmost economy must prevail.

Space limits prevent the illustrating of more than a few suggestions. However, an unlimited selection is available. We will be glad to cooperate with architects in working out special designs.

To assist architects and owners in writing a complete elevator entrance and car specification that will assure undivided responsibility, an outline is given below:

ELEVATOR ENTRANCE SPECIFICATION

This form is suggested for typical steel entrances. For other metals specifications will be furnished on request.

SILLS are to be cast iron with safety surface. Grooves planed in the solid casting. Securely fasten to building structure with special steel brackets.

FACIAS of .080" steel, full length of sill, to extend from the top of header to sill of the floor above.

STRUCTURAL SUPPORTS consisting of a 5" x 3" x ⅜" steel angle at door closer end and 3" x 3" x ¼" angle at the other end of each entrance are to be fastened to the sill at the bottom and the building beam at the ceiling.

HEADER of 3/16" formed steel plate is to be securely bolted to the structural supports independently of the surrounding wall.

COVER PLATE of .080" steel shall be removable type, constructed in three sections so that the portion over the doorway may be easily removed for access to the hanger mechanism.

JAMBS of .109" steel are to cover the entire thickness of the wall and be fully welded at all corners. They shall be rigidly bolted to the sill and to the header.

TRIM shall be .0625" drawn steel fully welded at all joints and provided with cast plinth blocks.

DOORS are to be built of .0625" sheet steel fully welded to a steel framing. They shall be provided with a sound deadening fireproof filler bonded to both front and rear panels. Reinforcements are to be provided for the attachment of operator mechanisms and hangers.

HARDWARE. The hangers shall have a 3/16" steel plate continuous type housing with ball bearing upper sheaves and ball bearing lower sheaves. The lower sheaves shall be adjustable for the control of upthrust action.

Bronze handles are to be provided on the hatch side of the door for emergency operation. Escutcheon plates are to be used in connection with the handles to protect the finish.

Adjustable type bumpers made of durable live rubber are to be provided for each entrance. Tyler removable self-adjusting guides are to be furnished on each door. These are to be of a type that will permit the replacement of guides without removing the doors.

FINISH. Sills, structural members, headers and other miscellaneous iron parts of each entrance are to be treated with a rust resisting paint. Jambs, trim, doors, cover plates and facias are to be cleaned of any scale or grease. Then they shall be given a coat of an accepted grade of paint primer, which shall be oven baked. All spot weld marks or other marks resulting from the manufacturing process shall then be filled and baked, after which the materials shall be sanded to a smooth, even surface. The material shall then have two color coats of the best grade of enamel and two protective coats of the best grade of clear varnish. Each separate coat is to be oven baked and rubbed with pumice stone and oil after baking.

GENERAL. All connections and fastenings are to be made invisible from the corridor side. The sheet steel, which takes an enamel finish, is to be cold rolled patent-leveled furniture stock.

ELEVATOR CAR SPECIFICATION

Due to the variation in design and materials it is not possible to present a standard form for elevator specifications.

Where a specific design has not been selected it is customary to include the elevator car under an allowance or appropriation and a form covering this situation is given below.

The elevator contractor will allow and include in his proposal the net sum of $..... each, f.o.b. the car manufacturer's plant, for the purchase of elevator cars.

Cars are to be of a design to be selected and approved by the architect and owner. The car manufacturer is to be acceptable to the architect and owner.

The elevator car allowance is to include .....

(Here list the desired car appointments, such as light fixture, hand rail, etc.)

The elevator contractor will accept the cars at the manufacturer's plant and assume complete responsibility for the installation and wiring and will furnish all appointments which are not listed as being part of the car appropriation.

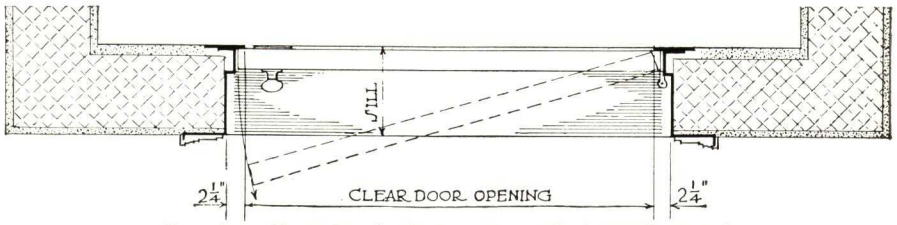
ENTRANCE LAYOUTS

In determining the type or plan of elevator entrance operation, consideration should be given to the nature of the traffic and service desired as well as the space available.

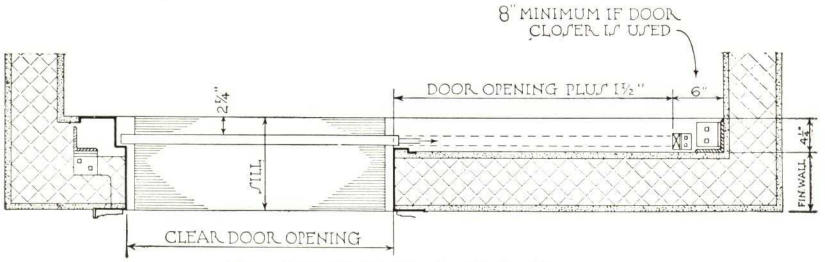
To illustrate, space requirements for center opening doors are twice the door opening plus 12". Two-speed doors require one-half the door opening plus 12".

For identification purposes the word Keyplate is used to mean an elevator entrance plan or layout. Code numbers indicate specific types of Keyplates or plans. Those in more common use are shown on this page.

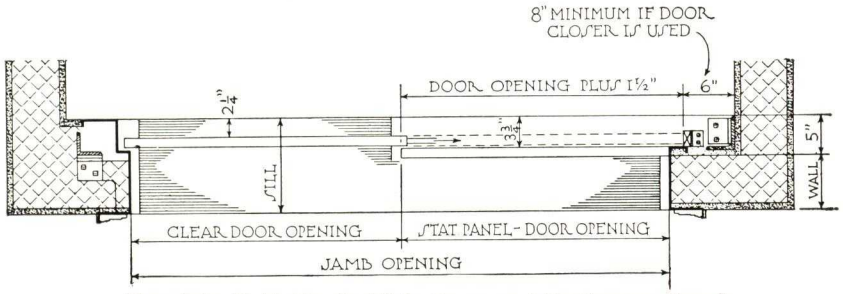
Tyler engineers will be glad to cooperate with architects and building owners in the selection of the type of keyplate best suited to their requirements, or the development of a special one to meet specific needs.



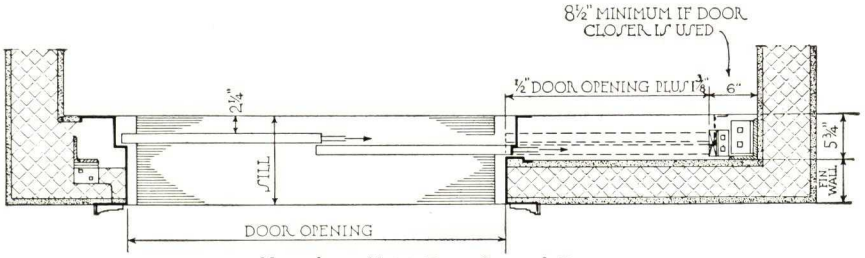
Keyplate K-18 Single Swing Door Flush With Hatch



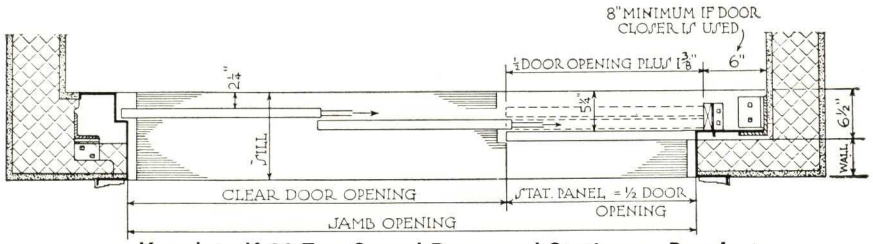
Keyplate K-15 Single Slide Door



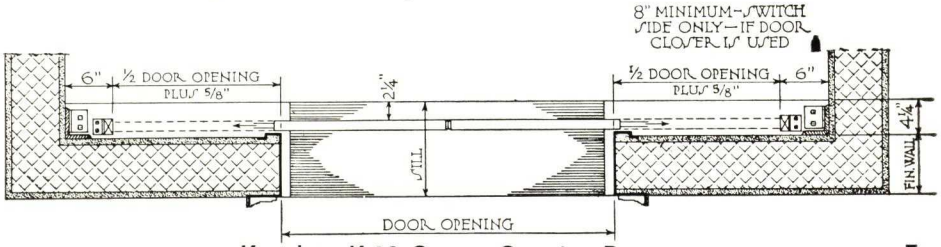
Keyplate K-16 Single Slide Door and Stationary Panel



Keyplate K-19 Two Speed Door



Keyplate K-20 Two Speed Doors and Stationary Panel

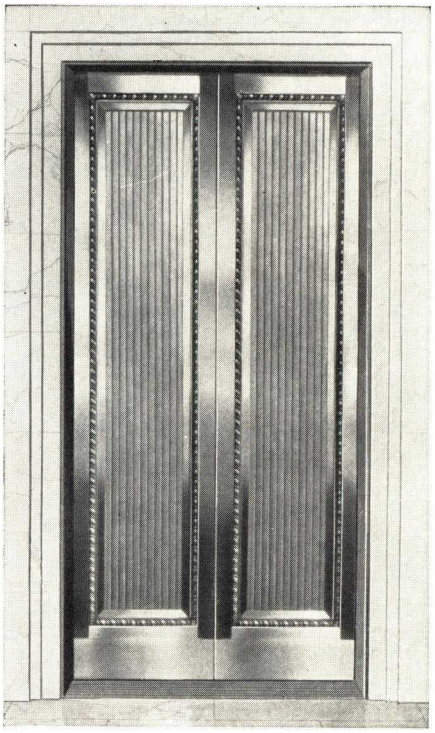


Keyplate K-22 Center Opening Doors

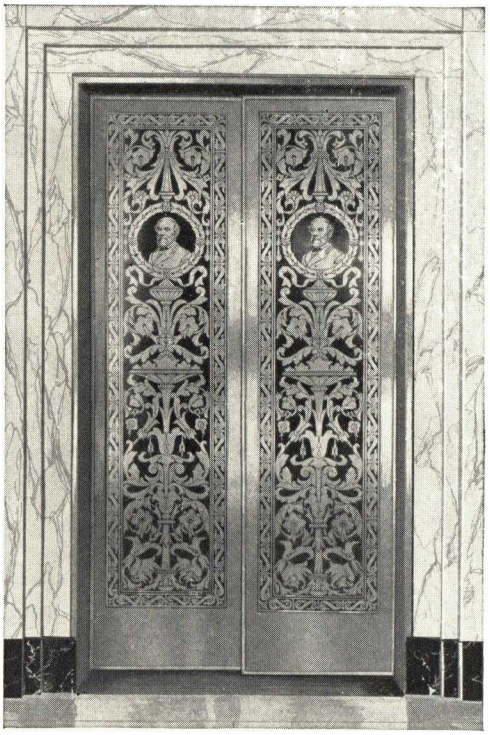
TYLER ELEVATOR ENTRANCES

The Tyler Elevator Entrance designs No. 44, 45, 46, 47, 52, 53 are here shown in enameled steel. There is, however, no limit to the possibilities of combining various metals and materials either in standard or special designs to suit individual requirements.

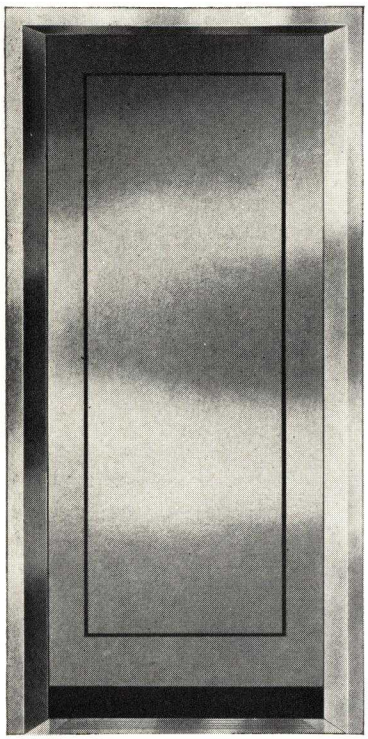
The photographs of installation shown at the top of these pages, indicate the unlimited possibilities in special types of entrances.



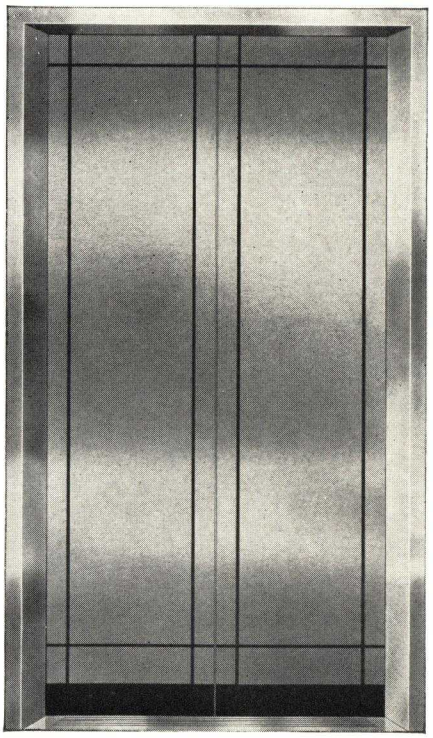
Cast Bronze Elevator Entrance



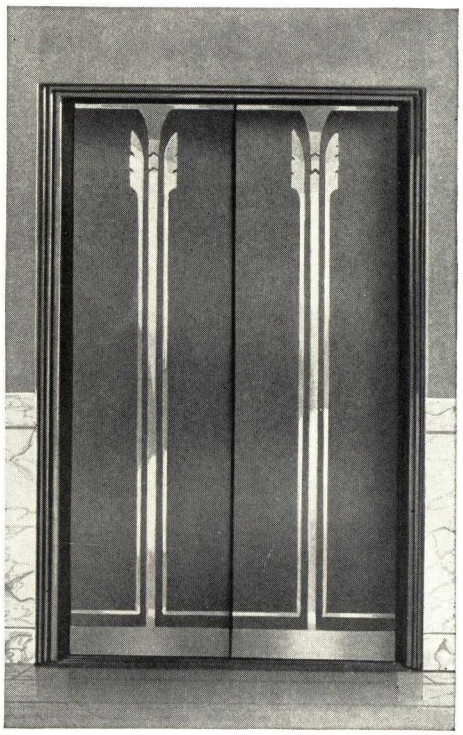
Etched Bronze Elevator Entrance



Design 45

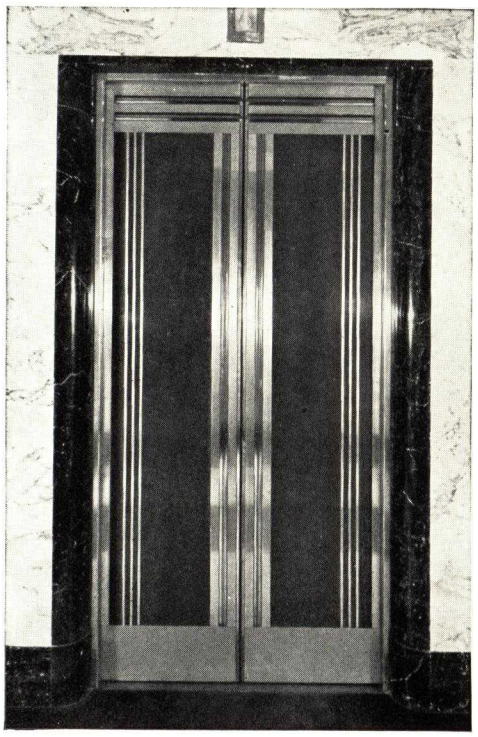


Design 47

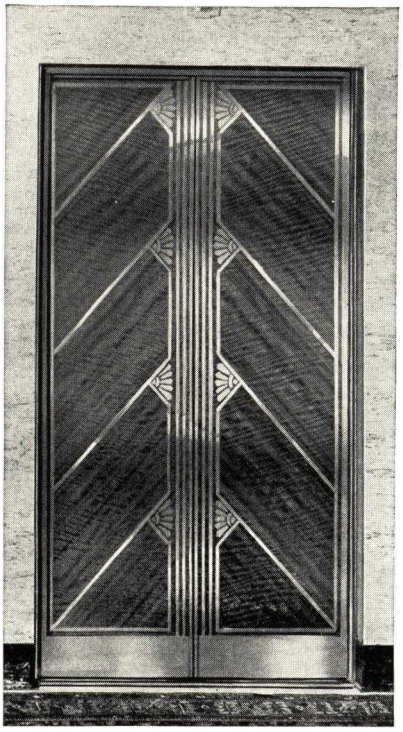


Design 52

TYLER ELEVATOR ENTRANCES



Enameled Steel, Bronze and Nickel

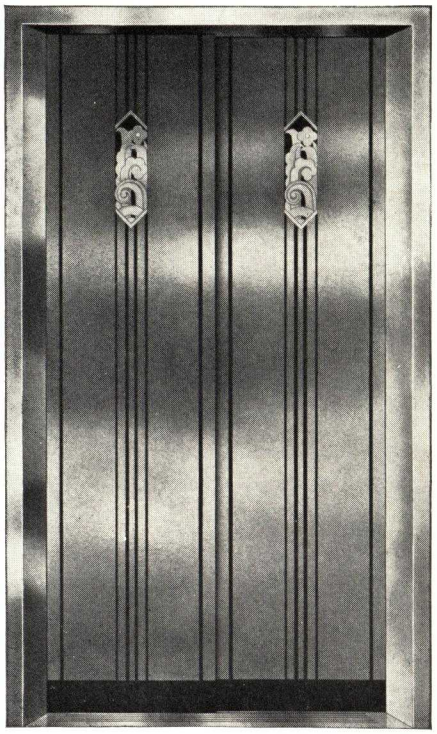


Me-Tyl-Wood Elevator Entrance

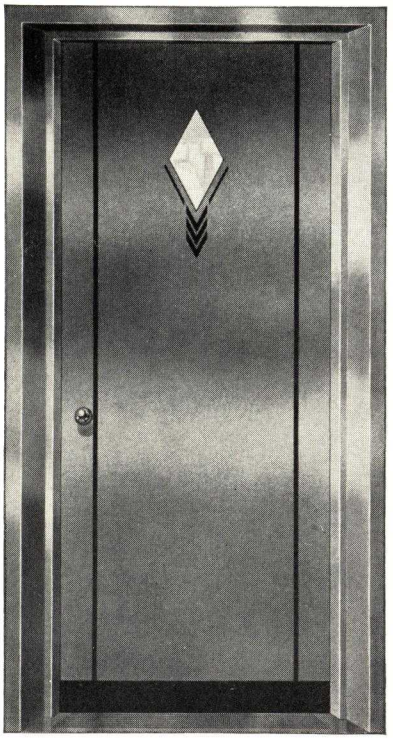
The Tyler designing and engineering staff, with its practical experience in producing special equipment for leading buildings is at the disposal of architects, contractors and building owners.

In many cases this service enables the customer to achieve unusual effects most economically.

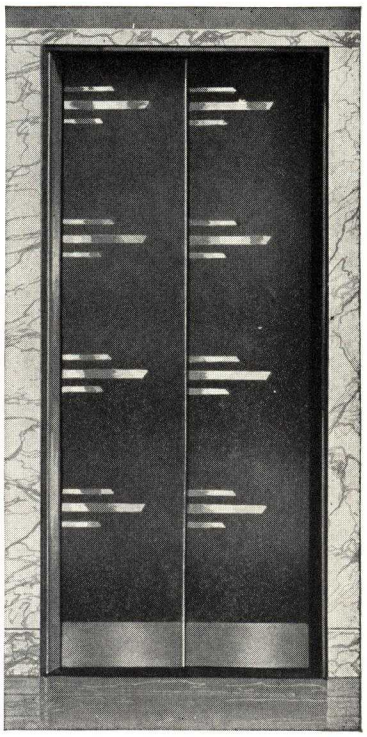
For the various types of elevator door arrangements see key plates on page 5.



Design 46



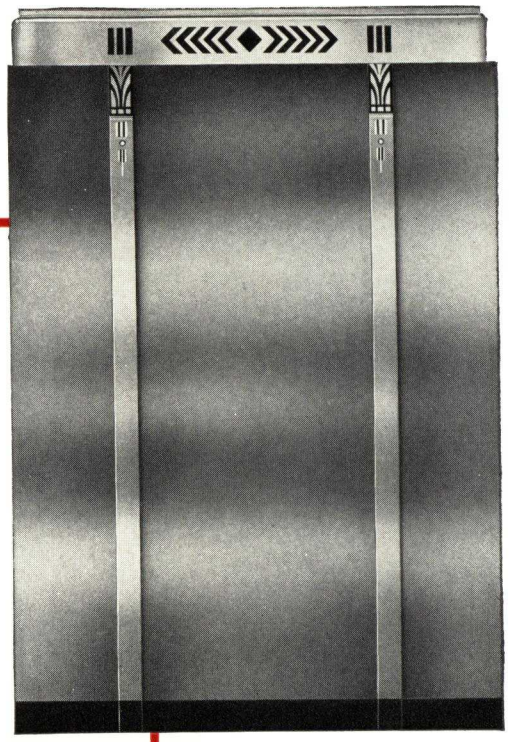
Design 44



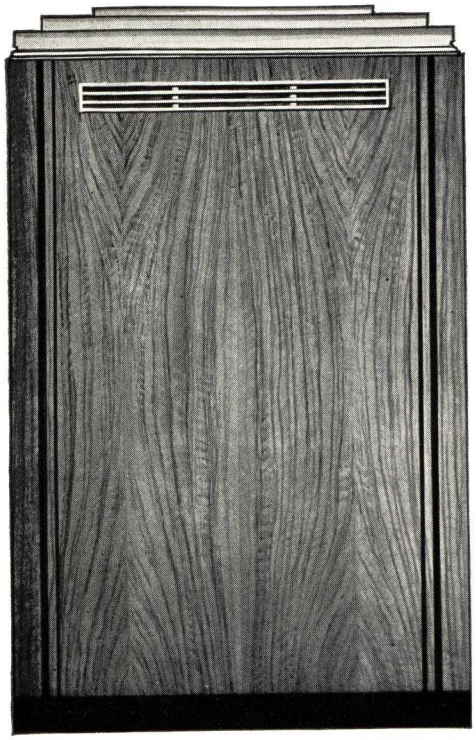
Design 53

ELEVATOR CARS

Design C-532



Design C-533



Design 536

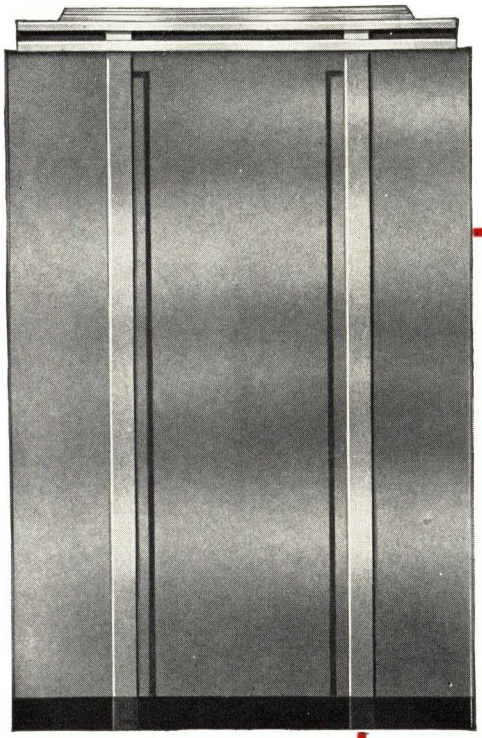
International Building, Rockefeller Center

Most effective results are secured by the combined use of Tyler Elevator Cars and Entrances.

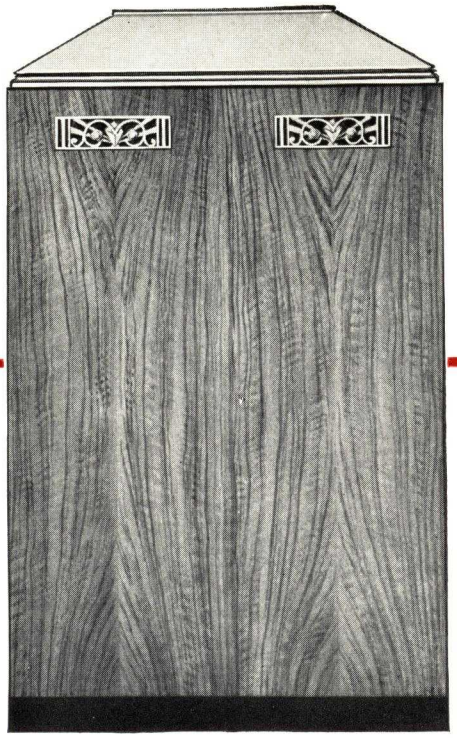
A thoroughly skilled group for every craft involved is available within our own plant, assuring undivided responsibility in producing a perfect installation.

From the very simple and least expensive to the most elaborate designs,

ELEVATOR CARS



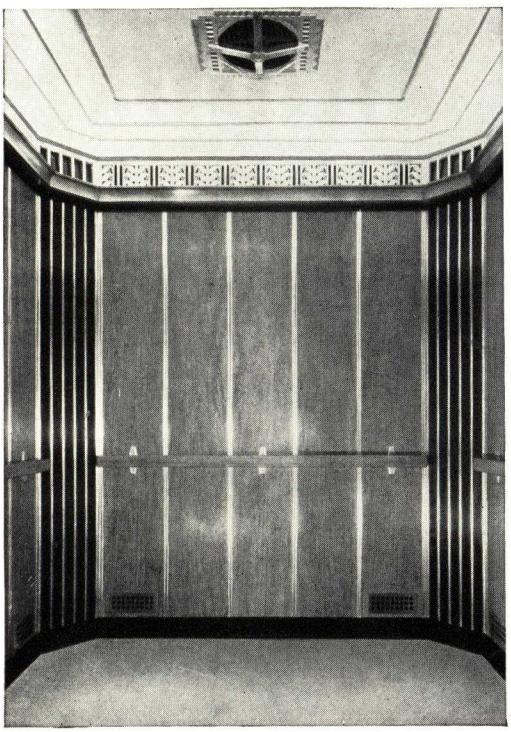
Design 534



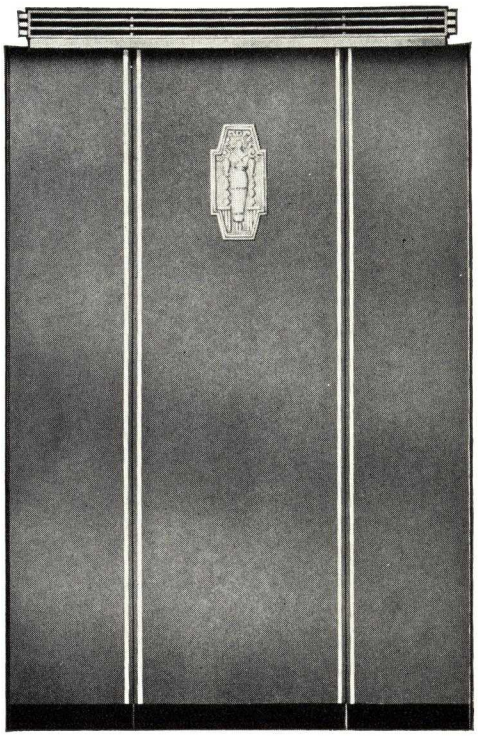
Design C-535

Tyler Elevator Car values are outstanding. This equipment is furnished in all the metals and woods, including Me-Tyl-Wood, and in all combinations of these materials.

Only a few of the many available designs are illustrated. Complete information and additional designs for any purpose will be gladly furnished.

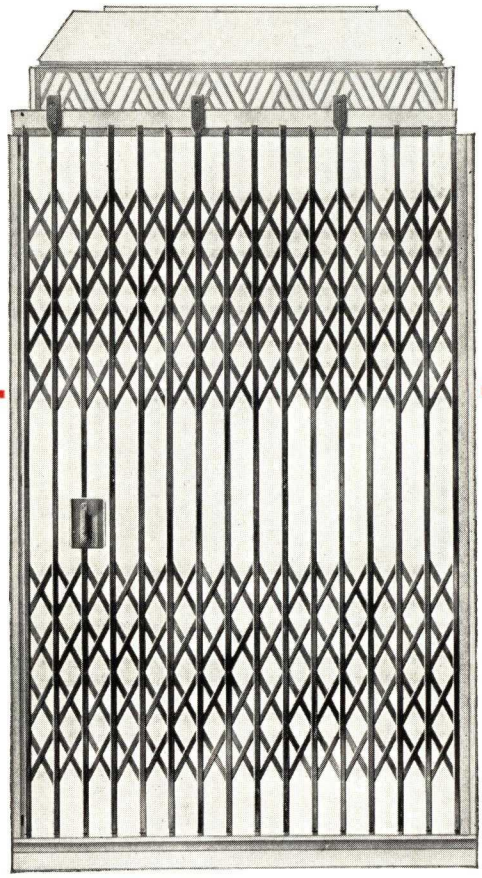


The Higbee Co., Cleveland Ohio



Design C-528

ELEVATOR CAR GATES AND DOORS



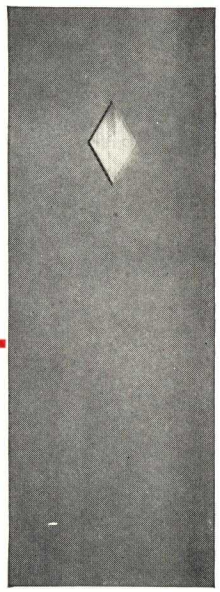
Collapsing Gate EX-G-1

Collapsing Gate EX-G-2

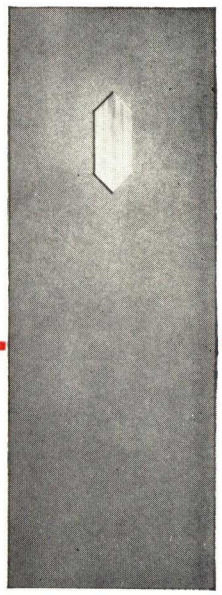
In many localities code requirements call for doors or gates at the car opening. Gates are used in many instances where space available is limited.
Doors can be furnished where desired to harmonize with cars and entrances in materials and finishes.

Car Door EX-D-1

Car Door EX-D-2

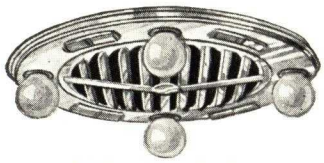


Car Door EX-D-3

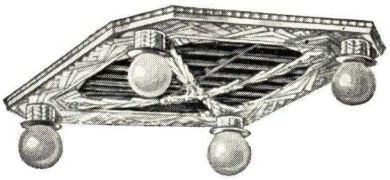


Car Door EX-D-4

ELEVATOR CAR LIGHTING AND VENTILATING FIXTURES



TY-Fandolier EX-TF-1



TY-Fandolier EX-TF-5

TY-Fandolier EX-TF-4

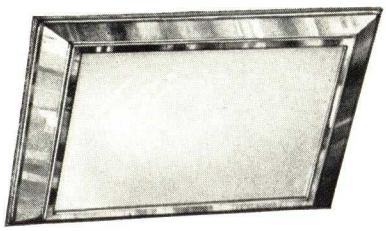
Proper car lighting and ventilation are most important in considering the comfort and satisfaction of passengers.

The Ty-fandolier, a combination lighting and ventilating unit, is a development to serve these two purposes.

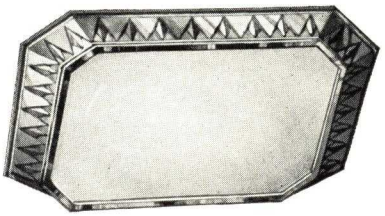
In these fixtures the distribution of air is uniform and in pleasing volume. the lighting is regulated to suit individual car conditions.

TY-Fandolier EX-TF-2

TY-Fandolier EX-TF-3



Fixture EX • L-6

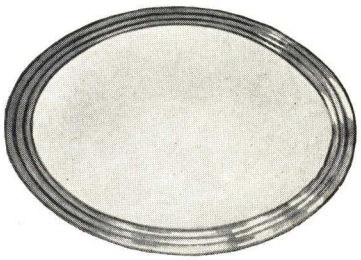


Fixture EX • L-1

Fixture EX • L-4

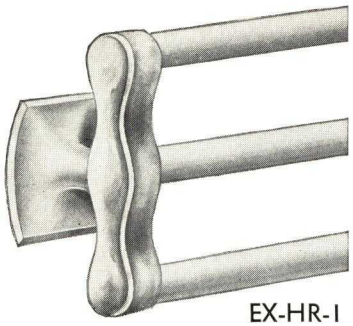
Fixture EX • L-5

Fixture EX • L-3

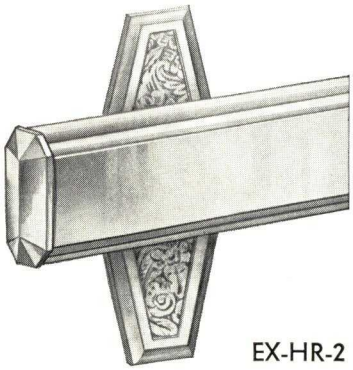


Fixture EX • L-2

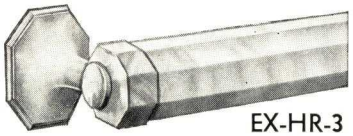
ELEVATOR CAR ACCESSORIES



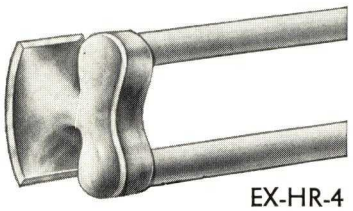
EX-HR-1



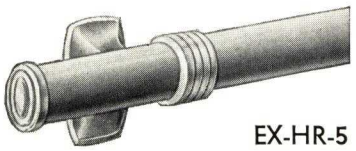
EX-HR-2



EX-HR-3



EX-HR-4



EX-HR-5

EX-HR-6

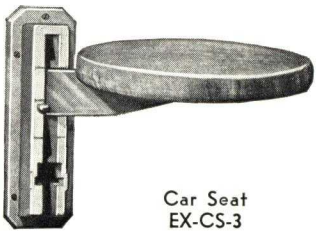
The general effect of the elevator car is materially enhanced through the use of properly designed accessories.

The standard Tyler accessories here illustrated are applicable both to new cars and for the modernization of existing equipment.

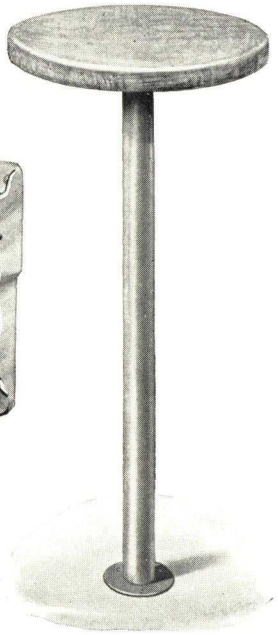
Designs will be gladly submitted to suit your individual requirements.

Car Seat EX-CS-2

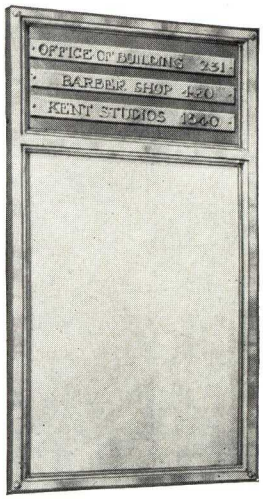
Car Seat
EX-CS-1



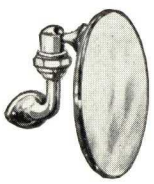
Car Seat
EX-CS-3



Car Seat EX-CS-4



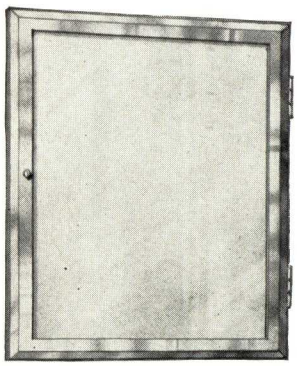
Certificate Frame
EX-CF-1



Mirror
EX-VM-6

Mirror
EX-VM-3

EX-OC-1



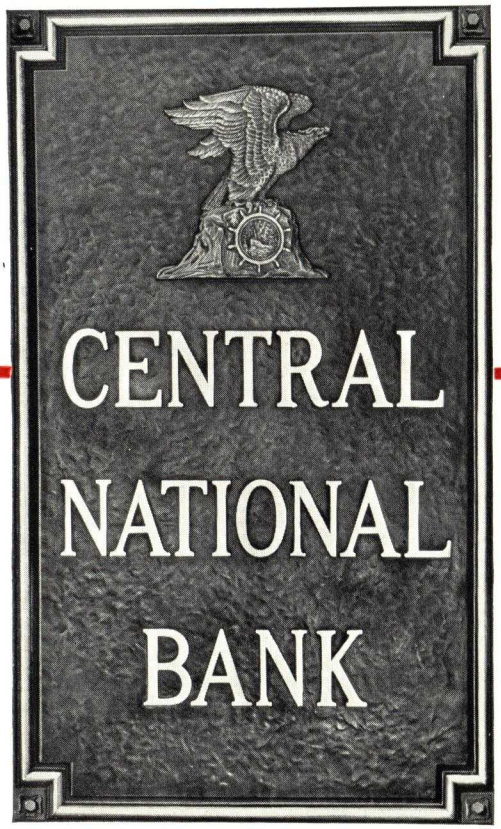
Certificate Frame
EX-CF-2

ORNAMENTAL IRON AND BRONZE

Tyler ornamental iron and bronze products include spandrels, railings, stairways, window frames, name plates and lamp standards in addition to the equipment here briefly illustrated.

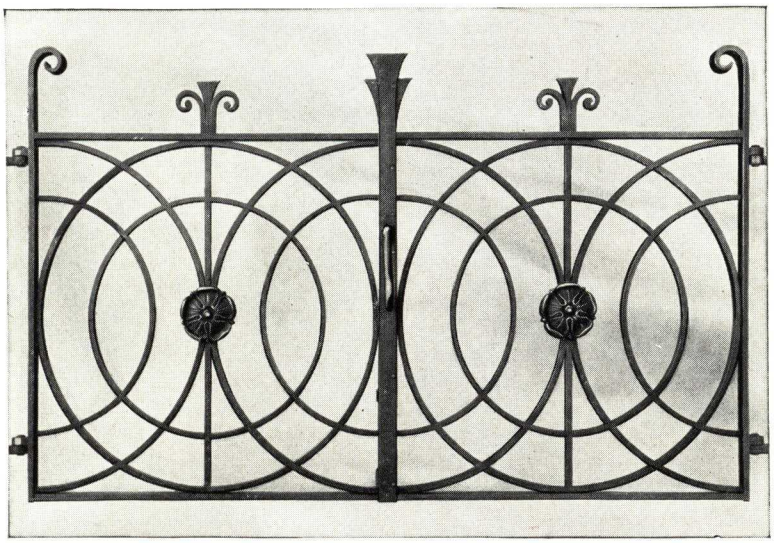
Cashier's Wicket

Mail Box Cover, Designed to Match Cast Bronze Elevator Entrances (See Page 6)



Bronze Tablet

Special emphasis is placed on the method of installation so essential to this type of work.



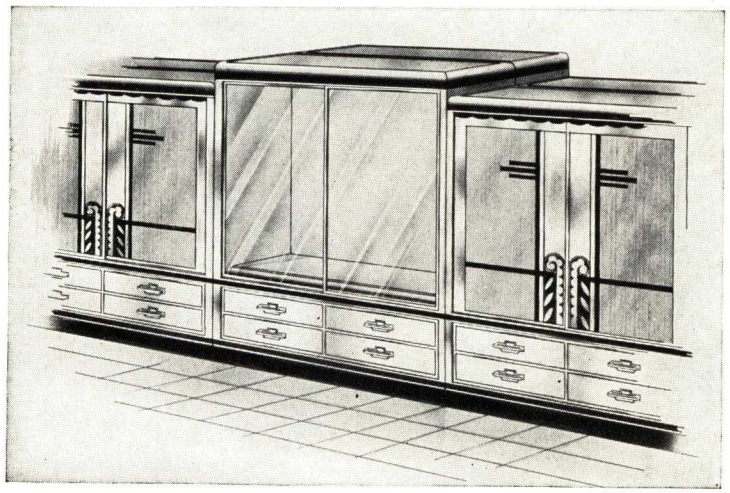
Wrought Metal Gate

Aluminum and Nickel Display Cases, G. Fox and Co., Hartford, Conn.

DISPLAY

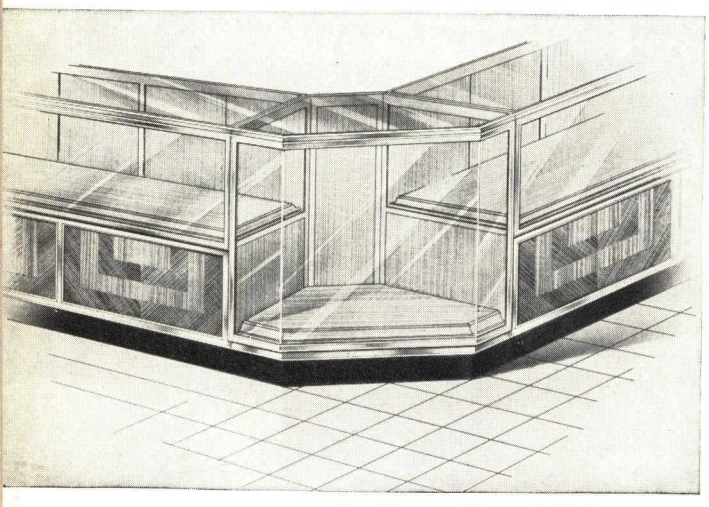
Tyler display cases add immeasurably to the appeal of merchandise.

They are designed so as to provide a neutral background with maximum visibility and compactness and

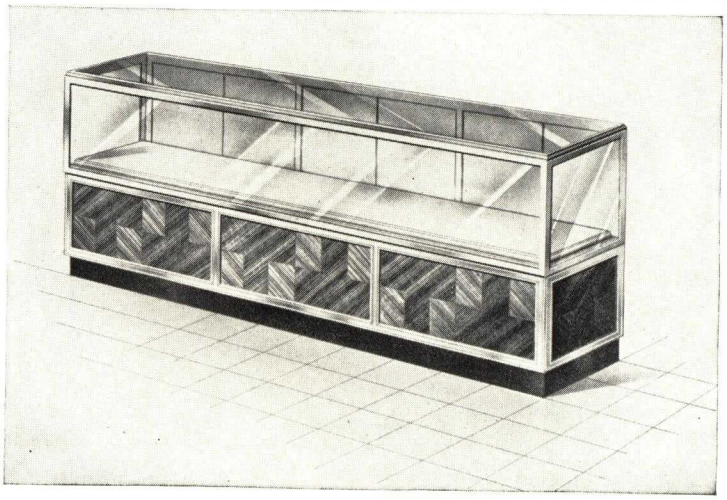


Design SA-105

Aluminum Display Table



Design SB-103



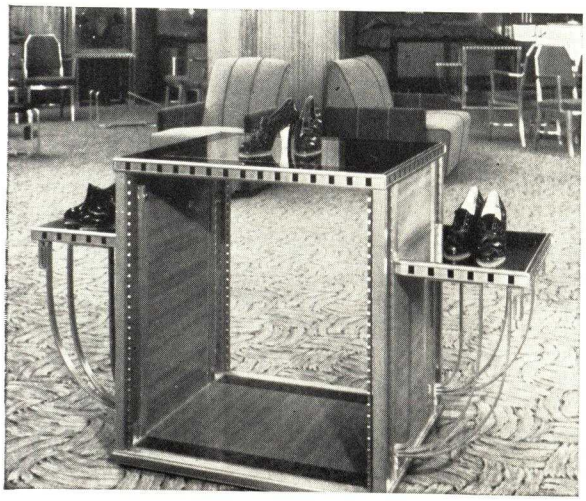
Design SD-102

CASES

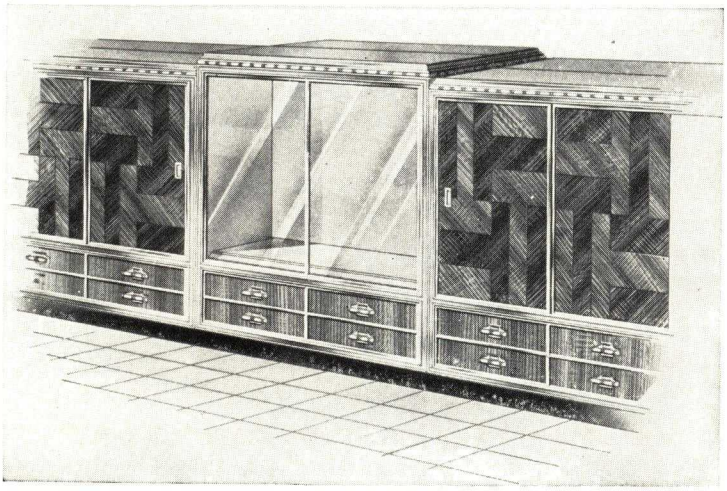
to focus the attention on the goods themselves.

Tyler display cases are available in a wide range of metals and finishes, in woods, combinations of wood and metal, and Me-Tyl-Wood.

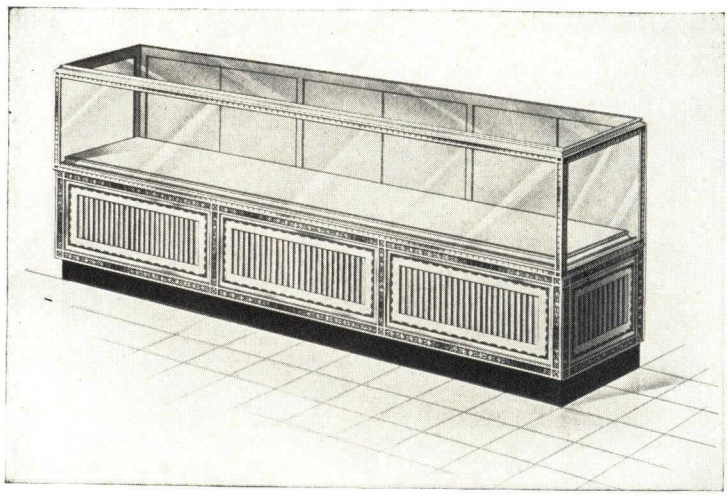
Aluminum Display Cases and Fixtures, John Wanamaker Store, Philadelphia



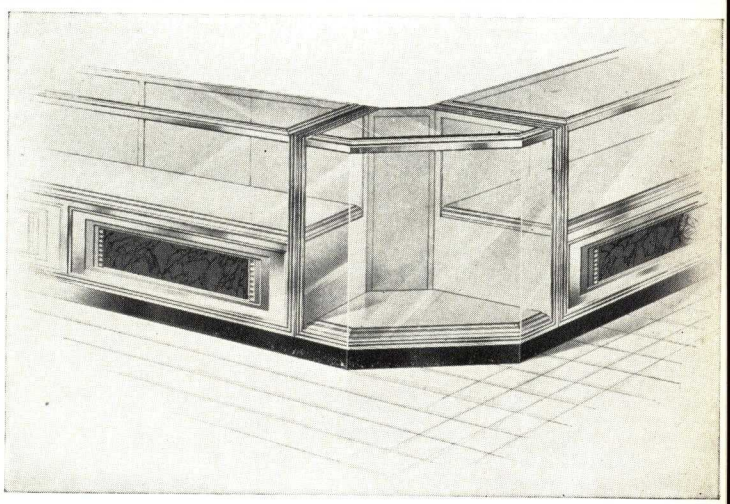
Aluminum and Wood Display Table



Design SA-101



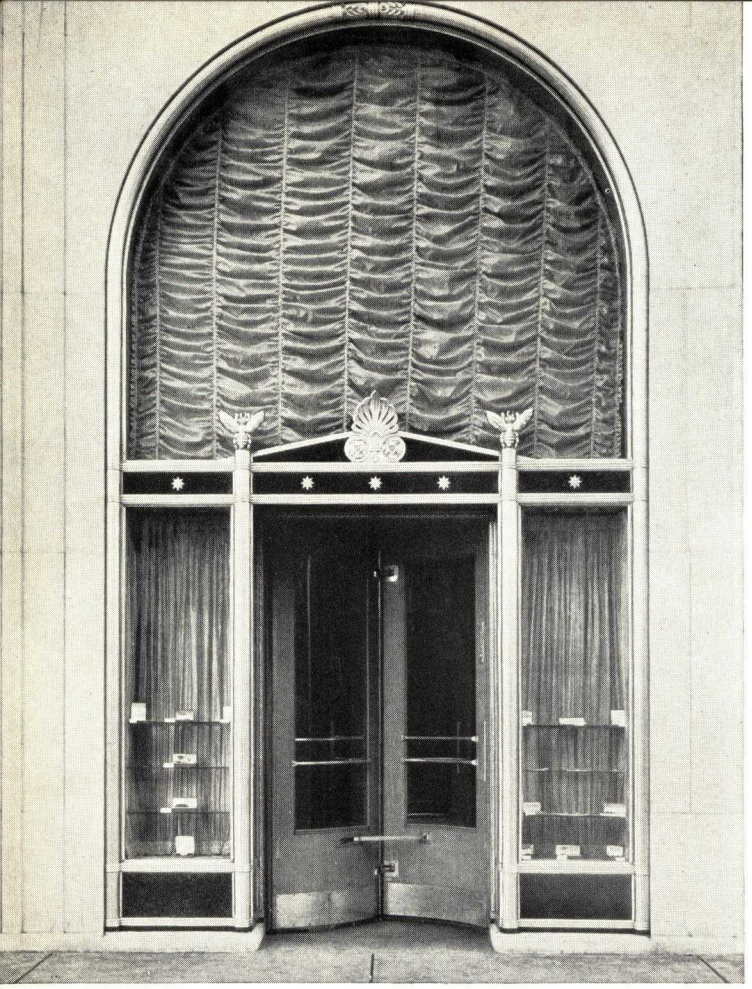
Design SD-105



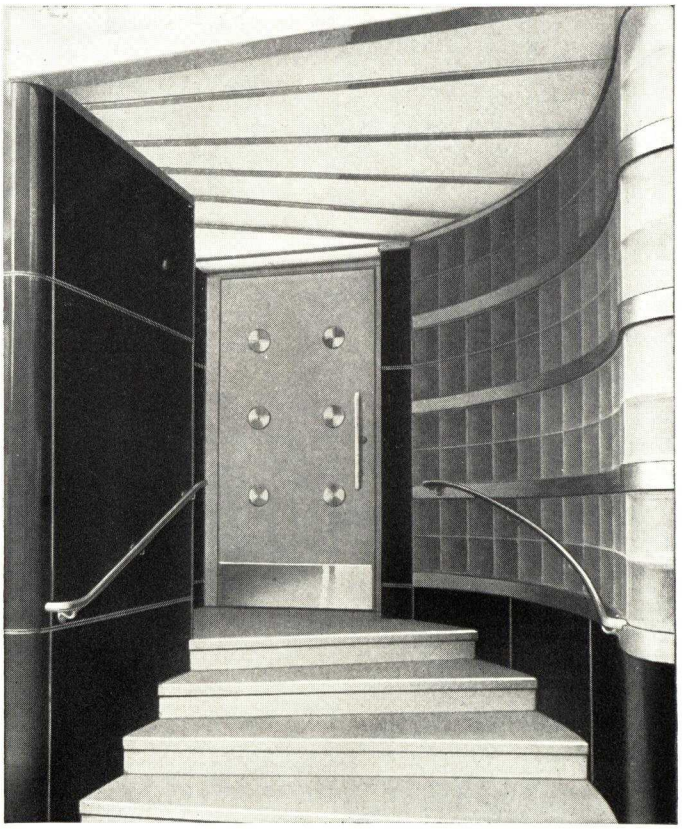
Design SB-104

BUILDING

Most important to every building is its entrance. Tyler entrances are available for every type of building. Treatment in



Store Front Showing Combination of Natural Finished Metals With Colored Background



Grill Entrance Featuring Natural Metals With Glass Brick

Marquee Showing use of Illuminated Name and Special Lighting

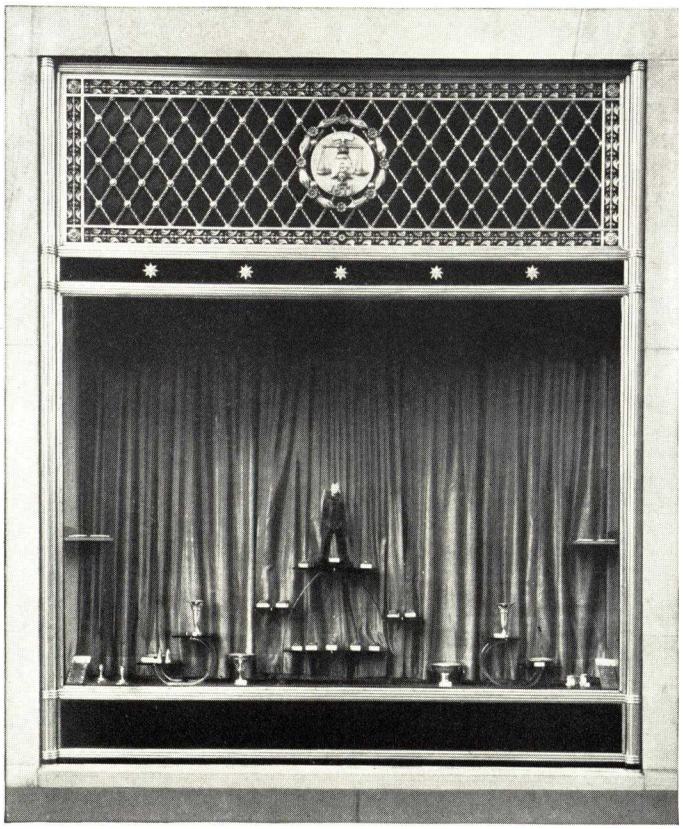
MARQUEES

Tyler marquees are furnished in both conventional and modern designs in metal and combinations of metal and glass with lighting arrangements to suit the type of installation.

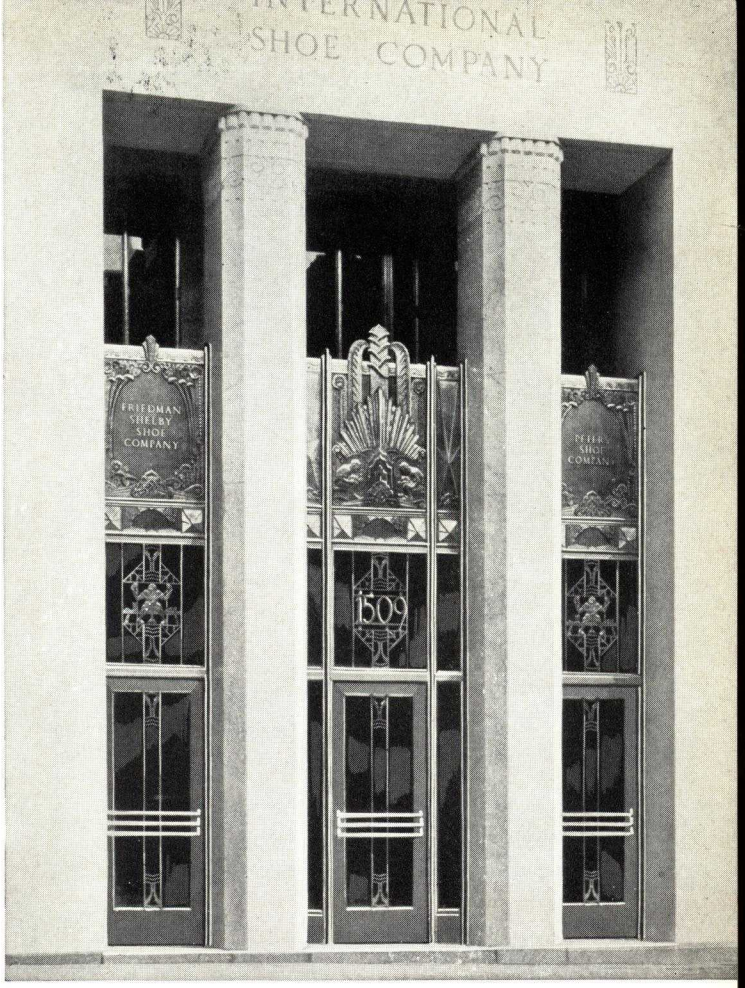
Owners of stores, office buildings, hotels, theaters, etc., can greatly increase the drawing power of window displays by installing properly designed marquees. Our designing and engineering department will be glad to cooperate.

ENTRANCES

harmony with the building to suit every condition is obtainable in any of the architectural metals.



Store Front With Ornamental Cast Grill



Building Entrance Featuring a Combination of Cast and Extruded Members With Glass

STORE FRONTS

Many builders have recognized the value of modernizing their store fronts.

Modernistic or the more conservative treatments can be procured in all of the various metals.

Designs for all types of store fronts or specialty shops are available.

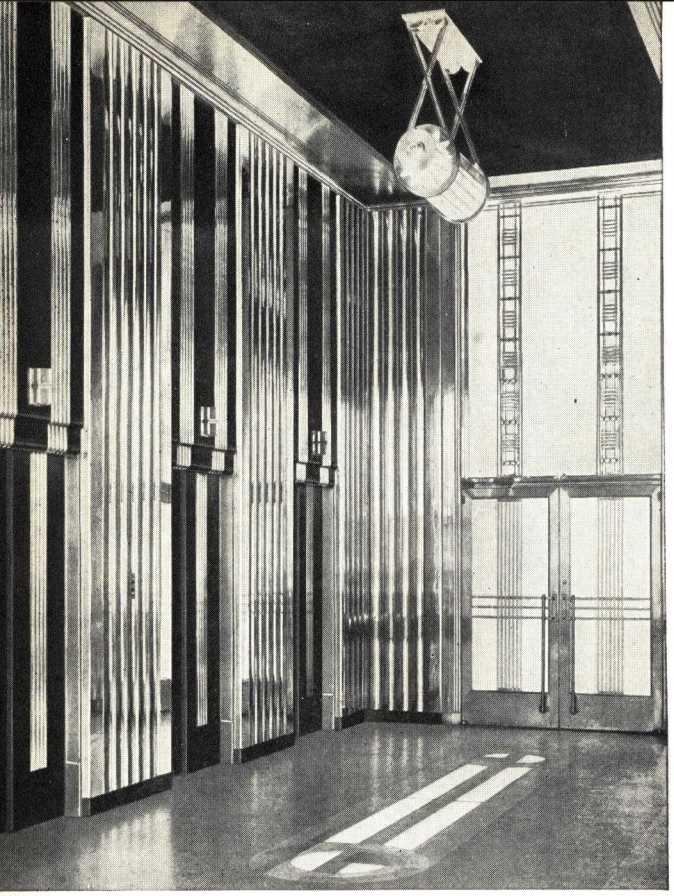
Services of our designing and engineering departments are offered to assist on developing special designs.

Continuous Type Marquee with Special Lighting Effects

ARCHITECTURAL

The use of metals as part of the interior decorative treatment of modern buildings is increasing and the wide variety of special materials available offers an unlimited choice of pleasing combinations.

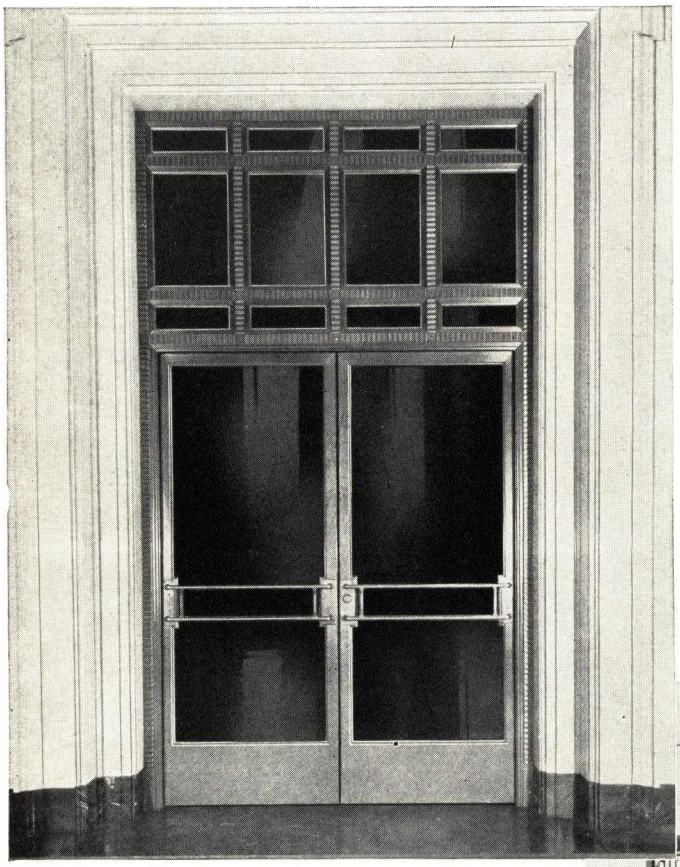
Metal is successfully combined with many



Lobby Featuring Metal Work Against Colored Background

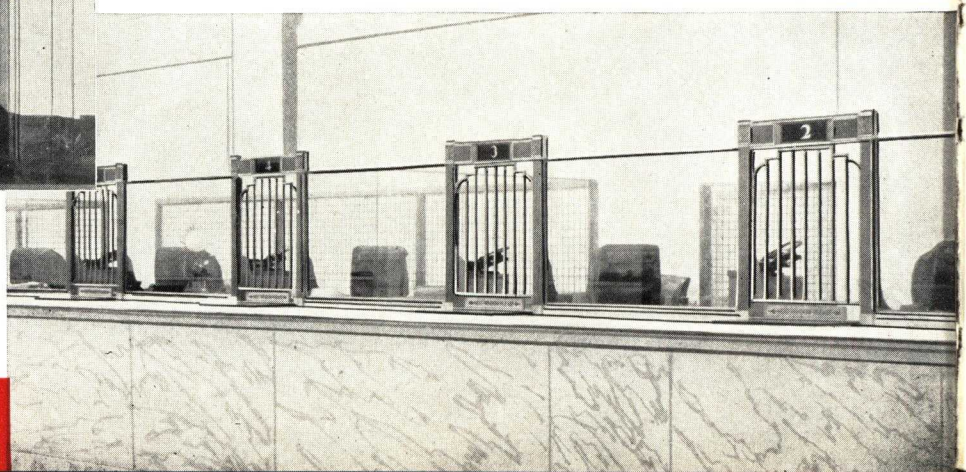
Exhibit Showcases

THE W. S. TYLER COMPANY



Interior Entrance Door

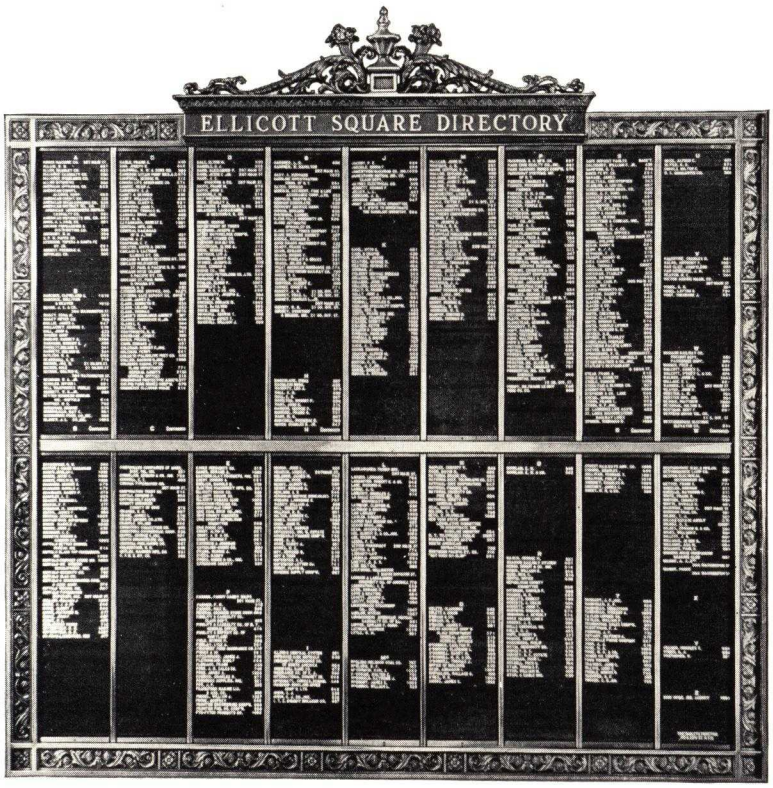
Cashier's Wickets



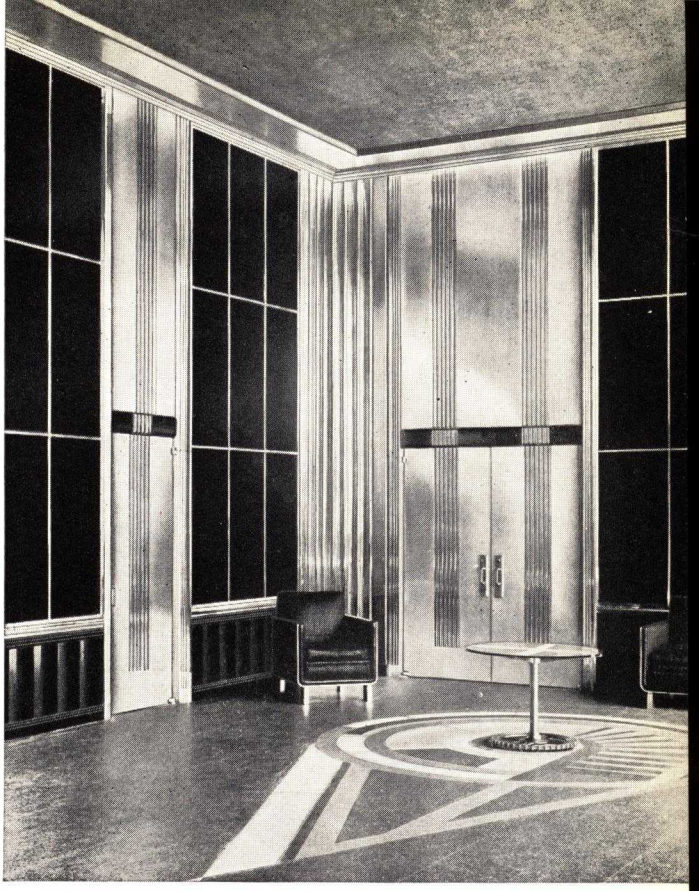
METAL WORK

other materials such as glass and plastics. Unusual effects may be secured by combining various materials and finishes.

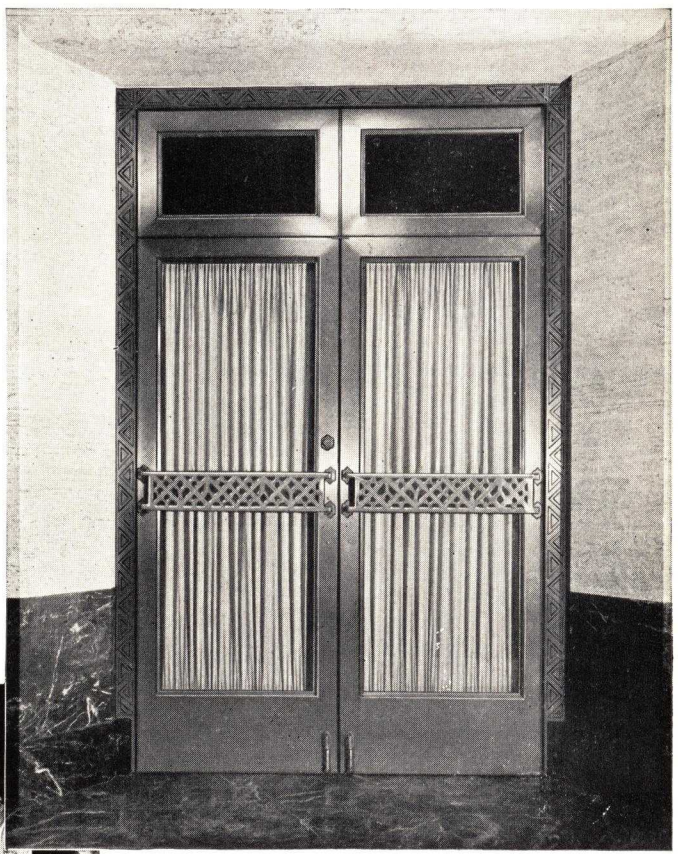
Tyler's field organization takes complete responsibility for the proper installation of this equipment.



Building Directory



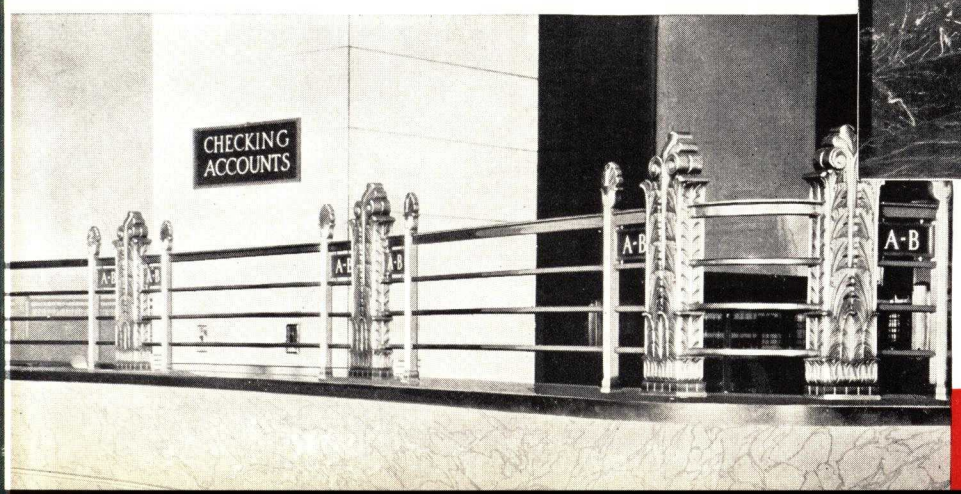
Reception Room. Various Metals May Be Combined For This Purpose



Interior Entrance Door

THE W. S. TYLER COMPANY

Bank Counter Screen



SALES OFFICES

BOSTON, MASS.
20 Providence Street

CHICAGO, ILL.
310 So. Michigan Avenue

NEW YORK, N. Y.
247 PARK AVENUE

PHILADELPHIA, PA.
260 S. Broad Street

ST. CATHARINES
Ontario, Canada

LONDON, ENG.

TYLER

THE W. S. TYLER COMPANY • CLEVELAND, OHIO

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TRUSSBILT

DIVISION OF SIEMS BROS., INC.

Manufacturers of Hollow Metal Doors, Frames and Trim

2575 Como Avenue
ST. PAUL, MINN.

3303 Como Avenue, Southeast
MINNEAPOLIS, MINN.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

TRUSSBILT STEEL FLUSH DOORS.
HOLLOW METAL PANEL DOORS.
ELEVATOR DOORS and FRAMES.
HOLLOW METAL BUCKS, FRAMES and TRIM.

Experience and Service

Trussbilt products represent the latest and best in Hollow Metal construction as developed during our many years of designing and fabricating experience. Our enviable reputation for responsibility, integrity and high quality of materials and workmanship is your guarantee of satisfaction when specifying Trussbilt Products.

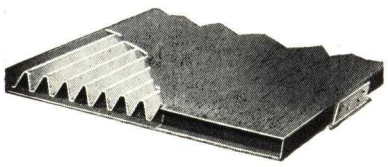
Trussbilt facilities and service make possible a satisfactory installation of high grade Hollow Metal.

Flush Doors

The steel flush door construction, as developed by Trussbilt engineers, is an outstanding improvement in the history of Hollow Metal Industry and Trussbilt flush doors give the designer a smooth and unbroken surface for creative design and decoration, which makes Trussbilt flush doors particularly attractive when used in hotels, apartment houses, hospitals, office buildings and schools.

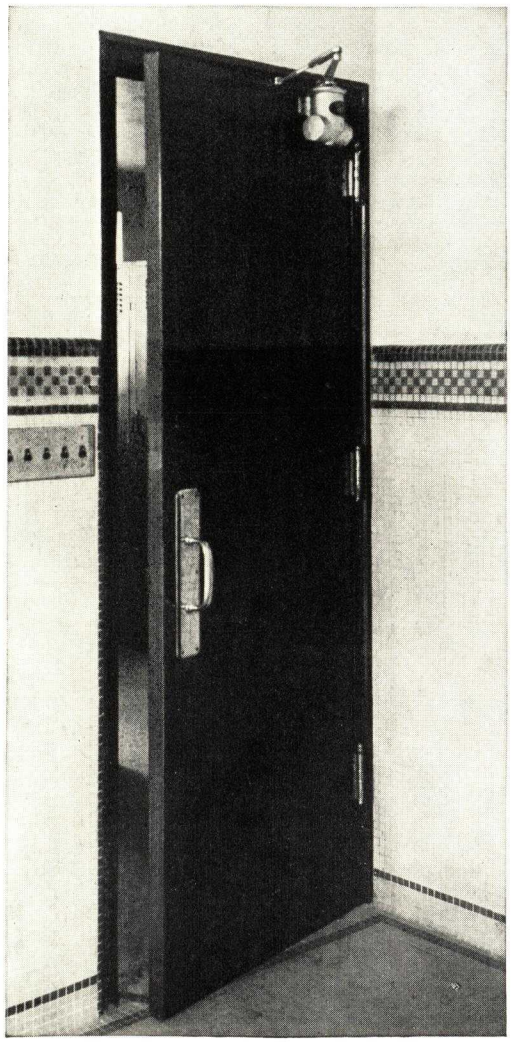
Construction

Trussbilt flush doors consist of an outer shell of 18-gauge steel which is reinforced with a truss-formed inner-core of 28-gauge steel, which core is spot welded to the outer shell at not more than 3 inches on centers, both vertically and horizontally over the entire surface on both sides.



The edges of doors are finished flush and the top and bottom of doors have a 16-gauge channel reinforcement welded in place.

All necessary mortises and reinforcements for hardware are provided, and all Trussbilt flush doors are properly sound insulated.



Trussbilt Flush Steel Door Unit

Underwriters' Labels

Trussbilt flush doors, paneled doors, bucks, and frames can be furnished with Underwriters' labels where so required or specified.

Specifications

Flush Doors—All flush doors where shown on plans or schedule shall be Trussbilt flush doors as manufactured by TRUSSBILT, of St. Paul, Minn.

Doors requiring glass panels shall have openings equipped with removable mouldings.

Hardware is to be furnished by others and all mortised hardware will be delivered prepaid to the door manufacturer for application without additional cost, the surface applied hardware, such as checks, holders, etc., to be applied at the building by the erector.

Finish

Before doors are painted they shall be thoroughly cleaned, completely immersed in a rust-inhibiting primer and baked, so the interior as well as the exterior is completely covered; follow with three coats for plain color work and five coats for grained finishes, all to be baked on. Final coat to be rubbed to an eggshell gloss.

TRUSSBILT

77T

UNITED METAL PRODUCTS DIVISION

DIEBOLD SAFE AND LOCK CO.
CANTON, OHIO
REPRESENTATIVES IN PRINCIPAL CITIES

SPECIFICATIONS FOR U. M. P. STANDARD HOLLOW METAL DOORS AND TRIM

Hollow metal doors are made of No. 18 US gauge steel, patent leveled, full finished sheets. Stiles and rails are formed of one piece of metal and interlocking channel is inserted in the stiles and rails providing reinforcement and also an interlocking member for the panel moulding.

All stiles and rails have cork inserts of suitable size to prevent metallic sound.

Panels—Two sheets of No. 18 US gauge steel with a filler of asbestos inserted in all labeled doors to make over-all panel thickness of 5/16 in. Panels are inserted in a deep groove provided in panel moulding. Panel mouldings are neatly mitered or coped at all corners and intersections are welded. All seams and joints are welded their entire length. All joints are made perfectly level and invisible. Reinforcing bars, drilled and tapped for hinges, and of sufficient length and thickness are welded in hinge stile at all hinge cutouts. Reinforcing plates are spot welded in lock stile to receive locks, and additional reinforcements are placed in door to receive such hardware as is specified.

The construction noted above has been listed by the Underwriters' Laboratories, Inc. and has the Underwriters' approval.

Non-labeled doors are of similar construction without asbestos lining.

Jambs—Are made of the same quality steel as described for doors. No. 18 US gauge steel for walls 7½ in. thick or less and No. 16 US gauge steel for walls more than 7½ in. thick. Jambs are formed to detail and made to fit accurately over bucks, all intersecting members are neatly coped and fitted before shipment.

Casings—Are made from cold rolled strip steel. All casing corners and miters are neatly welded and ground off to insure invisible joints. Casings are applied to frame with concealed clips.

Transom Sash—Is constructed similar to doors and properly reinforced for hardware.

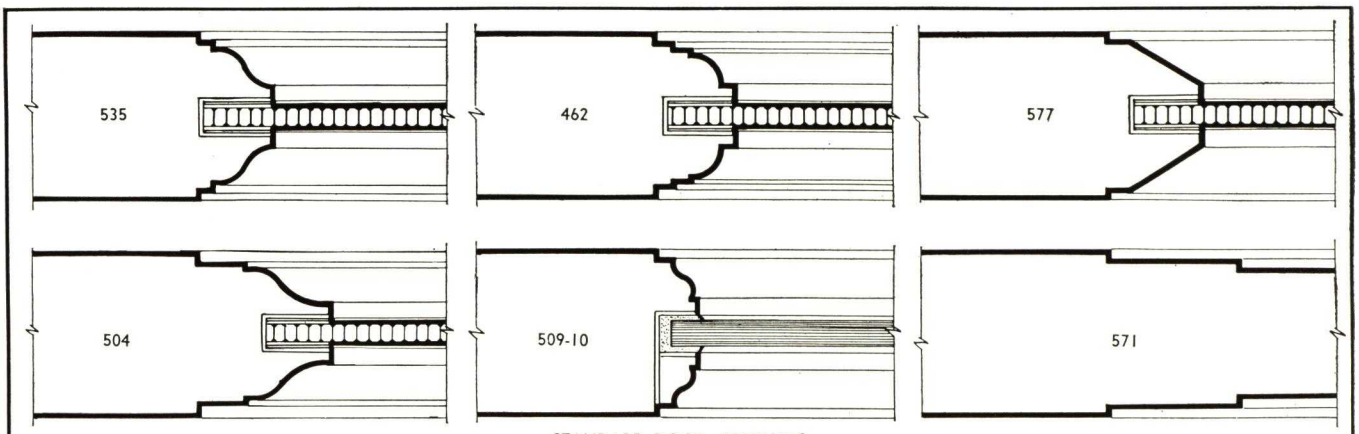
Rough Bucks—Are made from 14 US gauge steel. Intersecting joints are accurately welded, adjustable crimped or corrugated anchors will be provided with rough bucks for building in wall. Bucks will receive dip coat of paint before shipment.

Unit Frame—Combining buck, jamb and trim in one unit is made from No. 12, 14 or 16 gauge steel of the same quality as described for doors. Combination frames are notched and reinforced for hardware. The frames will receive a baked-on prime coat, the finishing coats to be applied at building by painting contractor.

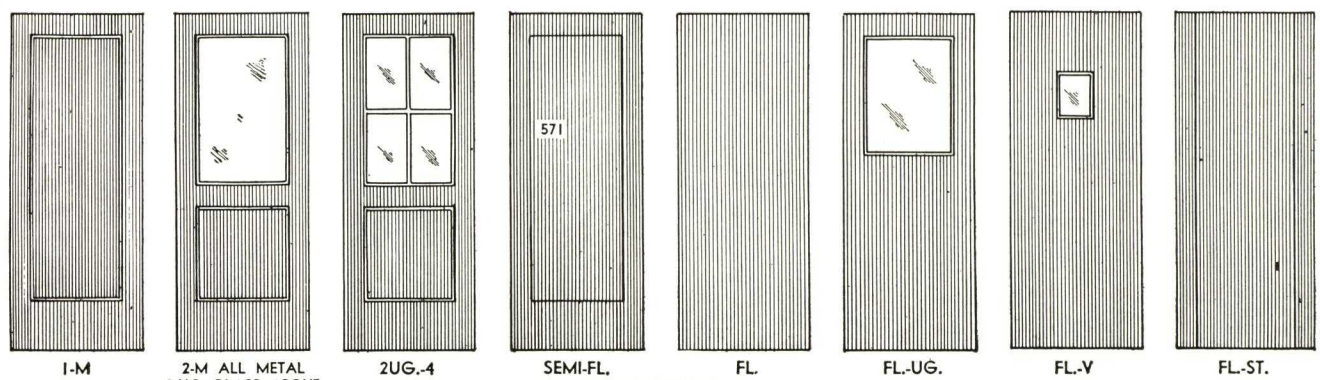
Finish—After fabrication, doors receive a dip coat of rust resisting enamel, the inside of panels are painted before being assembled, the dip coat is baked on and a filler is then applied over all uneven surfaces and baked. The filler coat is ground and sanded perfectly smooth. Two coats of high grade mineral paint are then applied, each baked on separately. All grained finishes receive two coats of best baking varnish—each coat is baked. All finished work is rubbed to an eggshell gloss.

Jambs, casings and mouldings are finished in the same manner as the doors.

Hardware—Applied to doors at factory before shipment, except where crating of materials might be interfered with. Drilling and tapping for such items as door closers and transom operators is done at the building by the erector after materials are installed.



STANDARD DOOR SECTIONS

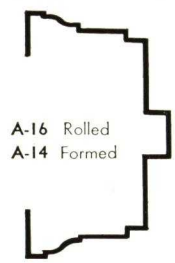


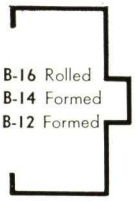
1-M | 2-M ALL METAL 2-UG GLASS ABOVE | 2UG.-4 | SEMI-FL. | FL. | FL.-UG. | FL.-V | FL.-ST.

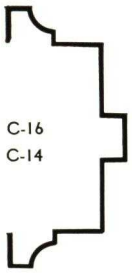
DOOR TYPES

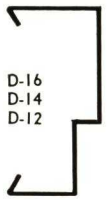
STANDARD DOOR DESIGNS

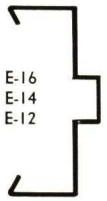
ALL DETAILS ONE HALF FULL SIZE

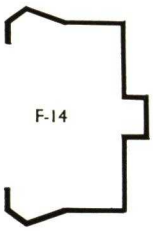


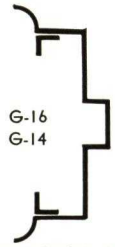


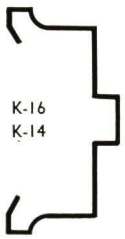






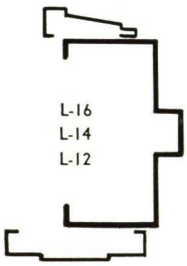


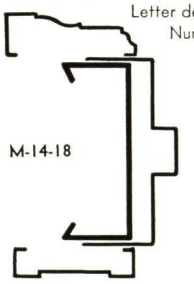


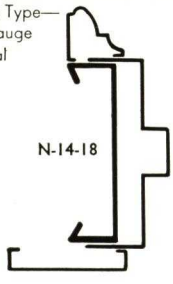


COMBINATION BUCK, JAMB AND TRIM OR UNIT FRAME TYPES

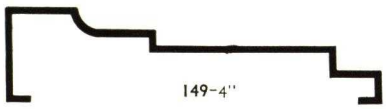
Letter designates Type—
Numeral Gauge
of metal

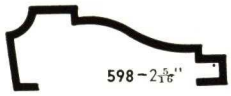


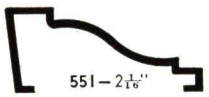


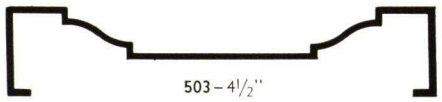


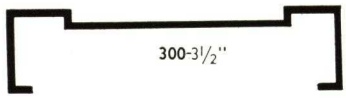
ROUGH BUCK CABINET JAMB AND TRIM.

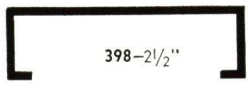


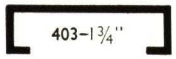


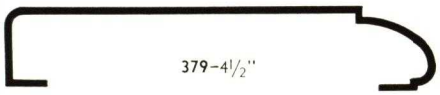


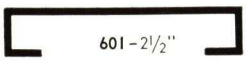


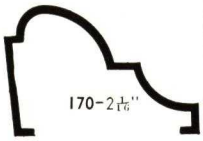


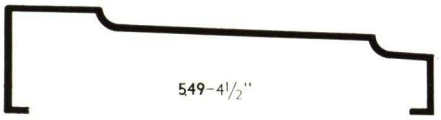


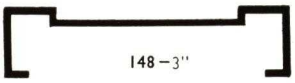


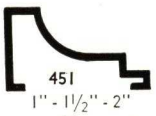


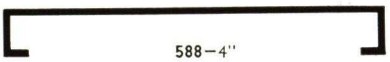


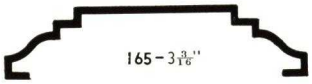


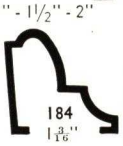


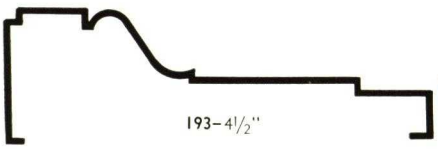


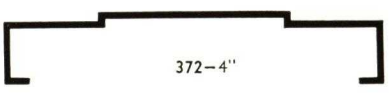


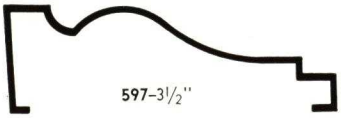


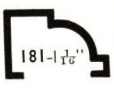












TRIM

STEEL BUCKS AND METAL TRIM PROFILES

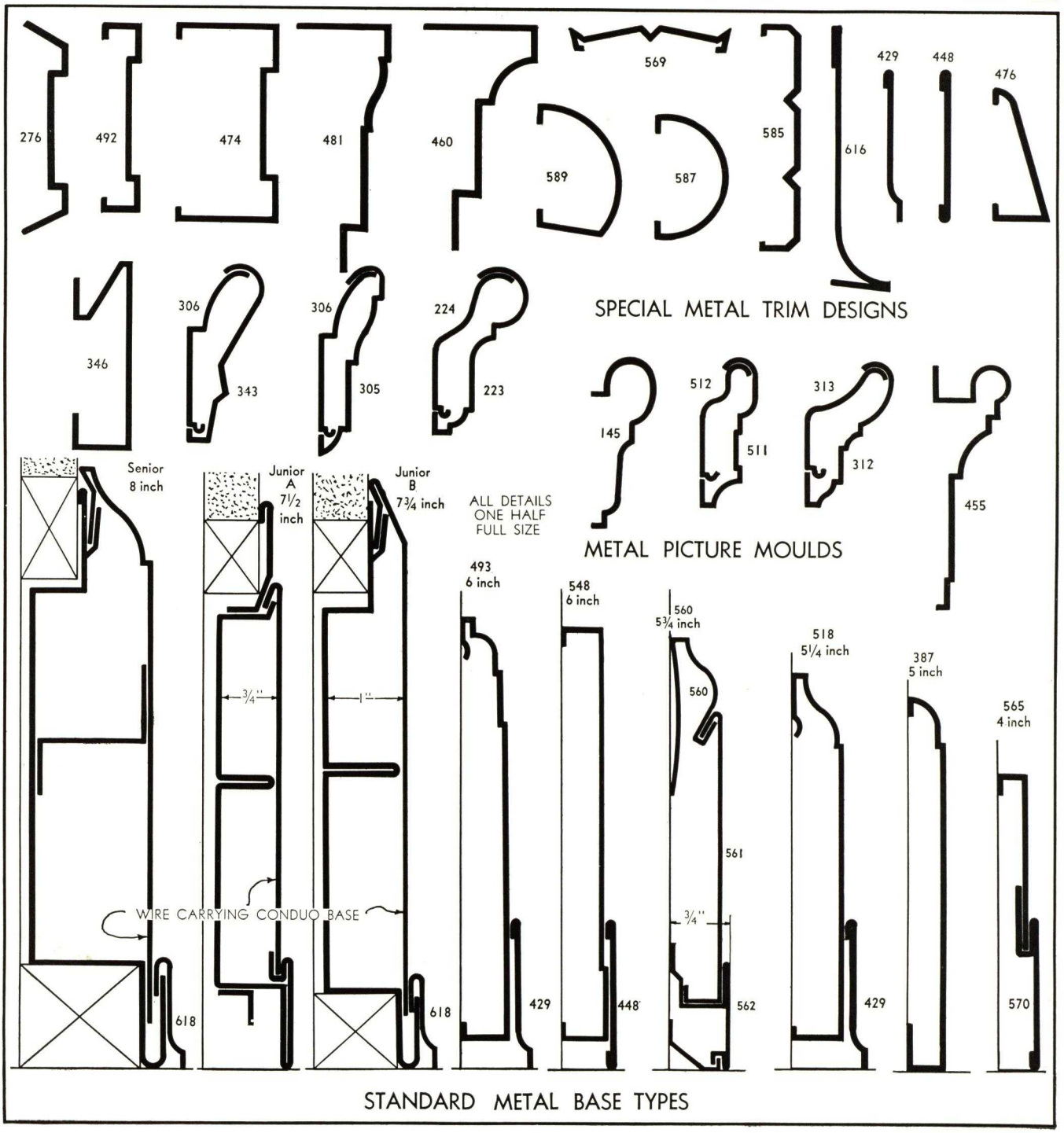
UNITED METAL PRODUCTS DIVISION

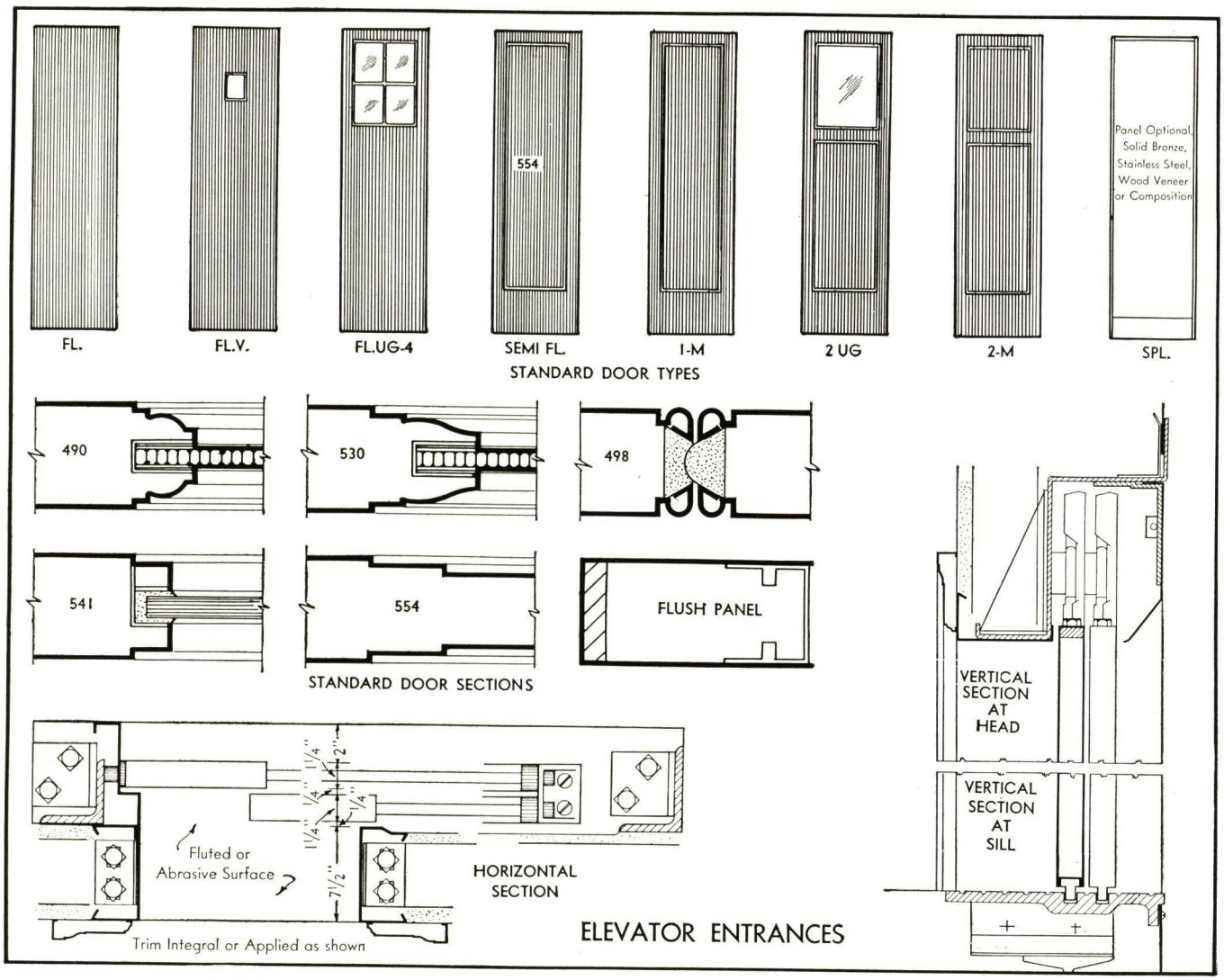
DETAILS UNDERWRITERS' LABELED DOORS

When Underwriters' Labels are specified, doors *must* conform with the following for all classes of labels. Maximum jamb size: Single openings 4 x 8 ft. Pairs of doors 8 x 8 ft. for class "A" label doors.

For all others, Single 4 x 10 ft. Pairs 8 x 10 ft.

	Location	Metal Panels	Glass Area	Hardware	Frame
Class A	Fire Wall	1 or 2 (Flush panels not approved)	None	3-point Lock Steel BB butts. Checks.	Extra heavy built in
Class B	Stair well Vertical shaft	1 or more (Flush approved)	Vision Light 10″ x 10″	Steel butts. ¾-in. throw lock.	No. 16 gauge min. No transom
Class C	Corridor or room partition	Variable	1296 sq. in.	Standard	No special
Class D	Exterior wall (not fire escape)	1 or more	None	Steel butts. ¾-in. throw lock.	Heavy standard
Class E and F	Fire escape	1 or more	720 sq. in.	Steel butts. ¾-in. throw lock. Checks.	Heavy standard





SPECIFICATION STANDARD U.M.P. ELEVATOR ENTRANCES

Elevator entrance doors shall be made of not less than No. 18 gauge sheet steel, patent leveled and full finished. Paneled doors shall be of similar construction to swing doors and Flush type doors shall be rigidly reinforced vertically at not less than 6-in. centers. Sliding doors shall be heavily reinforced across top edge for hanger bolts and at all other locations where operating hardware will be attached. Two guides shall be securely attached to the bottom of each door. (Ironwood with Bronze bushing standard.)

Combination Frames—Shall cover the wall and be made of No. 14 gauge steel with integral trim (applied trim alternate.) Hanger support shall be made of No. 8 gauge steel to extend between and be securely attached to vertical angles.

Coverplates—Shall be No. 18 gauge with removable section at door opening for access to hangers.

Sills—Shall be of cast iron (or bronze) not less than ½ in. thick with abrasive surface and lugs for grouting in or attaching to structural beams.

Facia Plates—Shall be No. 16 gauge steel and extend from the coverplate to the sill above, and be 12 in. wider than the door openings, providing a flush, even finish to the shaft.

Structural Angle Supports—Shall extend from sill to beam or a height of 11 ft., 3 x 3 x 5/16 in. at the closing jamb and 3 x 5 x ⅜ in. at least 7 in. back of the doors when open to support closing device.

All exposed surfaces of doors, frames and trim to be finished in baked enamel similar to specification for swing doors.

INSTALLATIONS

United Metal Products Division has furnished hollow metal doors and trim for some of the largest buildings in the United States as is evidenced by the partial list of prominent buildings noted below. "United" also specializes in exterior trim in stainless steel as well as decorative lobby walls and interiors in steel panel work with stainless steel or special metal trim of which the Empire State Building, McGraw-Hill Building and Insurance Company of North America, in New York City, are representative installations.

The names of prominent Architects and General Contractors identified with the following projects will be furnished on request, for reference purposes.

Irving Trust Bldg., New York, N. Y.
Library, Columbia University, New York, N. Y.
Bowery Savings Bank, New York, N. Y.
515 Madison Ave., New York, N. Y.
444 Madison Ave., New York, N. Y.
Wall and Hanover Bldg., New York, N. Y.
60th and Madison Bldg., New York, N. Y.
Riverside Church, New York, N. Y.
Bank of Manhattan, New York, N. Y.
Chemical National Bank, New York, N. Y.
State Hospital, Rochester, N. Y.
Administration and Laboratory Bldg., Saratoga Springs, N. Y.
Drink Hall, Saratoga Springs, N. Y.

Rikers Island Penitentiary, Rikers Island, N. Y.
Grasslands Hospital, Valhalla, N. Y.
University Hospital, Baltimore, Md.
U. S. Post Office Bldg., Columbus, Ohio
Youngstown City Hospital, Youngstown, Ohio
Dr. Cunningham's Health Tanks, Cleveland, Ohio
Chicago Daily News, Chicago, Ill.
Naval Hospital, Philadelphia, Pa.
U. S. Post Office, Cleveland, Ohio
Post Office Department Bldg., Philadelphia, Pa.
Department of Public Works, Boston, Mass.
U. S. Marine Hospital, Chicago, Ill.
Haddon Hall, Atlantic City, N. J.
Fire Association of Philadelphia, Pa.

Fidelity-Philadelphia Trust, Philadelphia, Pa.
Strawbridge-Clothier, Philadelphia, Pa.
Keystone Athletic Club, Pittsburgh, Pa.
Industrial Trust, Providence, R. I.
Miners Bank, Wilkes-Barre, Pa.
St. Louis Civil Courts, St. Louis Mo.
450 Sutter St., San Francisco, Calif.
City National Bank, Bridgeport, Conn.
United Shoe Machinery Co., Boston, Mass.
Court and Remsen Bldg., Brooklyn, N. Y.
O'Neil Store, Akron, Ohio
Cleveland Public Library, Cleveland, Ohio
First National Bank, Canton, Ohio
Ford Museum, Detroit, Mich.

ALLEN AUTOMATIC INCORPORATED

GENERAL OFFICES
37 Main Street, OSSINING, N. Y.
Telephone Ossining 3426
FACTORY: 21 WATER STREET, OSSINING, N. Y.
SALES OFFICES: NEW YORK, N. Y., 420 Lexington Avenue—Telephone MOhawk 4-1993
BOSTON, MASS., 80 Boylston Street—Telephone Hancock 3077
SALES AGENTS: Allen & Drew, Inc., 1472 Broadway, NEW YORK, N. Y.

Products

Automatically Operated Doors, Windows, Gates, Blackboards, Curtains, Awnings, Store Fronts, Orchestra Platforms, Floors, Roofs, Ceilings, Skylights, Bleachers, Bars, Walls, Partitions.

Services

Acting as Engineers, specializing in designing of automatic movable parts or structures in all types of buildings.

We have, and are developing, many unusual automatically operated structures for saving of time and labor and also for spectacular entertainment purposes.

Doors

We manufacture and install electrically operated doors of all types to suit the various conditions encountered in all types of buildings.

Four-fold—Automatic swinging folding doors are furnished with ball bearing hardware with continuous pintles. The driving equipment is powered by high torque motors from 1/6 to 1½ hp., depending on size of doors and speed of operation required.

Vertical Sliding—We furnish automatic doors sliding in one or several sections and at multiple speed. These doors sliding on ball bearing guides, are perfectly balanced and controlled by our heavy duty driving equipment.

Airplane Hangar—We furnish doors electrically operated for covering the large hangar openings. These doors are either multisection horizontal sliding or single section vertical.

Revolving—By using our motor operated revolving doors, accuracy of the movements is established, eliminating accidents and complaints. By combining the revolving doors with our motor operated platform, the entire assembly may be moved out of the way allowing easier passageway.

Gates

We furnish electrically operated gates of all types, operated in the same manner as the doors. We furnish equipment for controlling gates for protecting exceptionally wide openings, in some cases a single section may be a hundred feet in width. For special use in jails and penitentiaries, we furnish gate systems which eliminate the necessity of keys, making these institutions more impregnable.

Windows

Casement Type—We furnish electric operators only for the remote control of any type casement sash. Windows are securely locked when fully closed.

Double Hung Windows—Simultaneous operation of both upper and lower sections of double hung windows can be accomplished from remote control by the use of one of our DH machines. We also furnish complete unit of frame windows and operators ready to set in new construction completely weatherstripped and of either wood or metal construction.

Large window areas may be controlled by our automatic equipment, either sliding or swinging in any direction.

Show Window Platforms—By using our show window platforms which are fully automatic in operation it is possible to set up displays remotely from show window, and these may be moved into the window, eliminating dressing windows at night or closing off the windows during the daytime.

Blackboards, Screens and Curtains

We furnish motor operated blackboards, moving picture screens in duplex and triplex arrangement for use in schools and conference rooms — allowing the use of different boards and screens at the same place. We also furnish electrically operated lightproof curtains to be used in conjunction with moving pictures in normally daylighted areas.

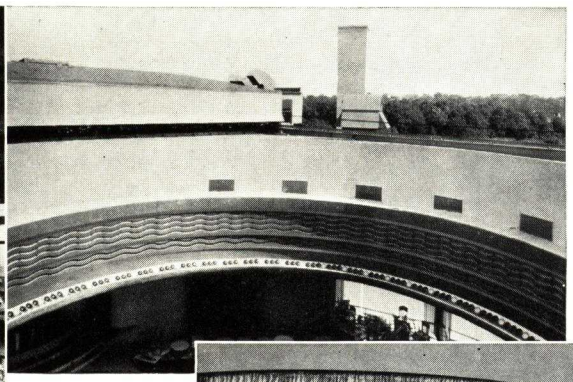
Awnings

By the use of our remote control equipment, an entire row of awnings may be controlled at once or individually, or automatically by the use of time clocks. We also furnish heavy duty equipment for controlling exceptionally large areas of awnings.

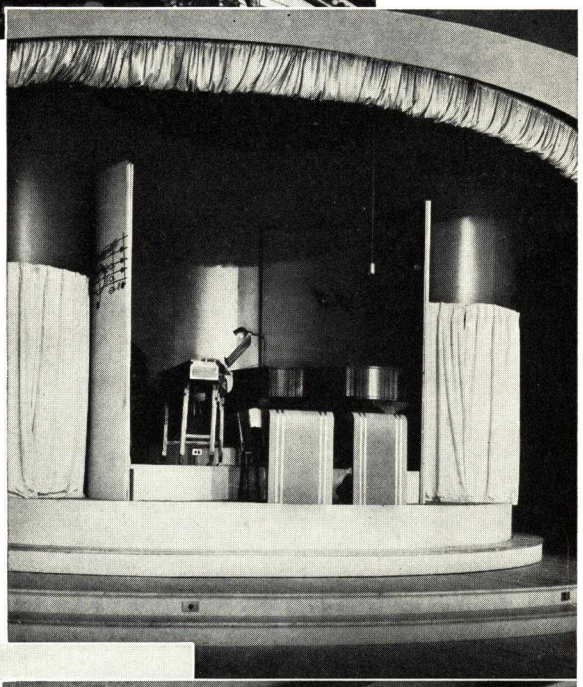
One of Seven Disappearing Store Fronts Designed and Erected for Longchamps Restaurants, New York, N. Y.

LOUIS ALLEN ABRAMSON
Architect

The entire corner may be opened by lowering the storefront and revolving doors into the basement — thereby creating an open air sidewalk cafe



Motor Operated Ceilings, Stage, Windows and Walls, Ben Marden's Riviera, Fort Lee, N. J.



Stage and Theatre Equipment

We furnish movable band wagons for movement in any direction, stage elevators, orchestra and console elevators, theatre curtains and complete rigging and many other motor operated devices for spectacular entertainment.

Automatic Roofs

Many night clubs, restaurants and other places of entertainment are using our rotating folding or sliding roofs for instantly converting an enclosed space into an open air area.

Store Fronts

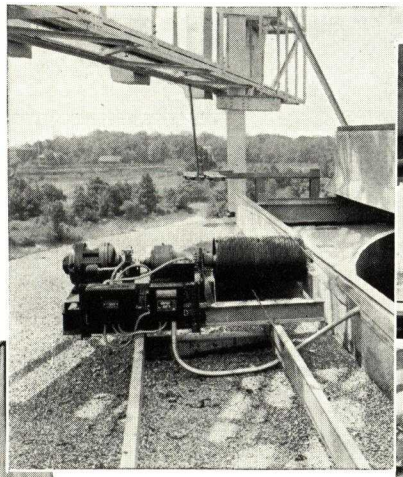
For use in automobile showrooms, restaurants, bars, and other types of stores—where it is desirable to have large openings to suit variable conditions—we furnish automatically controlled store fronts disappearing either into basement or ceiling. These fronts may include main entrance doors and in some cases revolving doors as well as large areas of plate glass.

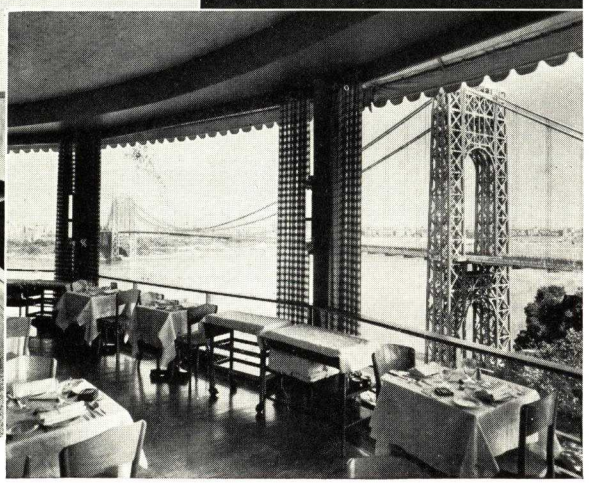
Bleachers and Grandstands

By using our disappearing seating arrangements, large areas may be used for other purposes, the bleachers forming a perfectly flush adjacent wall when not in use.

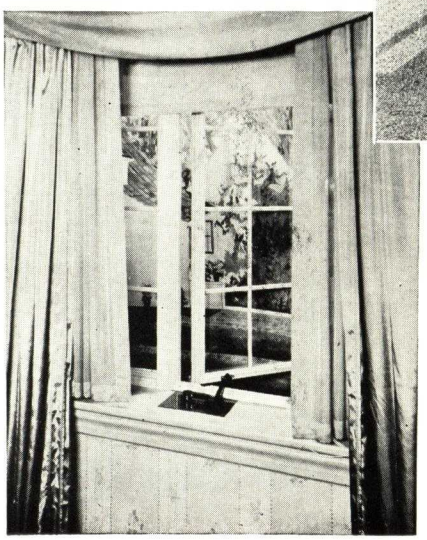
Bars

We furnish several novel bars for the dispensing of liquor, some of which rotate and others movable in different ways; some combination bars and dance floors. In all cases, they are fully equipped with flexible feeds for water, beer, electricity, etc.





Motor Operated Casement Window—Brooklyn Edison Model Wonder House



Floors

We furnish floors which may be changed automatically at will from level to sectional terraces as well as rotating and pyramiding.

Partial List of Unusual Installations by Allen Automatic, Inc.

Building	Location	Architect
Disappearing Store Fronts, Longchamps Restaurant	New York, N. Y.	L. A. Abramson
Revolving Bar, Merry-go-round	Newark, N. J.	Chas. Shilowitz
Disappearing Bleachers, Scranton High School	Scranton, Pa.	P. A. Howley
Motor Operated Roof, Disappearing Windows and Stage Equipment, Ben Marden's Riviera	Fort Lee, N. J.	L. A. Abramson
Display Turntable, Henshaw Furniture Co.	Jamaica, N. Y.	DeYoung & Moscowitz
Disappearing windows and screens, Anthony Fokker residence	Nyack, N. Y.	

BYRNE DOORS, INC.

Manufacturer of Airplane Hangar Doors, Industrial Doors, Movable Steel Partitions and Crane Entrance Doors

1150 Griswold Street
DETROIT, MICH.

Products

Canopy Doors
Crane Entrance Doors
Hangar Doors—all types
Industrial Doors
Movable Steel Partitions
Special Enclosures

Automatic, high-speed operation—any width—any height—in sections or single spans.

A complete engineering and advisory service.

Byrne Doors have been adopted by the U. S. Army Air Corps and by leading Air Transport companies.

They are fully patented and can be secured from licensed manufacturers or direct from Byrne Doors, Inc.

Exclusive Features

Byrne Canopy Doors are recognized standard for crane entrances, hangars and large doorways. Backed by ten years' engineering research and development, they have lifted the restrictions from door design. Installations are now possible to meet any requirement. We believe there are more large Byrne Type Doors in satisfactory service than all other types combined. Some outstanding advantages are:

Day in and day out trouble-free operation—minimum maintenance—long-life construction.

Compensate for building settlement and temperature changes.

Snug tight when closed—cold air infiltration and heat losses minimized.

High speed operation — counterweighted — minimum power and operating cost.

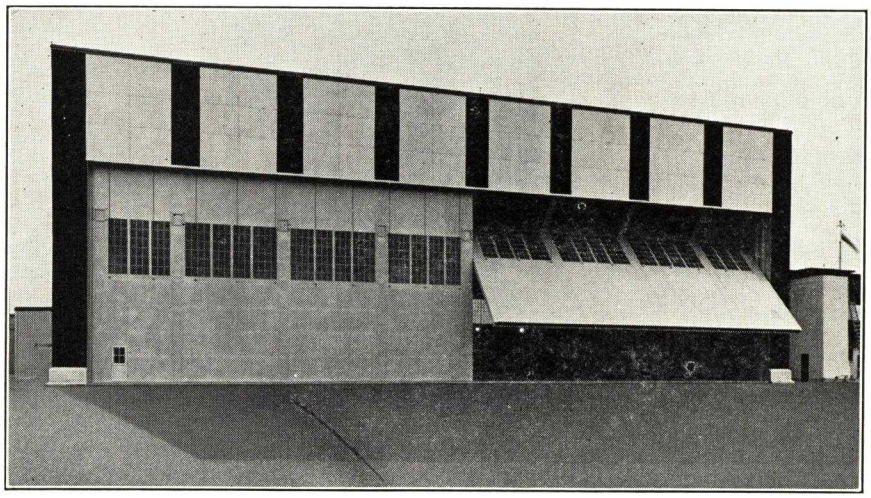
Occupies minimum space when closed—entirely out of the way when open.

Anti-freeze sill construction—no floor tracks.

Canopy, when open, adds to useful floor space.

Cooler in summer—warmer in winter.

Heating economy and reclaimed floor space will usually save the entire cost of installation.



The Largest Canopy Door on Earth
One section closed and one section partially open

The Largest Door on Earth

For ten consecutive years Byrne Doors have established a record for size. The illustration at left shows an installation made in 1937 which is 150 ft. wide by 40 ft. high.

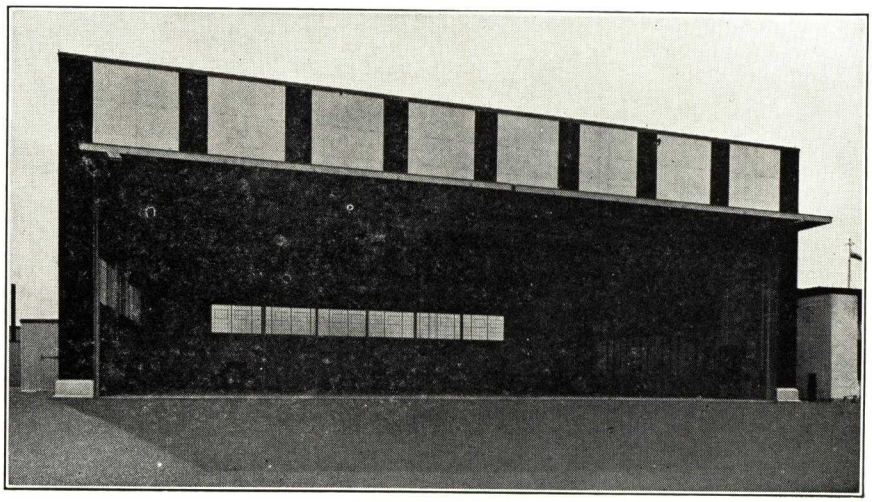
This hangar was constructed at Pittsburgh, Pa. by David T. Riffle, for Allegheny County under the administration of Henry Hornbostel, Commissioner of aviation. The building design was prepared by the Allegheny County Bridge Engineering Department.

The door weighs 41 tons and is designed to sustain a horizontal wind load of 90,000 lbs. Byrne Doors have been used exclusively at the Pittsburgh Airport since 1931.

High Speed Operation

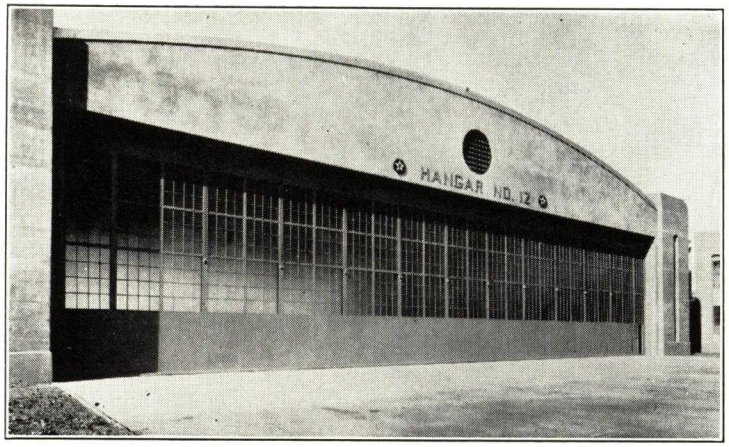
The illustration at right shows door fully open. Despite the huge dimensions and weight of this door it can be opened or closed in 45 seconds. Operation is by means of a two-speed motor which automatically reduces speed for closing.

The first movement in opening is a vertical rise of about 6 in. to clear snow, ice or ground obstructions. The door is then tilted on its horizontal axis and raised to open position with the lower half projecting outward to form a useful canopy across the entire opening.



Both Sections Open
No obstructions in opening—no removable mullions

See second page following for Details and dimensions.



At left, a standard Army Air Corps hanger with Byrne Door closed snug tight, rigidly locked, secure against internal and external pressures.

Cold air infiltration and heat losses are reduced to the minimum.

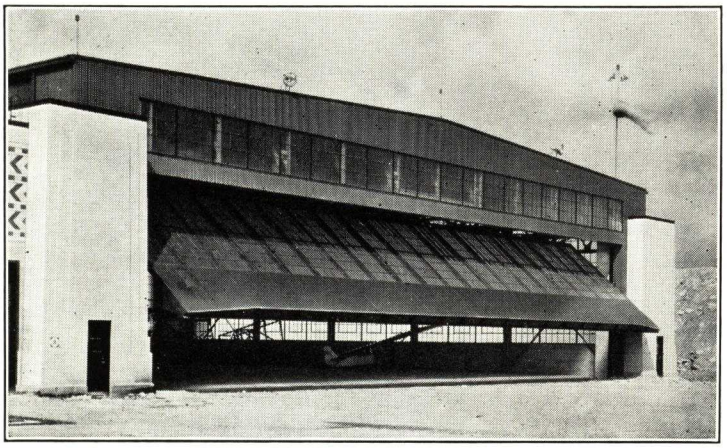
Flexible supports and vertical guides compensate for building settlement and temperature changes and insure tight closure at floor.

The automatic floor bolts are interesting and most important. These have a toggle action which locks and unlocks automatically with the closing and opening movements of the door.

At right, the original hanger at Pittsburgh, Pa. built in 1931. The Byrne Door is partially open, balanced on its own center of gravity, counterweighted and suspended on a series of steel cables.

The multiple cable system constitutes a safety provision of highest merit. It is designed to support the door and full wind load with a liberal safety factor.

The operator, with double, opposed drums and a positive, self-locking mechanism, restrains each cable independently and holds the door securely at any open position.



At left, fully open, maximum speed, silent operation, minimum power.

This is the hanger shown recently in Sea Devils, the picture featuring the splendid service of the U. S. Coast Guard, with Victor McLaglen playing the lead.

The Coast Guard built the hanger at Miami, Fla. in 1932 and selected Byrne Doors because of their dependable operation, strength and security.

See next page for Details and Dimensions.

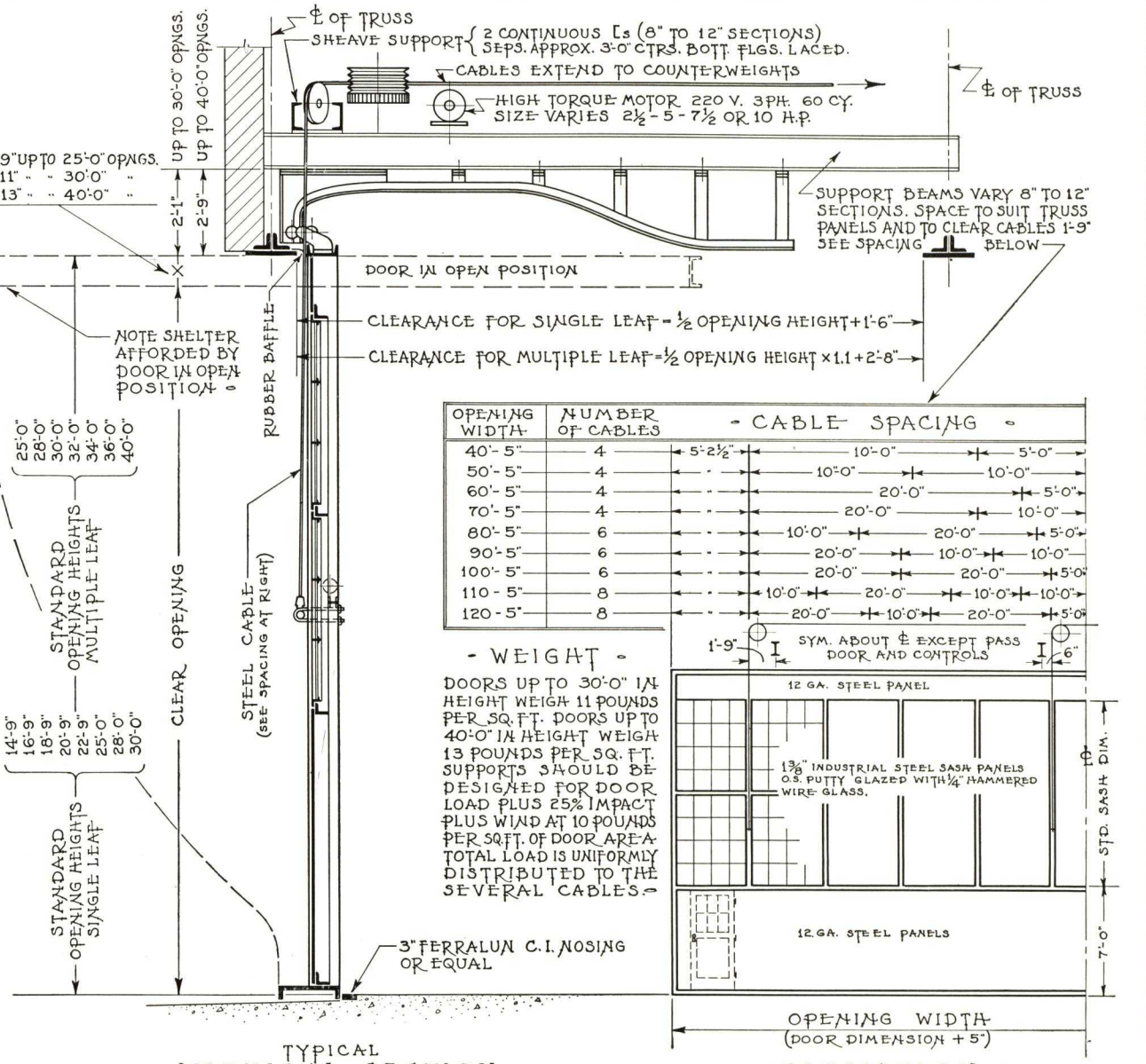
A PARTIAL LIST OF BYRNE DOOR USERS

American Airways, Chicago, Ill.
*Babcock & Wilcox Co., Barberton, Ohio
Beaumont, Tex., Municipal Airport
Billings, Mont., Municipal Airport
Booth-Henning, Inc., Dallas Tex.
Denver, Colo., Municipal Airport
Fort Worth, Tex., Municipal Airport
Galveston, Tex., Municipal Airport
*Great Lake Steel Co., Detroit, Mich.
Joliet, Ill., Municipal Airport
Metropolitan Water Commission, Boston, Mass.
National Guard, Boston, Mass.
National Guard, Newark, N. J.
National Guard, Philadelphia, Pa.
*Nichols Copper Co., El Paso, Tex.
Palwaukee Airport, Chicago, Ill.
Pittsburgh, Pa., Municipal Airport
Rochester, N. Y., Municipal Airport
San Antonio, Tex., Municipal Airport
Transcontinental & Western Air, Kansas City, Mo.
Tyler, Tex., Municipal Airport
U. S. Army, Aberdeen, Md.
U. S. Army, Barksdale Field, La.
U. S. Army, Fort Benning, Ga.
U. S. Army, Fort Bragg, N. C.
U. S. Army, Middletown, Pa.
*U. S. Army, Sacramento, Calif.
U. S. Coast Guard, Miami, Fla.
*U. S. Navy, Norfolk, Va.
Wm. K. Vanderbilt, Miami Beach, Fla.

*Indicates Crane Doors

BYRNE DOORS, INC.

BYRNE CANOPY DOORS



OPENING WIDTH	NUMBER OF CABLES	CABLE SPACING
40'-5"	4	5'-2½" — 10'-0" — 5'-0"
50'-5"	4	10'-0" — 10'-0"
60'-5"	4	20'-0" — 5'-0"
70'-5"	4	20'-0" — 10'-0"
80'-5"	6	10'-0" — 20'-0" — 5'-0"
90'-5"	6	20'-0" — 10'-0" — 10'-0"
100'-5"	6	20'-0" — 20'-0" — 5'-0"
110'-5"	8	10'-0" — 20'-0" — 10'-0" — 10'-0"
120'-5"	8	20'-0" — 10'-0" — 20'-0" — 5'-0"

WEIGHT

DOORS UP TO 30'-0" IN HEIGHT WEIGH 11 POUNDS PER SQ. FT. DOORS UP TO 40'-0" IN HEIGHT WEIGH 13 POUNDS PER SQ. FT. SUPPORTS SHOULD BE DESIGNED FOR DOOR LOAD PLUS 25% IMPACT PLUS WIND AT 10 POUNDS PER SQ. FT. OF DOOR AREA. TOTAL LOAD IS UNIFORMLY DISTRIBUTED TO THE SEVERAL CABLES.

TYPICAL
VERTICAL SECTION

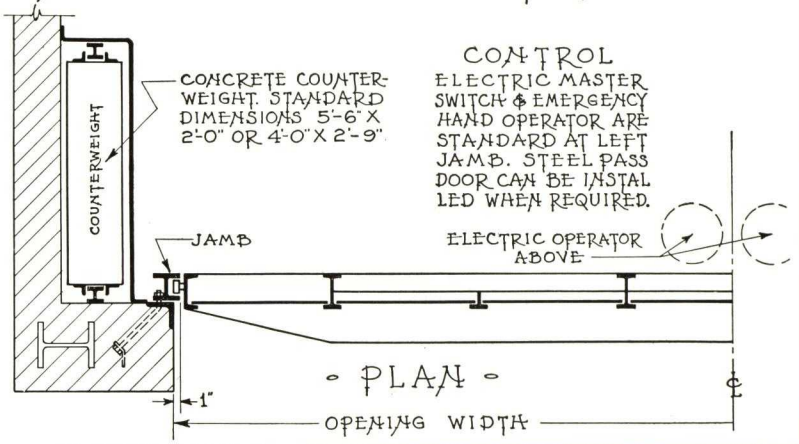
ELEVATION

NOTE

SINGLE LEAF DOORS ARE RECOMMENDED FOR OPENINGS UP TO 120'-5" WIDE X 30'-0" HIGH. LARGER DOORS SHOULD BE MADE IN TWO OR MORE SECTIONS.

MAIN TRUSSES ARE USUALLY 20'-0" OR 25'-0" ON CENTERS. CONSIDERABLE LATITUDE IS POSSIBLE IN THE COLLATERAL STEEL FRAMING FOR A BYRNE DOOR. THE NOTES ON THIS PLATE ARE SUFFICIENT FOR A PRELIMINARY LAYOUT. OUR ENGINEERS ARE READY TO FURNISH FINAL DETAILS ON REQUEST.

BYRNE DOORS ARE FURNISHED ERECTED IN PREPARED OPENINGS AND INCLUDE DOOR OPERATING MECHANISM, COUNTERWEIGHTS, AND CONTROLS. COLLATERAL STEEL, JAMBS, COUNTERWEIGHT GUIDES, GLASS, GLAZING, ELECTRIC WIRING, FIELD PAINT, AND FLOOR NOSING ARE FURNISHED IN PLACE BY OTHERS.



PLAN

CONTROL

ELECTRIC MASTER SWITCH & EMERGENCY HAND OPERATOR ARE STANDARD AT LEFT JAMB. STEEL PASS DOOR CAN BE INSTALLED WHEN REQUIRED.

BYRNE DOORS PLATE B1

PEELLE DOORS

FREIGHT ELEVATOR • DUMBWAITER • INDUSTRIAL ENTRANCE

THE PEELLE COMPANY • BROOKLYN, N.Y.

More than 30 YEARS *of* DOOR SERVICE

For more than 30 years the same Peelle management has specialized in the manufacture of quality Peelle Doors.

Changes in building construction, higher speeds and heavier duties for freight elevators, the adoption of Building Codes, and the demands of insurance Underwriters, have presented new problems, and made continuous demands on the ingenuity of the management. THE PEELLE COMPANY has contributed its share to industrial building progress, by designing and producing quality door products in step with this progress.

From the hatch covers and Safety Gates in non-fireproof buildings of 40 years ago, THE PEELLE COMPANY has developed the modern Peelle Motorized Door that provides safety, fire protection, as well as fast and quiet operation to fit the most modern building and elevator equipment.

Peelle quality reflects the policy of the management which believes in the sound basic principles that have endured in the construction industry—thus Peelle Doors are built for quality buildings, planned by Architects and Engineers for the purpose required, with appropriate materials selected, specified, and used.

Peelle stakes its reputation for producing Quality Doors on their performance in every installation large or small—regardless of length of time in service.

Special Door Problems

THE PEELLE COMPANY maintains a file for the use of Architects and Engineers who have special door problems. This file includes the accumulated experience of others in solving difficult door problems. It contains much interesting and informative material and may be consulted at any time without obligation.

MEMBER OF
PRODUCERS
COUNSEL

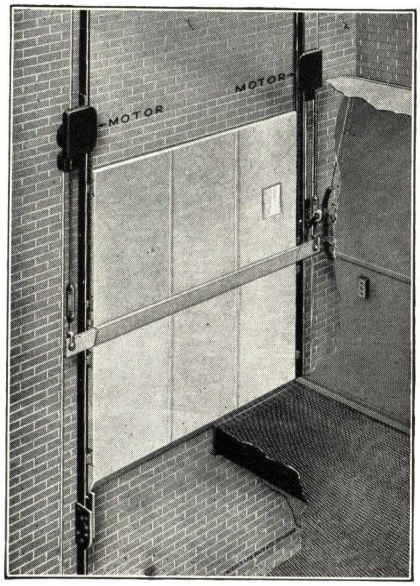
THE PEELLE COMPANY

47 Stewart Avenue — Brooklyn, N. Y.

TELEPHONE — STagg 2-0366

FOR DISTRICT OFFICES SEE BACK COVER

PEELLE DOORS *are made for* THREE CLASSES *of openings . . . .*



PEELLE
MOTORIZED
DOORS

Peelle Motorized Doors are an important factor in the quick and automatic handling of freight in modern, efficiently operated industrial buildings. They increase the efficiency of the entire freight handling organization and personnel, reduce maintenance costs and increase the life of the equipment.

The Peelle Motorized Door is a standard, manually operated door with a motor built into each sheave housing. No auxiliary mechanism is required.

The space required between the elevator car and the shaft wall is the same as for manually operated doors. The doors are controlled from push button stations. Automatic opening, in conjunction with the elevator control is standard on self-leveling elevators.

Manual operation is possible at all times without disconnecting any mechanical or electrical parts.

The Motorized sheaves are standard for all doors, and are the same for either a-c. or d-c. primary current. 220 volts, 3 phase. 60 cycle is preferred.

Low maintenance and operating costs are assured by The Peelle Company's unqualified guarantee which is behind every Motorized installation.

See pages 6 and 7 for the advantages of
Peelle
MOTORIZED
Doors

1. Freight Elevator Doors

Peelle Freight Elevator Doors consist of two vertically sliding leaves, one balancing the other. They are installed on the shaft side of the opening. They serve to protect the openings of fireproof freight elevator shafts and are ruggedly built to withstand the constant heavy trucking of freight elevator traffic. Peelle Freight Elevator Doors may be either motorized or arranged for manual operation.

2. Industrial Entrance Doors

Peelle Industrial Entrance Doors are made in four styles—Telco, Four-Fold, Bi-Fold and Horizontal Sliding—for openings in garages, and at platforms or vehicle entrances in commercial or industrial buildings. They are not made in standard stock sizes but are made to order only. Large size doors are provided with remote control and motorized operation.

3. Dumbwaiter Doors

Peelle Dumbwaiter Doors are of the counterbalanced type, mounted in steel guides with a combination pressed metal frame and trim. The upper leaf slides up while the lower leaf slides down. The entire unit is assembled at the factory, ready for building into the masonry wall while the shaft is being built. The standard door is furnished with a flush panel design, but special designs may be made as desired.

All Peelle Doors are made to order to fit the size of the openings and space requirements of each job. They can be executed in any architectural design and in any of the commercial metals or alloys, in hollow metal, or in sheet metal over wood.

PEELLE FREIGHT ELEVATOR DOORS

Peelle Regular—

Peelle Regular Doors are used wherever spandrel heights above and below the openings in the shaft are of sufficient height to provide unobstructed space for the doors to open fully. The minimum spandrel height must be equal to one-half the opening height plus 6 in.

These doors operate in one vertical plane.

The guides are continuous. The upper leaf of one door operates in the same guide as the lower leaf of the door above, and vice versa. Only one door in a series is open at a time.

Operation—Manual or motorized*.

See pages 6 and 7 for the advantage of motorized operation.

Page 8

Peelle Pass—

Peelle Pass Doors may be used where spandrel heights above and below openings are insufficient to take each door leaf when opened, without encroaching on the openings above and below. The minimum spandrel height required is 10 in.

The two leaves of each door operate in separate vertical planes, each leaf having separate guides. This construction permits the lower leaf of one door to pass in front of the upper leaf of the door below, while the upper leaf passes behind the lower leaf of the door above. The space between the upper leaf of each pass type door and the shaft wall at the lintel is closed with a hinged movable lintel.

Operation—Manual or motorized*.

See pages 6 and 7 for the advantage of motorized operation.

Page 10

Peelle Self-Sealing—

Peelle Self-Sealing Doors are recommended for use on service elevators in office buildings, hotels, department stores, and hospitals, as well as for general freight elevator use.

Peelle Self-Sealing Doors may be used for any shaft opening where the spandrel height is at least 18 in.

Both leaves of Self-Sealing Doors when closed make actual contact with the frame of the shaft opening at both sides, top, and bottom.

Self-Sealing Doors effectually seal the shaft openings against draughts, sounds, odors, dust, and smoke.

When opening, the leaves have an offsetting motion so that when the spandrel height is less than half the opening height plus 6 in., the doors will overlap the shaft doors above and below on the shaft side.

Operation—Manual or motorized*.

See pages 6 and 7 for the advantage of motorized operation.

Page 12

Peelle Elevator Car Gates—

Peelle Elevator Car Gates are made in a single vertically sliding unit and are counterbalanced with weights. The necessary guides are erected on the car platform and these must be the height of the shaft opening plus the height of the gate. Car gates are usually 6 ft. high unless otherwise required by safety codes.

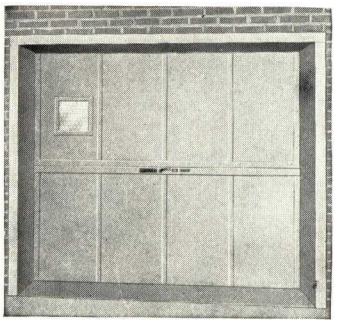
Peelle Car Gates are constructed of 11-gauge wire mesh, set into steel angle frames with vertical and horizontal reinforcements.

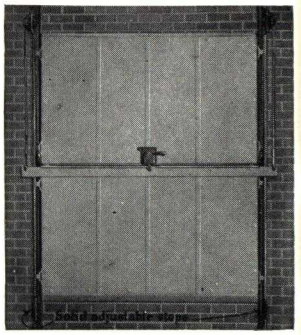
Peelle Car Gates are usually motorized*. When used in conjunction with motorized doors, the gates open and close simultaneously with the doors, and are controlled from the same push buttons.

Car gates, when used in conjunction with manually operated doors, should be motorized so that the elevator operator will not lose the time required to operate the car gates.

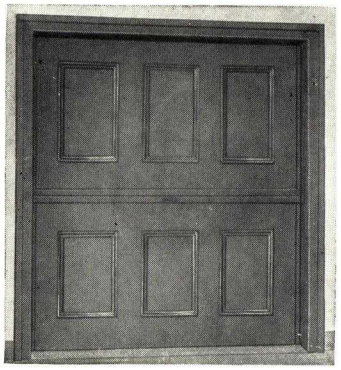
See pages 6 and 7 for the advantage of motorized operation.

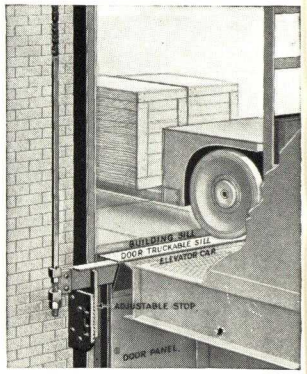
Not covered in this catalog. Further information on request.



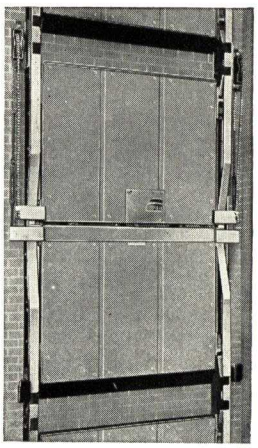


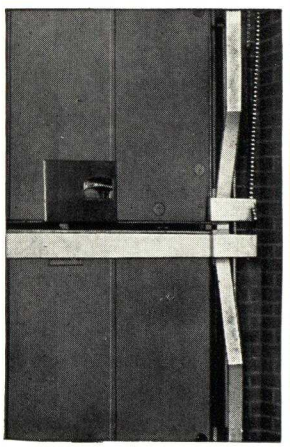
Peelle Regular Doors



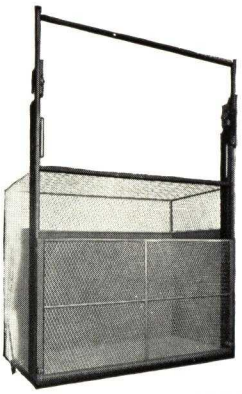


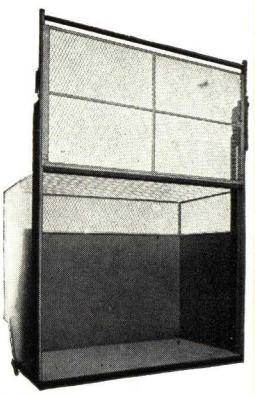
Peelle Pass Doors



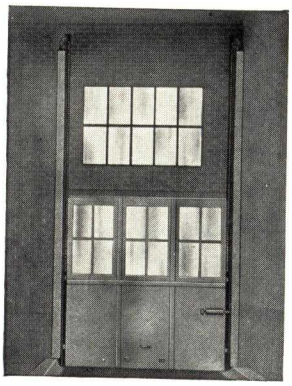


Peelle Self-Sealing Doors

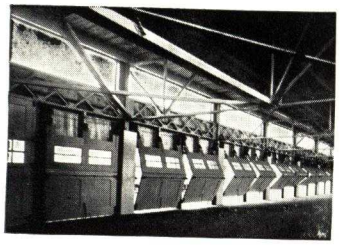




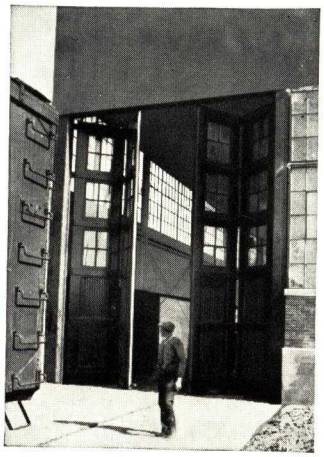
Peelle Elevator Car Gates



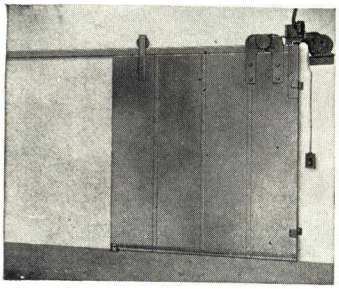
Peelle Telco Doors



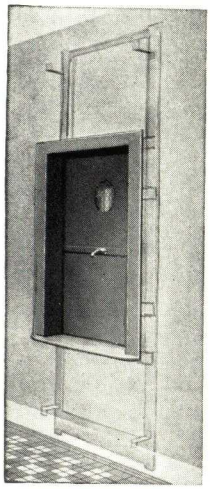
Peelle Bi-Fold Doors



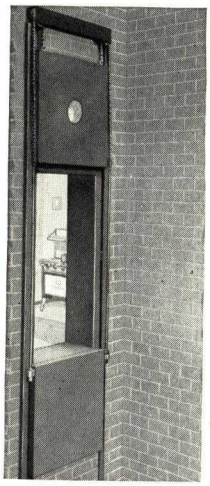
Peelle Four-Fold Door



Peelle Horizontal Sliding Door



Peelle Dumbwaiter Doors



PEELLE DRIVEWAY, PLATFORM AND INDUSTRIAL ENTRANCE DOORS

These doors are designed and made to fit each special condition. They are made in any material desired.

Peelle Telco

Peelle Telco Doors are made in two leaves counterbalanced by weights. They slide up at a ratio of 2 to 1. This door is recommended wherever there is sufficient space overhead and at the jambs to permit its installation. Door openings can be any size.

Page 18

Peelle Telco Doors are usually motorized, but may be made for manual operation.

Peelle Four-Fold

Peelle Four-Fold Doors are made, as the name implies, in four sections which are hinged together to fold vertically. These doors are ideal for use where only a limited space is available and can be made for any size.

Page 19

Peelle Four-Fold Doors are usually motorized, but can be made for manual operation.

Peelle Bi-Fold

Peelle Bi-Fold Doors consist of two leaves horizontally hinged to each other, the upper leaf being also hinged to the head of the opening. The leaves fold together as they swing up while opening. These doors are recommended for the smaller openings and where space limitations prevent the use of either Peelle Telco or Peelle Four-Fold Doors. These doors may be motorized or manually operated.

Not covered in this catalog. Further information on request.

Peelle Horizontal Sliding

This is the simplest type of entrance door, where the space conditions permit its use. The minimum clear height required over the opening is 13 in., and the horizontal dimension on one side must equal the opening, plus 6 in., and 6 in. is required on the opposite side.

There are practically no limitations to the design of these doors or the material from which the doors are made. The most practical and economical construction, however, is wood.

Not covered in this catalog. Further information on request.

PEELLE DUMBWAITER DOORS

The Peelle Dumbwaiter Door unit is a counterbalanced door mounted in steel guides with a combination pressed metal frame and rim. The entire unit is assembled in the factory, ready for building into the masonry wall while the shaft is being built.

The door operates on the inside of the shaft, and takes up no floor space in opening or closing. It may be adapted to any floor plan without confliction. Each door has a 3-in. observation light so that the dumbwaiter is visible with the door closed.

Page 16

The doors are insulated to eliminate noise. The standard door is furnished with a flush panel design and bears the label of Underwriters' Laboratories, Inc.

Note

Standard specifications and construction details for all of the gates and doors described on these pages may be obtained from any district office or the home office.

PEELLE *Motorized* DOORS

SPEED TRAFFIC

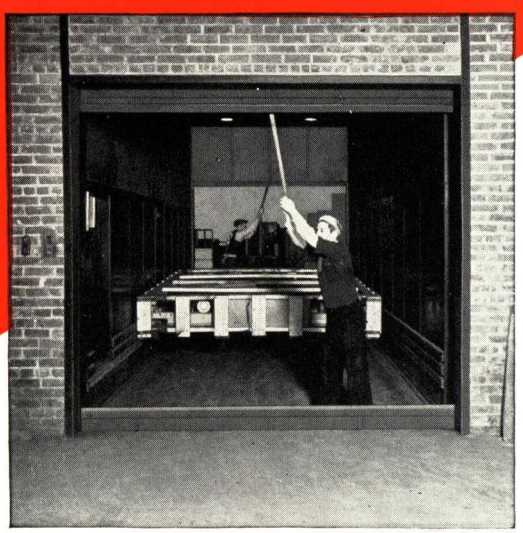
Peelle Motorized Freight Elevator Doors operate from two to four times faster than manually operated doors. Motorized doors open automatically upon arrival of the elevator thus preventing congestion around door openings which cause loss of time, loss of man power and greatly reduce the usefulness of mechanized freight handling apparatus.

With Motorized Doors uniform efficiency is maintained throughout the working day whereas manually operated doors depend for their efficiency upon the physical condition of the operator. *Peelle Motorized Doors always operate at the same speed—Peelle Motorized operators never grow tired.* In industries where production is dependent upon continuous and uniform flow of supplies from one floor to another, Peelle Motorized Doors help to maintain production schedules by expediting movement of materials. The use of Peelle Motorized Doors is justified, therefore, not only because of the elevator time saved but also because the time saved at that point is reflected by increased efficiency throughout other departments.

INCREASE VOLUME HANDLED

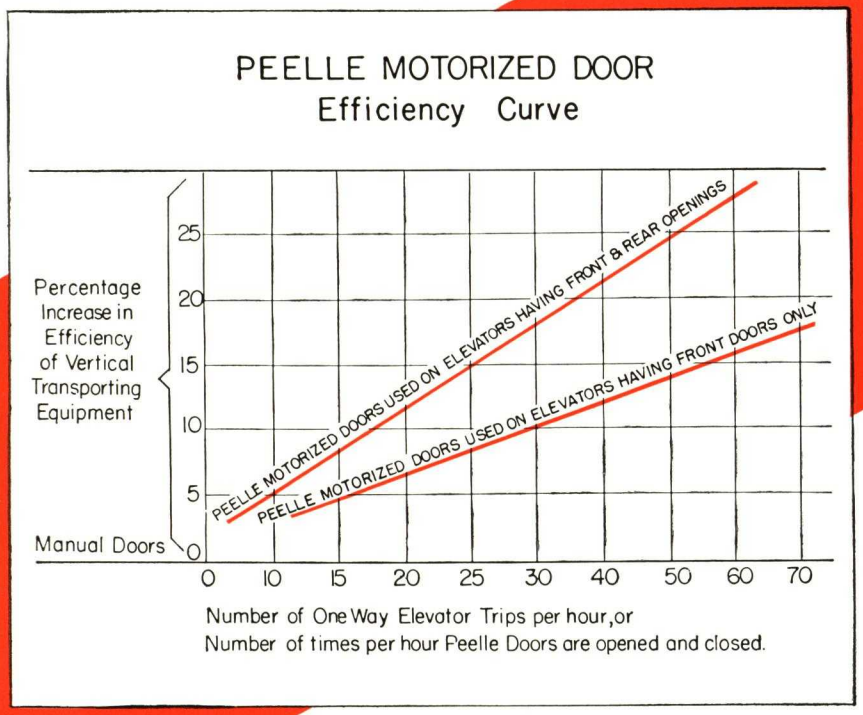
Peelle Motorized Doors permit loading the elevator to its full area capacity. In a fully loaded elevator the latch of a manual door is often difficult to reach—the Peelle Motorized Door opens and closes automatically while the operator remains at the control station.

ONE MAN DOES THE WORK OF TWO MEN



Rear doors, at the opposite end of the elevator, may be opened and closed without the operator moving from his station—no time lost in climbing over or working around the freight to operate the rear doors; nor does the operator require an assistant for this purpose—once the car is loaded, a touch on the push button control and he is on his way.

SPEED TRAFFIC
INCREASE VOLUME HANDLED
LOWER OPERATING COSTS



LOWER OPERATING COSTS
—and Increase Efficiency

Peelle Motorized Doors lower operating costs and increase the efficiency of the elevator in direct proportion to (1) the number of one-way trips, either up or down, the elevator makes per hour; (2) the number of times the doors are opened and closed, and (3) whether Motorized Doors are used on both front and rear openings or on front openings only.

We have developed an interesting formula for computing the savings and increased efficiency resulting from the use of Peelle Motorized Doors. Present your problems to the nearest Peelle office. We will apply the formula and develop a Peelle Motorized Door Efficiency Curve Chart covering your particular case.

Use PEELLE MOTORIZED DOORS for

(1) All automatic leveling elevators.
(2) Elevators having front and rear doors.
(3) Heavy duty freight elevators.
(4) All elevators used for transporting freight that completely fills the car platform.
(5) Freight elevators in industrial plants where production schedules must be maintained and costly delays avoided.

and to assure

ECONOMY SAFETY EFFICIENCY

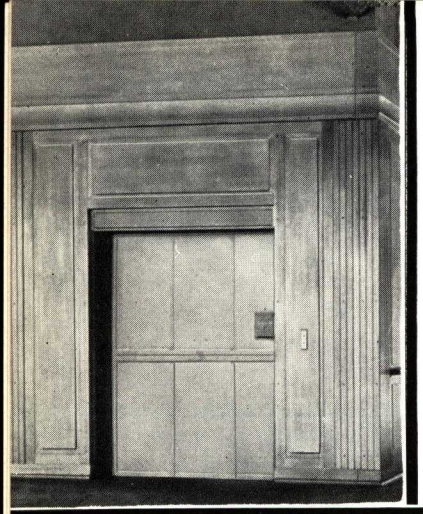
A Few Prominent Users of PEELLE MOTORIZED DOORS

United States Users

American Can Co.
American Railway Express Agency
American Rolling Mill
American Safety Razor Corp.
American Window Glass Co.
A.P.W. Paper Co.
Bakelite Corp.
Beech-Nut Packing Co.
Bliss, E. W. & Co.
Borden Farm Products Co.
Coca Cola Co.
Colgate Palmolive Peet Co.
Congoleum-Nairn, Inc.
Continental Can Co.
Dick, A. B. Co.
Eastman Kodak Co.
Fisher Body Corp.
Ford Motor Car Co.
Fox Film Building
General Aniline Works, Inc.
General Dyestuff Corp.
General Electric Co.
General Motors Bldg.
Hershey Chocolate Corp.
Higbee Department Store
Kelvinator Corp.
Kent Automatic Garages
Kraft-Phenix Cheese Corp.
Kress, S. H. & Co.
Lehigh Valley R. R.
Louisville Gas & Electric Co.
Mead Johnson & Co.
Montgomery Ward & Co.
National Biscuit Co.
New York Central R. R. Co.
New York Telephone Co.
Owens Illinois Can Co.
Pennsylvania Railroad Co.
Phoenix Metal Cap Co.
Public Service (Elec. & Gas Co.) of N. J.
Sears Roebuck & Co.
Simmons Co.
Singer Manufacturing Co.
Standard Oil Co. of N. J.
U. S. Rubber Co.
U. S. Tobacco Co.
Walker, Hiram & Sons, Inc.
Wanamaker, John
Western Electric Co.
Wright Aeronautical Corp.

Foreign Users

Hamilton, Ont.—Hamilton Post Office
Honolulu, T. H.—Honolulu Con. & Dray. Co.
Honolulu, T. H.—Love's Bakery
Montreal, Quebec, Can.—Post Office
Toronto, Ont.—Lever Bros. Ltd.
Toronto, Ont., Can.—Robert Simpson



PEELLE
REGULAR
FREIGHT ELEVATOR DOORS

Motorized* or Manual

FOR USE WHERE THE MINIMUM SPANDREL HEIGHT ABOVE AND BELOW OPENING EQUALS HALF THE HEIGHT OF OPENING PLUS 6 INCHES

SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle "Regular" Counterbalanced Freight Elevator Doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

(2) Work by Others

(2a) Door Opening Frames and Sills—*(Specify under "Miscellaneous or "Ornamental" iron work).* (See page 15 for details and specifications).

(2b) Finish Painting—*(Specify under "Painting."):*

Note

Peelle door guides, hardware and angle frames around door sections are given a priming coat of aluminum paint at the factory. For industrial use no field or finish coat is necessary. Where finish painting is required, it should be included in the same specification under "Painting" with the trim and surrounding surfaces. Where special finishes, such as baked-on enamel, bronze, aluminum, etc., are required, they should be applied at the factory and specified accordingly.

(2c) Power Supply for Motorized Doors — *(Specify under "Electrical Work"):* The electrical contractor shall furnish in the elevator penthouse, for the use of the PEELLE COMPANY, a 220-volt, 3-phase, 60 cycle a-c. supply with a 30-ampere fused safety switch and shall include the necessary conduit and wiring to carry this supply to the Peelle Control Board.

(2d) Miscellaneous Requirements—*(To be furnished by elevator contractor. Specification to be included under "Elevator Work"):* The elevator contractor shall make provision on his car for mounting Peelle door cams, push buttons, emergency release switches and car gates; and on his control board shall provide terminals for Peelle cams, interlocks and shall provide selector relays but wiring shall be done by Peelle.
(If Push Button Elevator is specified, add):
The elevator contractor shall furnish car and hall door-operating push buttons but wiring will be done by Peelle.

(3) Doors

(3a) Construction — Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled copper bearing steel, galvanized sheets, design (select design from page 13). Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Doors shall have movable lintels, where required. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall be run in steel guides and each pair connected with $\frac{5}{8}$ in. square rolled steel rod with special micro adjuster, and No. 6 rust-resisting flexible cable chain, running over double race ball bearing sheaves having machined grooves.

(3b) Operation—

Motorized—Each door shall be equipped with Peelle Motorized electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

Manual—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

(3c) Control—*(For Motorized Doors)*—A push button station for each line of doors marked "Open," "Close," and "Stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of *"Open"* button shall open a door that has been closed without elevator having been moved. Momentary pressure of *"Stop"* button shall stop the doors in any position. Constant pressure of the *"Close"* button shall close doors. Limit switches shall terminate the opening and closing the doors. *Note:* Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

The mechanical latching equipment shall be so designed that the top section of the door automatically locks the lower section of the door when closed, and prevents the raising of the upper leaf from the outside.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, $1\frac{1}{2}$-in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—

Motorized—Car gates shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

Manual—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when gate is open.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

***See pages 6 and 7 for the Advantages of Peelle Motorized Doors**

(6) Wiring

This specification includes all of the wiring to door appurtenances to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of aluminum primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

CONSTRUCTION DETAILS

Details show construction of doors and spaces required in elevator shaft for installation of Peelle Regular Doors.

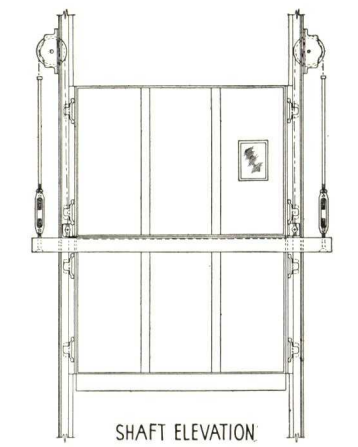
Minimum Spandrel Height—Is one half the opening height plus 6 ins. for either motorized, or manually operated doors. Where Regular Doors are used, the spandrel height at one floor limits the height of opening at that floor, and also height of opening at floor immediately above.

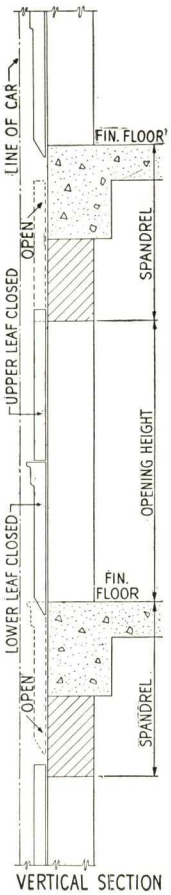
Minimum Jamb Return Space—Is measured horizontally on inside of shaft, from jamb of opening to return wall or nearest obstruction. For manually operated Regular Doors the minimum return should be 9 ins., and for Motorized Doors 12 ins. Where these return dimensions are not available Standard Peelle equipment can usually be modified to meet conditions.

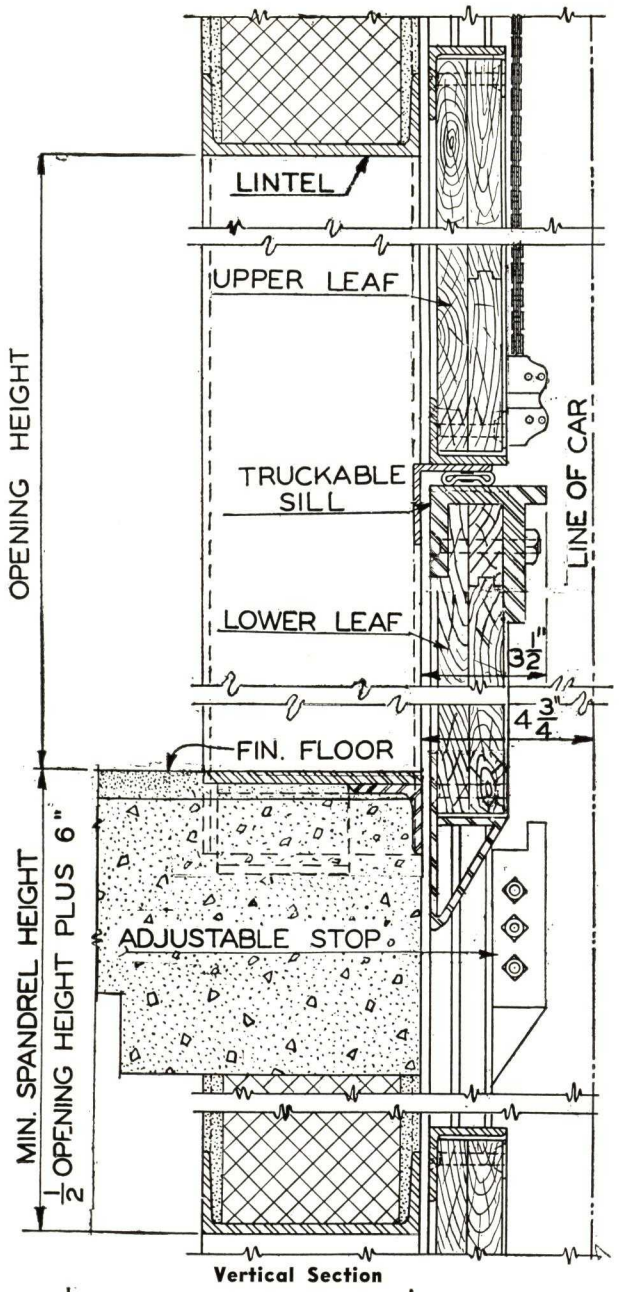
Car Clearance—From flush shaft wall to edge of elevator platform is 4¾ ins. total for Regular Doors, 3½ ins. for the truckable sill of the door, plus 1¼ ins. running clearance for the elevator. Running clearance of elevator may, in case of emergency, be reduced to ¾ ins., giving total clearance of 4¼ ins. For normal tolerances in shaft construction, 4¾ ins. total clearance should be allowed in all cases wherever possible.

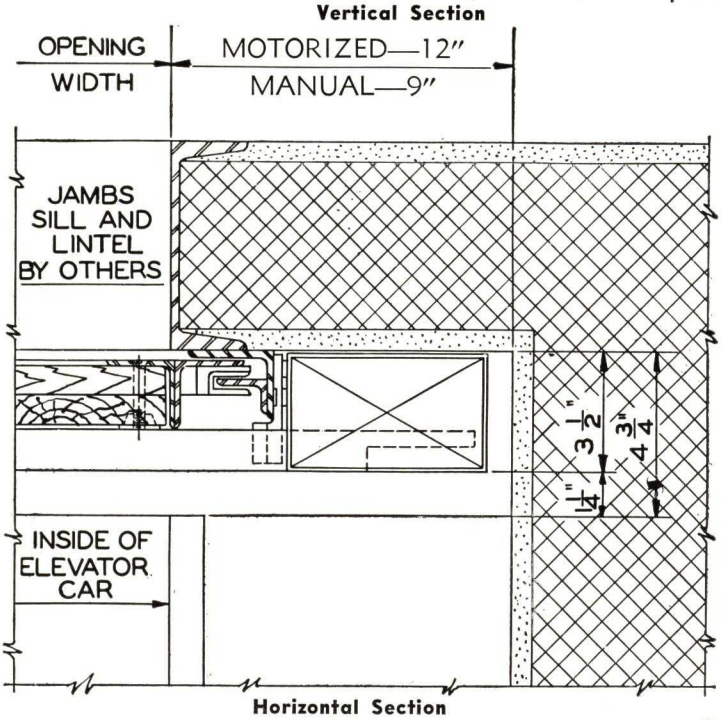
Minimum Pit Depth—Is one-half the opening height of bottom landing shaft opening, plus 3 ins.

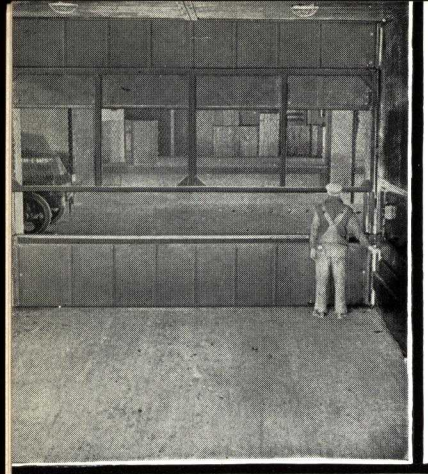
For design of doors, see page 14.
For shaft opening frame details, see page 15.











PEELLE
PASS
FREIGHT ELEVATOR DOORS

Motorized* or Manual

FOR USE WHERE THE MINIMUM SPANDREL HEIGHT IS 10 INCHES

SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle "Pass" Freight Elevator Doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

(2) Work by Others

(2a) Door Opening Frames and Sills—*(Specify under "Miscallaneous" or "Ornamental" iron work.).* (See page 15 for details and specifications).

(2b) Finish Painting—*(Specify under "Painting."):*

Note

Peelle door guides, hardware and angle frames around door sections are given a priming coat of aluminum paint at the factory. For industrial use no field or finish coat is necessary. Where finish painting is required, it should be included in the same specification under "Painting" with the trim and surrounding surfaces. Where special finishes, such as baked-on enamel, bronze, aluminum, etc., are required, they should be applied at the factory and specified accordingly.

(2c) Power Supply for Motorized Doors — *(Specify under "Electrical Work"):* The electrical contractor shall furnish in the elevator penthouse, for the use of the PEELLE COMPANY, a 220-volt, 3-phase, 60 cycle a-c. supply with a 30-ampere fused safety switch and shall include the necessary conduit and wiring to carry this supply to the Peelle Control Board.

(2d) Miscellaneous Requirements—*(To be furnished by elevator contractor. Specification to be included under "Elevator Work"):* The elevator contractor shall make provision on his car for mounting Peelle door cams, push buttons, emergency release switches and car gates; and on his control board shall provide terminals for Peelle cams, interlocks and shall provide selector relays but wiring shall be done by Peelle.

(If Push Button Elevator is specified, add):

The elevator contractor shall furnish car and hall door-operating push buttons but wiring will be done by Peelle.

(3) Doors

(3a) Construction — Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled copper bearing steel, galvanized sheets, design (select design from page 13). Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Doors shall have movable lintels, where required. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall be run in steel guides and each pair connected with $\frac{5}{8}$ in. square rolled steel rod with special micro adjuster, and No. 6 rust-resisting flexible cable chain, running over double race ball bearing sheaves having machined grooves.

(3b) Operation—

Motorized—Each door shall be equipped with Peelle Motorized electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

Manual—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

(3c) Control—*(For Motorized Doors)*—A push button station for each line of doors marked "open," "close," and "stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of "*open*" button shall open a door that has been closed without elevator having been moved. Momentary pressure of "*stop*" button shall stop the doors in any position. Constant pressure of the "close" button shall close doors. Limit switches shall terminate the opening and closing the doors. *Note:* Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

The mechanical latching equipment shall be so designed that the top section of the door automatically locks the lower section of the door when closed, and prevents the raising of the upper leaf from the outside.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, $1\frac{1}{2}$-in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—

Motorized—Car gates shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

Manual—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when gate is open.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

(6) Wiring

This specification includes all of the wiring to door appurtenances to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of aluminum primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

***See pages 6 and 7 for the Advantages of Peelle Motorized Doors**

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

CONSTRUCTION DETAILS

Details show construction of doors and spaces required in elevator shaft for installation of Peelle Pass Doors.

Minimum Spandrel Height—Is 10 ins. for either motorized, or manually operated doors. Where variation in spandrel heights for same line of shaft doors requires Pass Doors at some floors, and Regular Doors at other floors, regular door truckable sills are extended to take up same space in shaft as Pass Type Doors. All shaft walls shall be flush the full height of shaft. Regular Doors with extended sills are shown in vertical section.

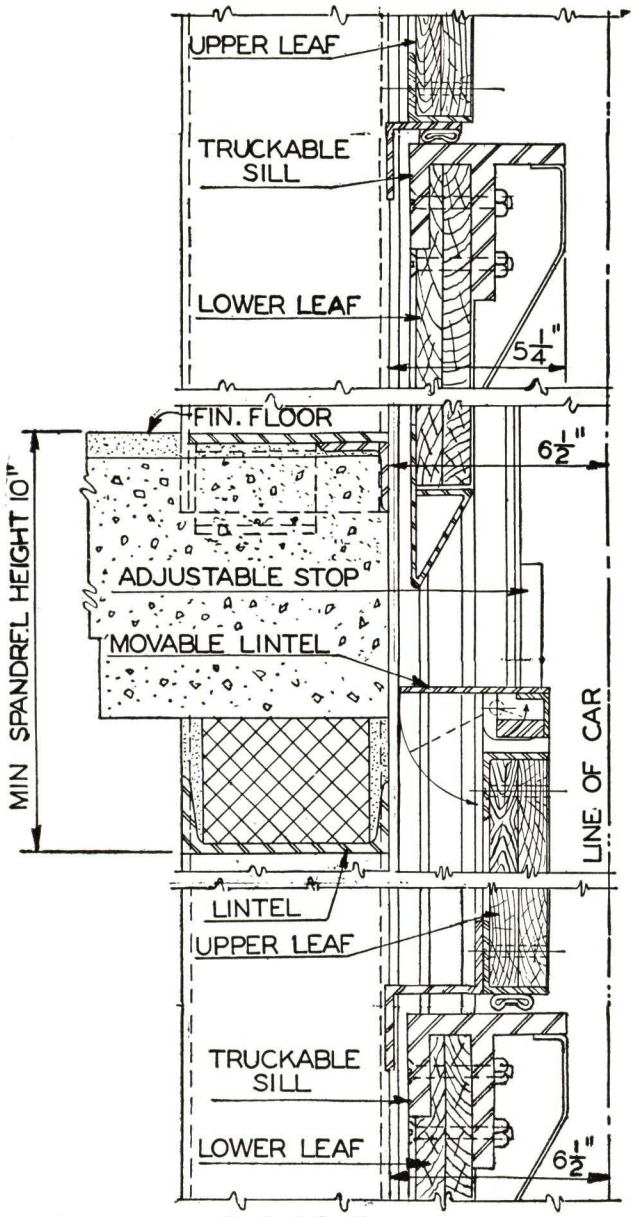
Minimum Jamb Return—Is measured horizontally on inside of shaft, from jamb of opening to side wall of shaft or nearest obstruction. For manually operated Pass Doors the minimum return space should be 9 ins. and for Motorized Doors 12 ins. Where these return spaces are not available Standard Peelle equipment can usually be modified to meet conditions.

Car Clearance—From flush shaft wall to edge of elevator platform is 6½ ins. total for Pass Doors, 5¼ ins. for truckable sill of door, plus 1¼ ins. running clearance for elevator. Running clearance for elevator may, in cases of emergency, be reduced to ¾ in., in which case total clearance would be 6 ins. For normal tolerances in shaft construction, 6½ ins. total car clearance should be allowed in all cases wherever possible.

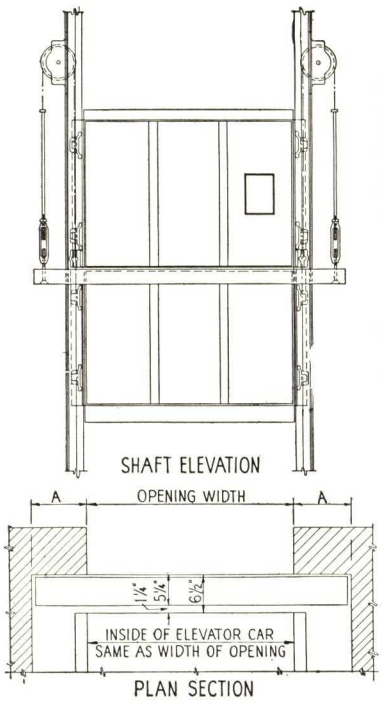
Minimum Pit Depth—Is one-half the opening height of the bottom landing shaft opening, plus 3 ins.

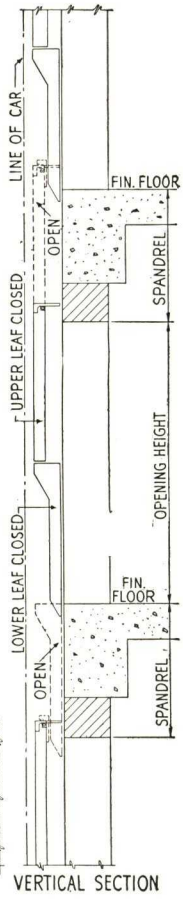
For designs of door, see page 14.

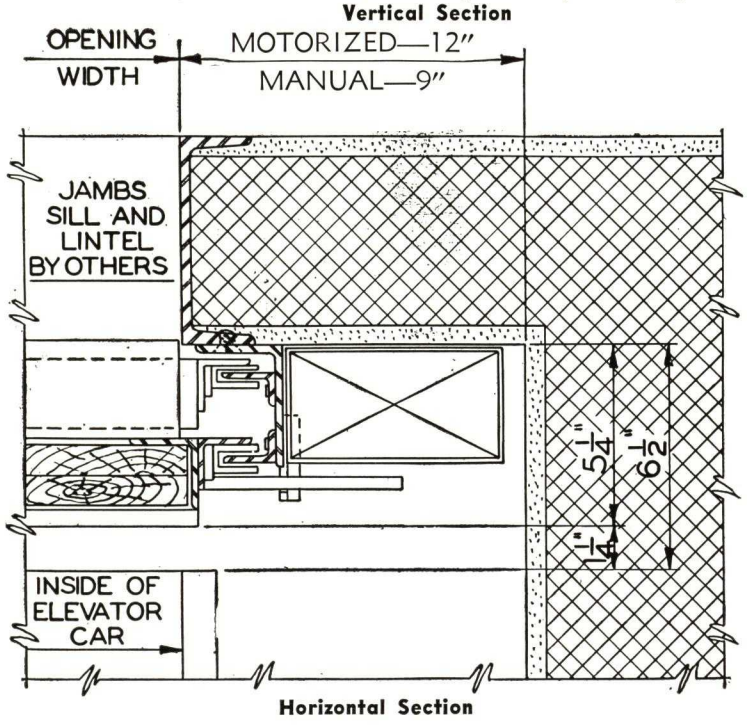
For shaft opening frame details, see page 15.



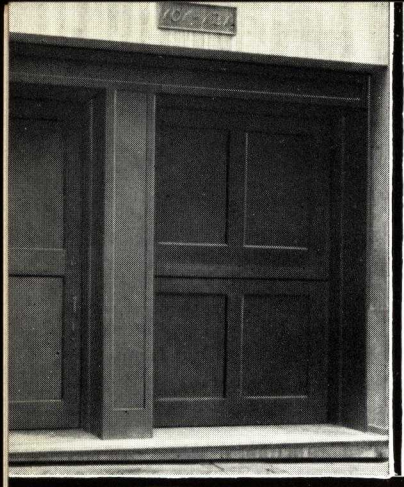
Vertical Section







Horizontal Section



PEELLE
SELF-SEALING
FREIGHT ELEVATOR DOORS

Motorized* or Manual

FOR USE IN OFFICE BUILDINGS, HOTELS, DEPARTMENT STORES, HOSPITALS, AS WELL AS FOR GENERAL USE.

Seal Shaft Openings Against Smoke, Odors, Dust, Sound, Drafts and Light.

Advantages

Self Sealing Doors have special advantages of performance and safety not available in freight elevator doors constructed with conventional methods.

Self Sealing Doors operate vertically in inclined steel guides which carry the door sections away from the wall when opening, and seal the door sections against the wall when closing. This advantage has many applications where it is necessary to eliminate dust, sound, odors, heat or cold.

Cold Storage Buildings

Peelle Self Sealing Doors eliminate drafts and prevent loss of refrigerated air—temperature may be more easily maintained at a constant level where self-sealing doors are used.

Air Conditioning

Where temperature and humidity are controlled Self Sealing Doors eliminate vertical shaft drafts thereby making the control more effective.

Safety

The special guide construction of Peelle Self Sealing Doors permits their use irrespective of the spandrel distance; they are constructed the same regardless of whether "Pass" or "Regular" conditions exist.

The conventional "Pass" door when installed in buildings with low floor heights presents the hazard that might result in a person being struck on the head by the bottom edge of the lower section when the door at the floor above is opening. This hazard is especially dangerous on Push Button Elevators where workers are required to observe the position of the elevator through vision panels.

Since both sections of Self Sealing Doors seal against the wall when closed, this hazard is eliminated by the use of Peelle Self Sealing Doors.

SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle Self-Sealing Freight Elevator Doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y. They shall be designed so that both leaves of each door when closed shall make contact with the shaft opening frame at both jambs, lintel, and sill.

(2) Work by Others

[*Same as for Peelle "Regular" Doors—see page 8.*]

(3) Doors

[*Same as for Peelle "Regular" Doors—see page 8.*]

(4) Interlocks

[*Same as for Peelle "Regular" Doors—see page 8.*]

(5) Car Gates

[*Same as for Peelle "Regular" Doors—see page 8.*]

(6) Wiring

This specification includes all of the wiring to door appurtenances to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of aluminum primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

***See pages 6 and 7 for the Advantages of Peelle Motorized Doors**

CONSTRUCTION DETAILS

Details show construction details and spaces required in shaft for installation of Peelle Self-Sealing Doors.

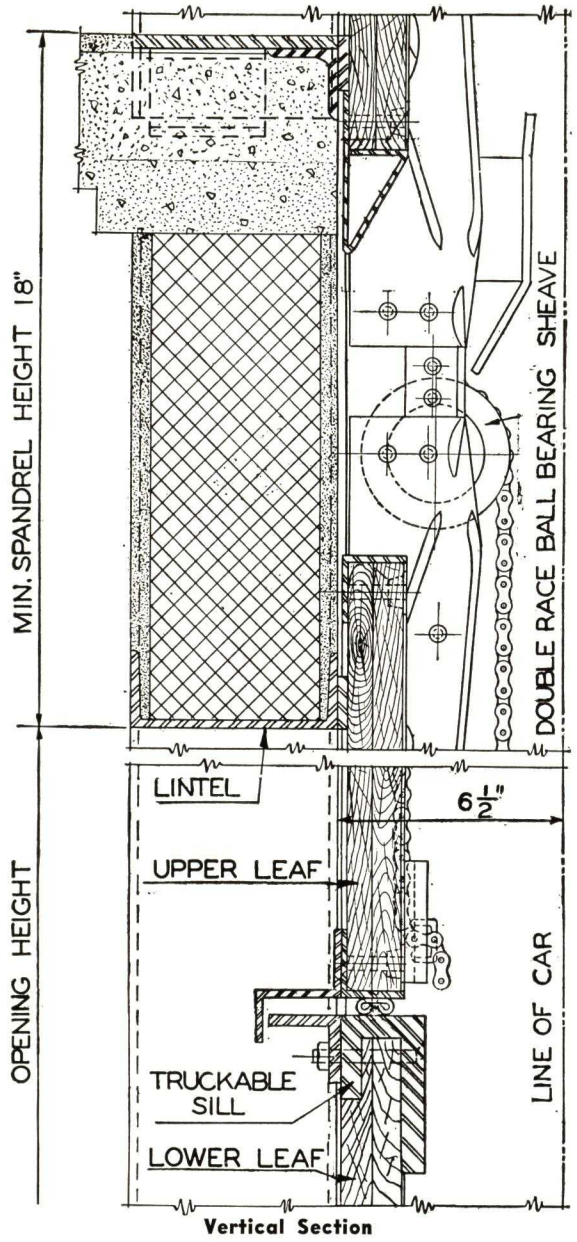
Minimum Spandrel Height—Is 18 ins. for either motorized or manually operated doors.

Minimum Jamb Return—Is measured horizontally on inside of shaft, from jamb of opening to side wall, or nearest obstruction. For manually operated Self-Sealing Doors the minimum return space should be 9 ins. and for Motorized Doors 12 ins. Where these return spaces are not available standard Peelle equipment can usually be modified to meet conditions.

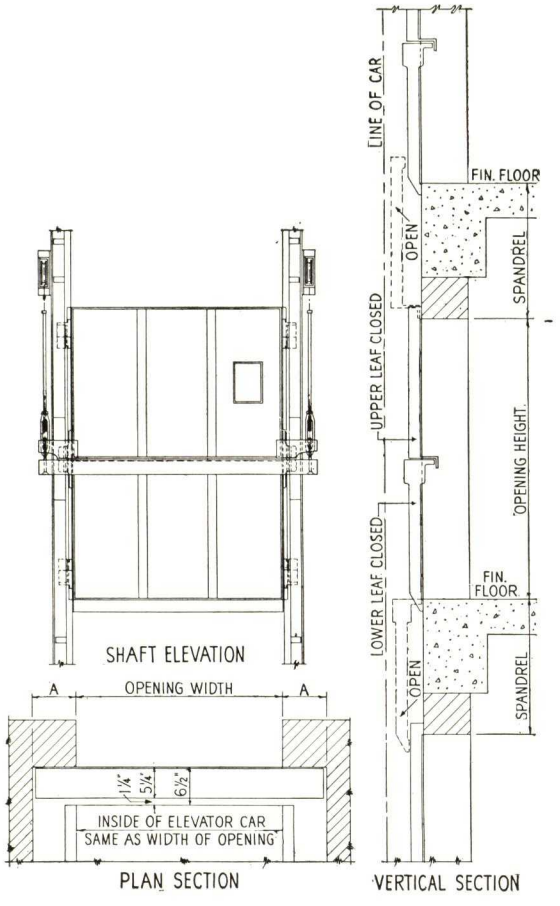
Car Clearance—From flush shaft wall, in which openings occur, to edge of elevator platform is 6½ ins. total for Self-Sealing Doors, 5¼ ins. for the truckable sill of door plus 1¼ ins. running clearance for elevator. Running clearance for elevator may, in case of emergency, be reduced to ¾ in. in which case the total clearance would be 6 ins. To allow for normal tolerances in shaft construction, 6½ ins. total clearance should be allowed in all cases wherever possible.

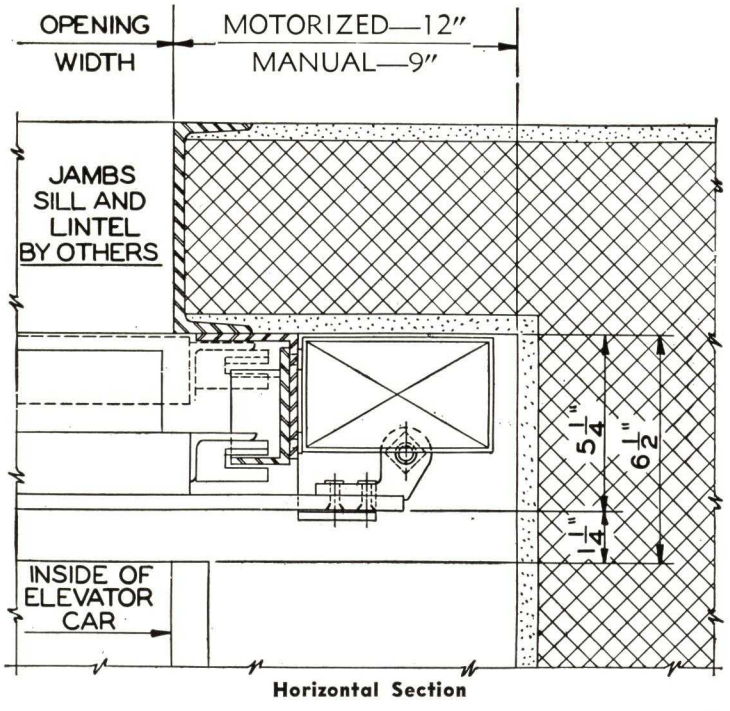
Minimum Pit Depth—Is one half of bottom landing shaft opening height plus 3 ins.

For design of doors, see page 14. For shaft opening frame details, see page 15.



Vertical Section

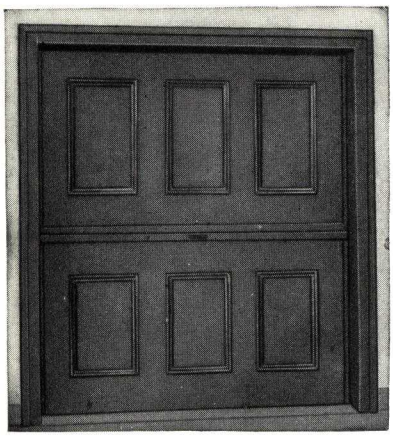




Horizontal Section

THE PEELLE COMPANY

PEELLE FREIGHT ELEVATOR DOOR DESIGNS



K-3 Kalamein Panelled Door, Three Solid Panels in Each Half

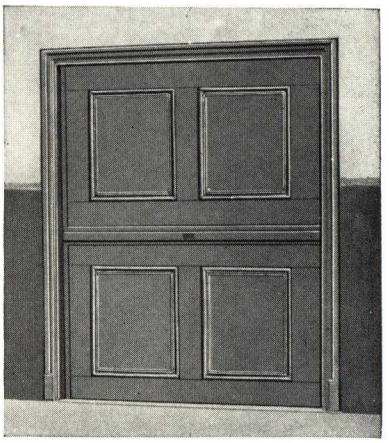
Standard Designs

Peelle Freight Elevator Doors can be made to any desired architectural design.

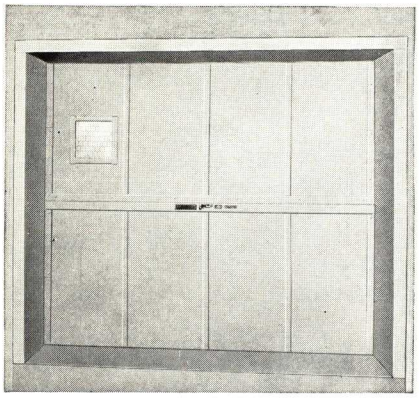
Designs R-9, or R-10, are standard for use in industrial buildings, where fine finish is not a consideration. The other designs show panelled doors which have been used where doors face public spaces, in corridors of commercial and institutional buildings, in sales spaces of department stores, etc.

All standard designs apply equally to all Peelle Freight Elevator Doors.

Peelle Doors for service and freight elevators in office buildings, hotels, department stores, hospitals, sanitariums, museums, etc., may be built to architectural designs to harmonize with the surrounding decorations.



K-1 Kalamein Panelled Door, Two Solid Panels in Each Half



R-10 Galvanized Metal Covered Door, with Flush Panels
R-9 without observation light
R-11 with two observation lights

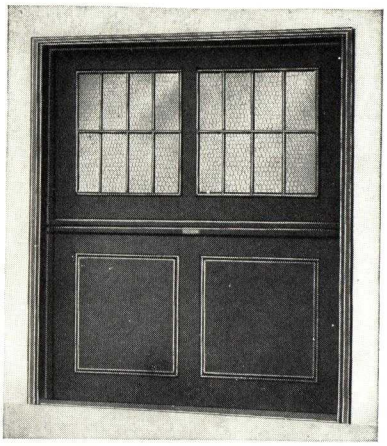
General Features

Glass—The legal maximum glass surface in any one door is 144 sq. in. except for exterior doors which may have larger glass area.

All doors having observation lights are furnished including the glass. Doors having glass of a larger area than observation light are not furnished with the glass.

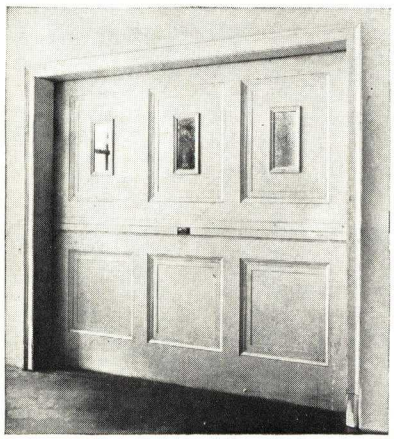
Underwriters' Label—The label of the Underwriters' Laboratories can be furnished on all Peelle Freight Elevator Doors. In such doors one 8 in. x 10 in. clear wire glass panel is standard, or two glass panels, the total area not exceeding 144 sq. in.

Painting—All standard metal doors and hardware, except the galvanized covering, receive one shop coat of aluminum primer. Special painting, enamel or grained finish will be done when so specified.



O-9 Kalamein Panelled Door, with Standard Size Steel Sash in the Upper Half

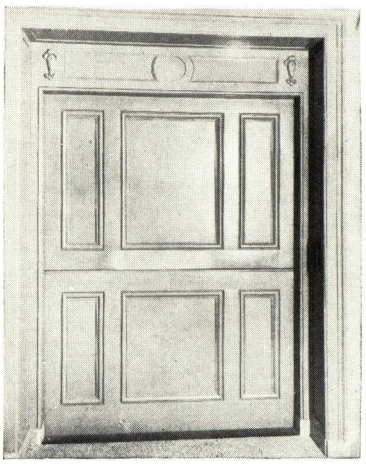
Because of the large glass area, this design can be used only on exterior wall openings



Special Designs

We desire to emphasize that there is no need for the architect, because of any esthetic reason, to hesitate using Peelle Freight Elevator Doors. We are prepared to execute designs in bronze, rust resisting steel alloys or any other metal, plain or ornamental, in accordance with the best standards of craftsmanship in use in the metal covered, hollow metal or ornamental metal trades.

Any desired finish whether to specifications or to sample may be obtained, including any kind of paint, enamel, baked enamel, imitation wood grained or special metal finish.



SHAFT OPENING FRAMES REQUIRED FOR PEELLE DOORS

Typical Details

Although the shaft opening frames for Peelle Doors are usually furnished by the miscellaneous iron contractor, this sheet of details is submitted to help the architect design the shaft opening to obtain the best practical result.

Steel frames in the shaft openings not only provide a substantial fastening for the door guides, but also provide an accurate base, or datum from which the door manufacturer may work. Steel frames also protect the masonry from damage by heavily loaded trucks.

Shaft Side Elevation—The upper left hand corner "shaft side elevation" shows a typical frame. Shaft opening frames are usually constructed of channels 1 in. deeper than the thickness of the masonry wall. This allows for plastering if required.

Freight elevator shafts are seldom plastered on the shaft side, and only occasionally on the room side. Where the outside of the shaft wall is not plastered, it should be specified that the masonry contractor should point up between the leg of the channel and the wall around the opening.

Frames may, if desired, be exactly the same depth as the masonry, but this construction requires considerable labor to cut the masonry to fit the channels. Whether the frames are constructed of channels 1 in. deeper than the masonry wall, or the same depth, the finished shaft is measured from shaft side face of the channel leg.

Vertical Section—"Vertical Section" shows a frame where it is not intended to plaster the room side of the shaft.

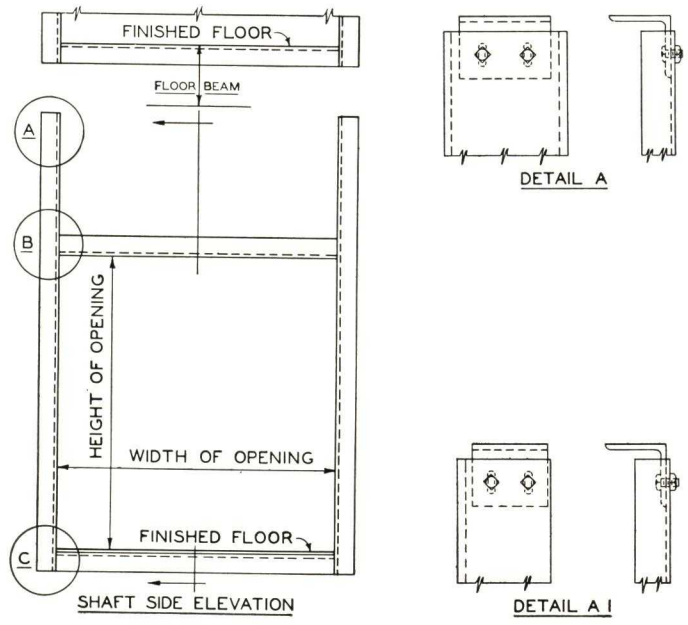
Alternate Vertical Sections 1 and 2—"Alternate Vertical Section 1" shows a frame where it is intended to plaster the room side of the shaft. Note the room side leg of the channel is cut out above the lintel. This construction reveals the frame only around the opening on the room side. The "Alternate Vertical Section 2" shows a frame where the vertical, or jamb members extend to the lintel only. This construction is permissible where the shaft is constructed of at least 8-in. brick, or 8-in. concrete.

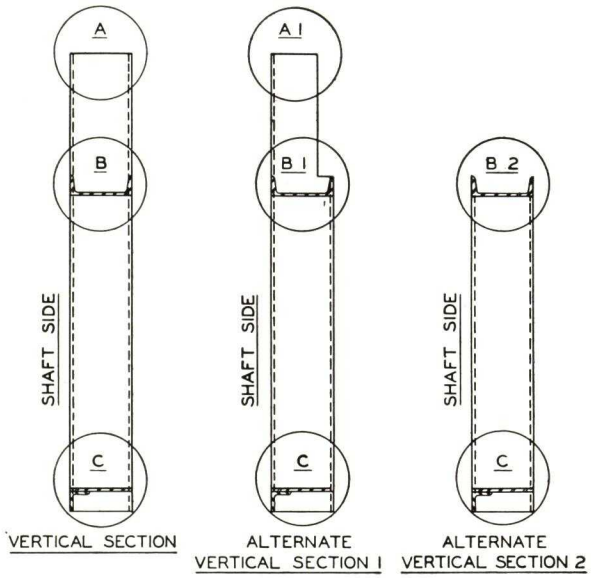
Details A, A1, B, B1, B2 and C—Details A, A1, B, B1, B2 and C suggest methods of construction. These details may be modified to suit the standard practice of the fabricator.

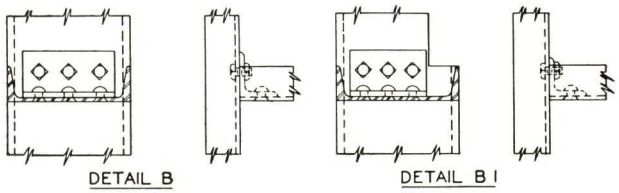
Specifications

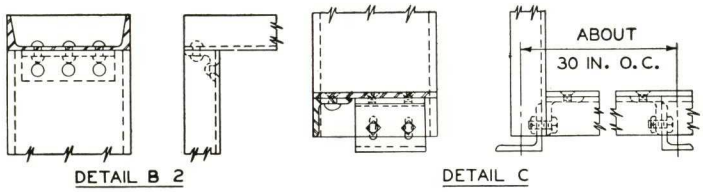
(To be included under "Miscellaneous" or "Ornamental" iron work)

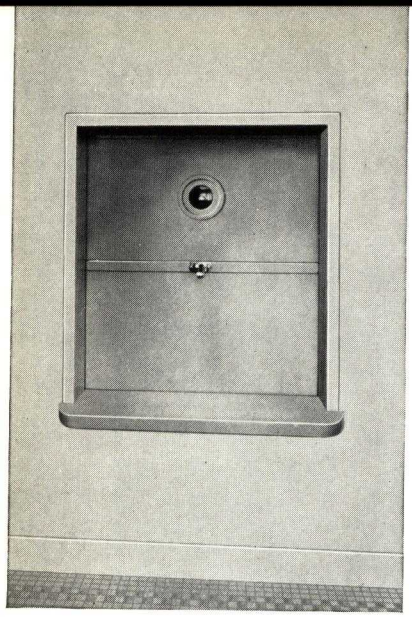
The iron contractor shall furnish and install steel frames and sills for the Peelle door openings as shown on the plans. These steel frames and sills shall be set with their jambs flush with the shaft wall and in vertical alignment, and sills perfectly level. These frames and sills shall be located in accordance with the final drawings of the elevator contractor and the Peelle Company.



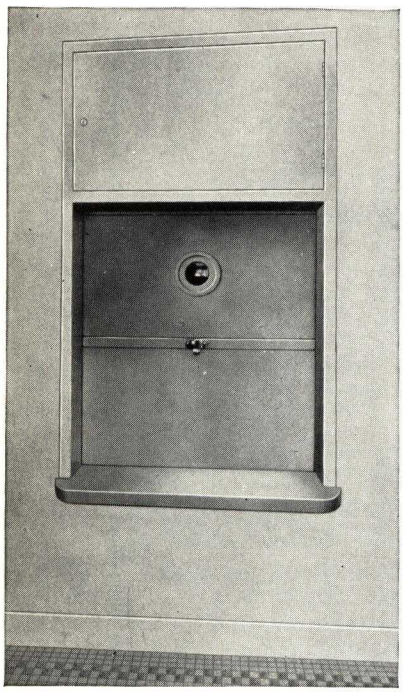




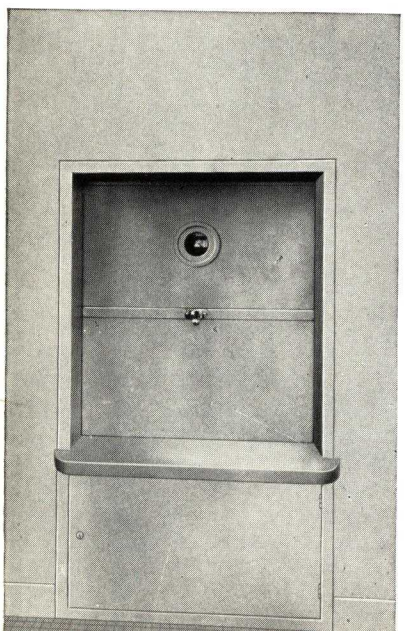




DW1
Peelle Standard Counterbalanced DW Door Unit



DW1A
Standard Peelle Counterbalanced DW Door with Swing Access Door Above



DW1B
Standard Peelle Counterbalanced DW Door with Swing Access Door Below

PEELLE
DUMBWAITER DOORS

FACTORY-ASSEMBLED DUMBWAITER DOOR UNITS READY FOR SETTING INTO MASONRY WALL DURING CONSTRUCTION.

FOR USE WITH ELECTRIC OR HAND-POWER DUMBWAITERS; ALSO WITH SUBVEYORS AND CONVEYORS, TRAYVEYORS and RUBBISH CHUTES.

General Description

Peelle Dumbwaiter Door Units are all steel, factory-fabricated Units. They are quiet and easy to operate and are designed to give satisfactory and maintenance-free service.

The units are mounted in steel guides with combination pressed metal frame, trim, and shelf. The entire unit is assembled in the factory, ready for setting into the masonry wall during construction. The door sections are constructed of two steel sheets and filled with a fireproof acoustical filler.

Underwriters' Label

Peelle Dumbwaiter Door Units bear the label of the Underwriters' Laboratories, Inc.

Uses

Peelle Dumbwaiter Doors are used with electric or hand power dumbwaiters, subveyors, conveyors or trayveyors in hospitals, hotels, clubs, and office buildings. Doors of a similar construction, or doors that slide up in one section are used with laundry and package chutes.

Convenience

The door operates on the inside of the shaft, and takes up no floor space in opening or closing. It is adaptable to any plan arrangement. Each door has a 3 in. observation light so that the dumbwaiter is visible with the door closed.

Durability

Unit is built of steel throughout. There are no parts to wear out, or weights to drop off. A heavy flat link chain connects the two door sections. Sheaves are double duty ball bearing type.

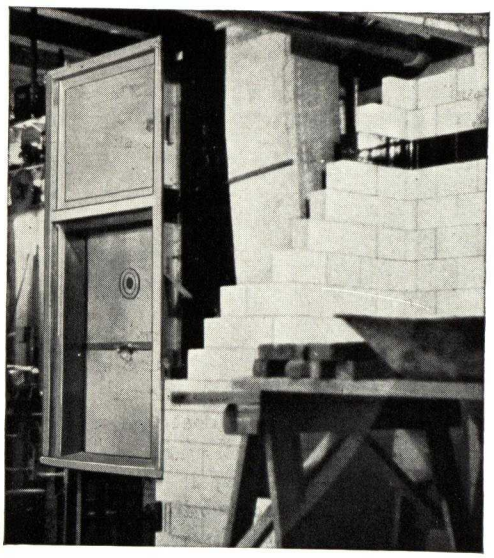
Operation

The two halves of each door are perfectly balanced, and have malleable shoes to eliminate friction. This construction, in conjunction with ball bearing sheaves, provides easy and swift opening and closing.

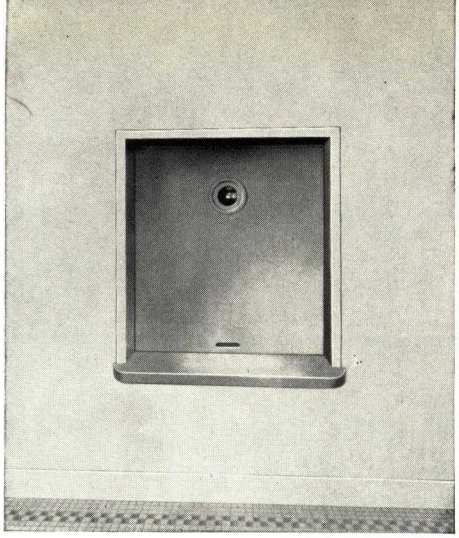
Safety

Each unit, for electric dumbwaiters, is provided with an electric interlock to prevent the operation of the dumbwaiter except when all doors in the shaft are closed.

Each door is also equipped with an automatic lock that prevents the door being opened except when the dumbwaiter is at the landing.

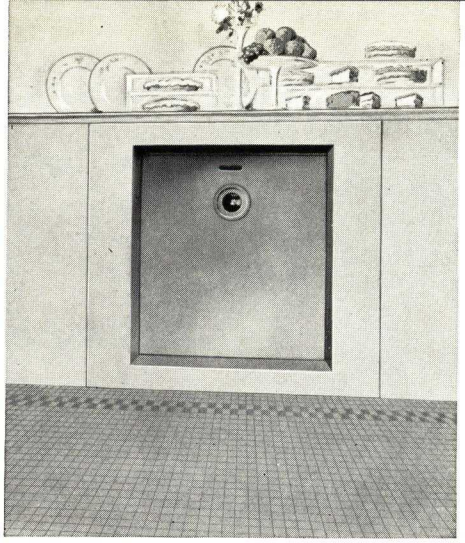


Peelle Dumbwaiter Unit Being Installed



DW1V
(Left) — Peelle One-piece Vertical Slide Up Dumbwaiter Door Unit

DW1D
(Right) — Peelle One-piece Vertical Slide Down Dumbwaiter Door Unit (Under Counter)



Erection

The doors, frames, guides and hardware are assembled in the factory to make a complete working unit. No field erection is required. The unit is built into the masonry wall like a window frame.

Economy

The first cost is the last cost. This unit saves maintenance and upkeep, saves floor space, saves time in opening and closing, and saves field erection.

Finishes

The frame is of pressed metal, with sanitary trim, mitered and welded at the corners. The unit as a whole is designed to present a pleasing architectural appearance. Standard units are furnished in steel with one prime coat of paint. When specified, the doors can be furnished in stainless steel, aluminum or bronze.

Where painted decorative effects are desired, it is preferable to have the work done by the painting contractor rather than at the factory. As the units are installed before plastering is completed the finish is apt to be damaged while construction is being carried on.

SPECIFICATIONS

Dumbwaiter Doors

The openings to the dumbwaiter shall be provided with Peelle Standard Dumbwaiter Unit No. .... manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

The Peelle Dumbwaiter Unit shall be completely assembled with steel guides, integral frame and trim, ready for setting into the masonry wall by the general contractors.

The door sections shall be constructed of two thicknesses of 16 gauge flat steel sheets reinforced at all edges with channels. Door sections shall be 1 inch thick and filled with fireproof acoustical filler. The door sections shall be connected to each other with flat link cable chain running over malleable iron, double race ball bearing, turned groove sheaves.

Each door shall be equipped with a 3-in. observation light. Each door shall bear the label of the Underwriters' Laboratories, Inc.

The integral frame and trim units shall be made to fit a masonry wall of (4 in.) (5 in.) (6 in.) thick, with an allowance for plaster on (one or both) sides

The assembled units shall have one prime coat of paint before shipment, to be finished by others on the job.

The doors shall be guaranteed for two years against defects in workmanship and materials by the manufacturer.

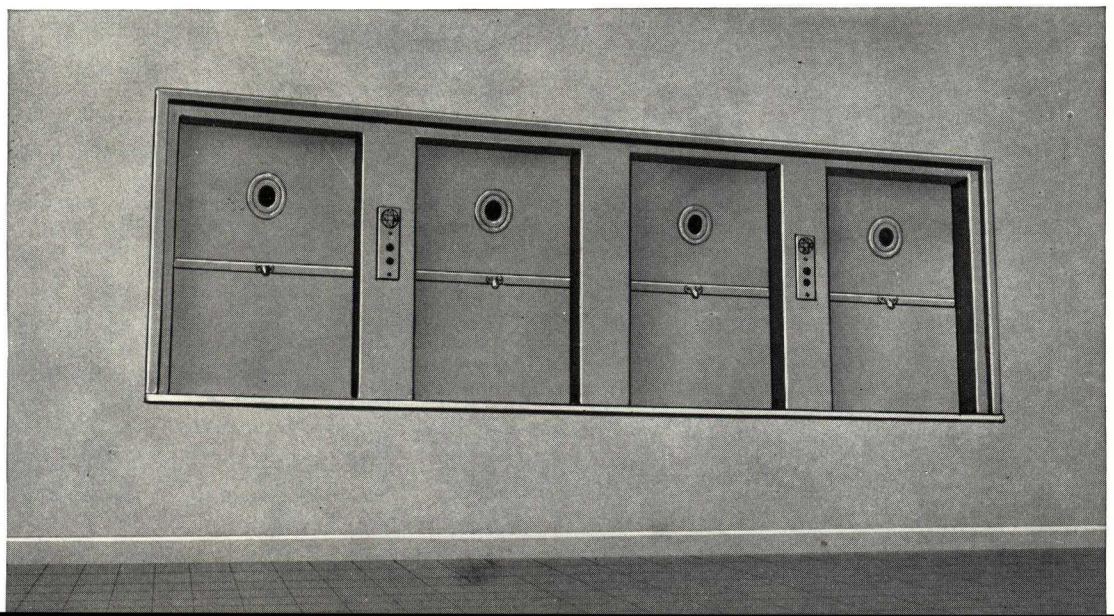
Dumbwaiter Door Locks

(For Electric Dumbwaiter)

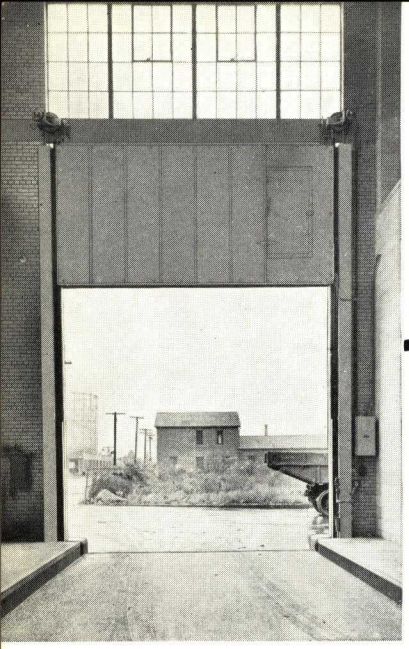
Each of the Peelle Dumbwaiter Door Units shall be equipped with the Peelle combination interlock and automatic lock. The wiring of the interlock and installation of the cam for operating the automatic locks shall be done by the dumbwaiter manufacturer.

Space Requirements

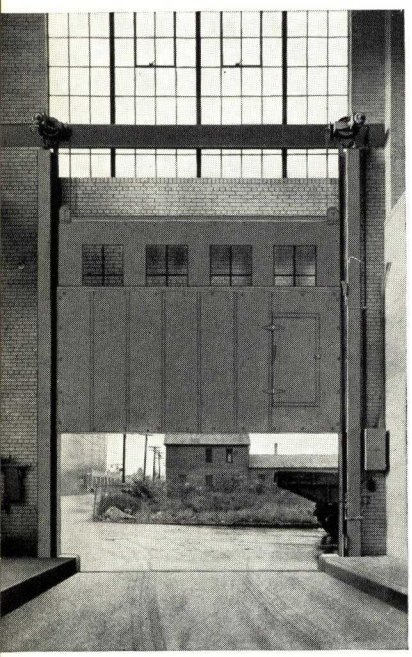
Between the dumbwaiter car and sill of door opening 2 in. are required. Minimum return spaces for electric dumbwaiters are 4½ in. on the interlock side and 2¼ in. on the opposite side. For hand power dumbwaiters, the minimum returns are 2¼ in. on each side.



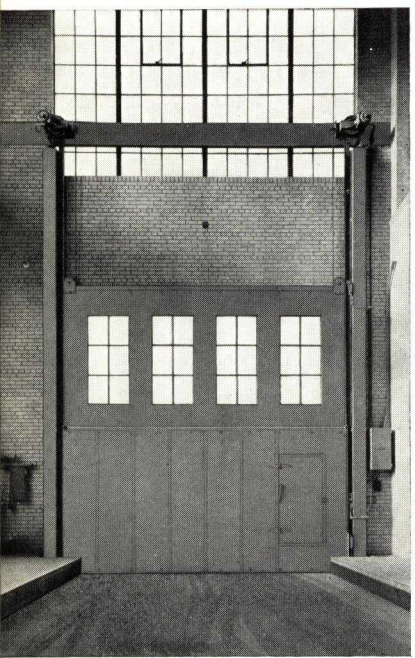
DW4
Peelle DW Doors may be made in banks of two or more Units



Telco Door Open



Telco Door Half Closed



Telco Door Closed

PEELLE
TELCO
ENTRANCE DOORS

Motorized or Manual

Description

The Peelle Telco Door is a two-section, vertical sliding telescopic door. Both halves travel up simultaneously, the lower half traveling at twice the speed of the upper section.

Advantages

The Peelle Telco Door when open is completely out the way of vehicular traffic passing through the door opening. There are no obstructions at either side of the driveway.

Space Requirements

Minimum return space required at each jamb is 16 in. for motorized doors. For manual doors 21 in. is required on one side and 6 in. at the other. Headroom needed is one half the opening height plus 2 ft. 6 in.

Motorized Control

For the operation of Motorized Peelle Telco Doors the same system that has been so successful with Peelle Motorized Elevator Doors is employed. Because of its extreme simplicity this system can be relied upon for efficient trouble-free operation. In case of power failure, the doors can be operated manually without disconnecting any mechanical or electrical part. One or more push button stations may be used.

Construction

Peelle Telco Door sections are usually constructed of metal clad wood with steel angle framing. Sections may, however, be all-steel, bronze or aluminum. For ordinary use, wood (metal clad) is recommended because of the inherent rigidity of the laminated wood core. This construction will withstand the impact of moderate collisions without requiring expensive straightening and repairs.

Door guides, hardware, operating mechanism, etc., are the same for all doors regardless of the material used in their construction.

SPECIFICATIONS

Furnish, deliver and erect in complete working order, two-speed vertical sliding Motorized Telco Doors as shown on the plans. This equipment shall be furnished and installed by The Peelle Company, 47 Stewart Avenue, Brooklyn, New York, in strict accordance with the plans and following specifications, subject to the approval of the Architects and Engineers. The entire installation shall be of a type that has been in satisfactory commercial operation for at least five years.

Frame and Sill—The sill and the framing for the opening is specified elsewhere.

Painting—The finished painting of this equipment is specified elsewhere.

Electric Service Supply—220 Volt, 3 Phase, 60 Cycle current for the use of the door contractor shall be supplied at the door, as specified under the electrical specifications.

Door Sections—Shall be wood (metal clad) with steel angle iron frame, etc. in accordance with the manufacturer's standard practice. (If glass is used, glass and glazing should be specified under "Glazing" and be done by the glazing contractor.)

Door and Counterweight Guides—The door guides shall consist of a heavy wall angle to which the door guide angles are securely riveted. The door guides shall be secured to the steel framing and the jambs with machine screws, drilled and tapped in the field and set plumb at the proper gauge to provide a minimum clearance. The counterweight shall run in a steel guide consisting of four corner angles fastened to each other with rectangular braces spaced not more than 30 in. on center. The weight box shall be enclosed the full run of the counterweights with the front cover removable. Sheet metal cover for the weight guides shall be not less than 16 gauge.

Sheaves and Chains—The door shall be balanced with counterweights running in the steel enclosed guides as specified above. The door shall be connected to the counterweights with a heavy flat link flexible cable chain.

Electric Operation—The Motorized Sheave shall operate the door. The motor shall be of ample size and duty to operate the door smoothly without stalling or hesitating. The chains described above shall run over the Motorized Sheave which shall be of malleable iron construction with turned grooves. The

sheave shall be set in malleable iron housing, and shall be equipped with highest grade roller bearings, having inner and outer ground sleeves. The operator shall be so designed that the door may be operated manually at any time without disconnecting any of the electrical or mechanical parts.

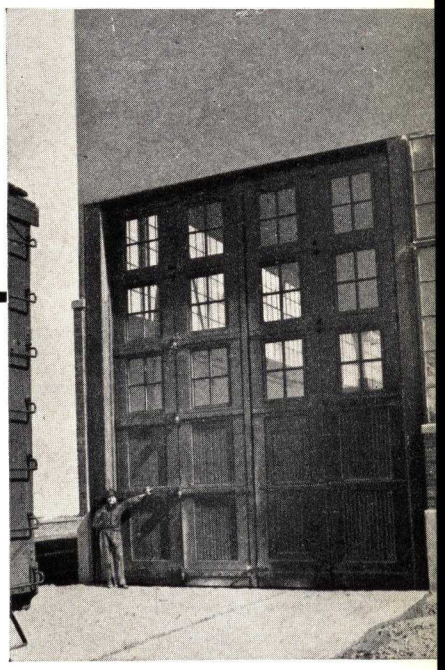
Electric Control—The control panel shall be of the enclosed type, and shall have mounted on the panel board, automatic reversing contactors, fused knife switch, and suitable thermal relays to protect the motor. The controlling apparatus shall include suitable limit switches and push buttons placed where indicated on the plans. Push button station shall consist of three buttons mounted in one box plainly marked "Open," "Close," and "Stop." The momentary pressing of the "Open" button will allow the door to open to its full limit of travel. The momentary pressing of the "Stop" button will stop the door at any position in its travel. The continuous pressing of the "Close" button shall close the door.

Electric Wiring—The electric wiring is specified elsewhere, and shall be done in accordance with the wiring diagrams supplied by the door manufacturer.

Guarantee and Shop Drawings—This manufacturer shall furnish complete shop drawings for approval before proceeding with the manufacture of this equipment. The entire installation shall be guaranteed for a period of not less than two years, to the extent that all defective or worn parts will be replaced free of charge.

PEELLE
FOUR FOLD
ENTRANCE DOORS

Motorized or Manual



Four Fold Door Closed

Description

The Peelle Four Fold Door is composed of four vertical sections, the leaves or sections being hinged together in pairs and each pair folding toward the jamb to which it is hinged.

The hardware is especially designed and of extra heavy construction throughout to prevent sagging and to assure satisfactory and maintenance-free service. Ball bearings are used in the hinges which are equipped with grease gun fittings to facilitate lubrication and to assure easy operation.

Advantages

The Peelle Four Fold Door is an exceedingly rugged door for large openings for use where only minimum return spaces at the jambs and overhead are available.

Space Requirements

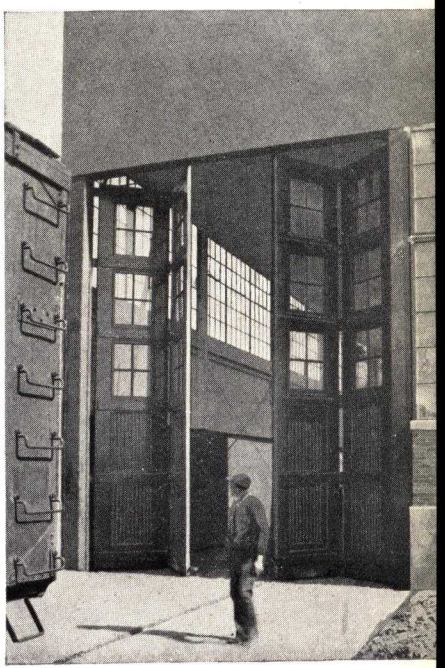
Minimum return space required at each jamb is 12 in.; overhead, 19 in.

Motorized Control

The electric operator is especially designed for the Peelle Four Fold Door, providing slow start and stop with fast operation but without slamming. An automatic release is provided so that the doors may be manually operated in case of power failure. One or more push button stations may be employed according to requirements.

Construction

The sections of the Peelle Four Fold Door are usually constructed of 2¾ in. thick white pine and this is the recommended construction. Sections, however, may be all-steel, bronze or aluminum if desired.



Four Fold Door Partly Open

SPECIFICATIONS

Doors to be furnished and erected under this specification shall be Peelle Four Fold Doors as manufactured by the Peelle Company, 47 Stewart Avenue, Brooklyn, New York, at locations shown on plans.

Door Sections—Door sections shall be of elevation shown on plans, stiles and rails being 2¾ in. thick two-ply White Pine glued and blind screwed together.

Hinges—Hinges shall be malleable iron and steel, full ball bearing, spring cushioned with vertical screw adjustment, grease gun lubricated and weatherproof.

Astragals—Astragals of rubberized fabric and 5 in. wide strap steel shall be supplied for all doors.

Miscellaneous—The iron contractor shall provide iron plates securely welded to his iron opening frames wherever shown and shall perform such drilling and tapping in same or in other iron faces of jambs or heads of openings as is shown on plans or required by this door contractor.

Control of door leaves in their swing-fold motion shall be effected through control rods as furnished and installed by this contractor.

Door leaves and hardware shall be furnished with prime coat of paint. Door panels shall be treated with No-D-K, a termite proof appliance before priming. All finished painting is to be performed under the painting contract and all glass and glazing under the glazing contract.

Electric Operation—The door shall be equipped with a Peelle Four Fold electric operator, with all necessary motor, brake, limit switches, push buttons, controller and manual release.

All wiring including hook up of motor shall be performed, in accordance with wiring diagrams of the Peelle Company, by the electrician who shall also furnish knife or cut-out switches as required by municipal ordinance.

Guarantee—Entire installation shall be guaranteed for a period of two years by the manufacturer.

THE PEELLE COMPANY

BROOKLYN, N. Y.

DISTRICT OFFICES

	Address	Telephone
ATLANTA, GA.,	212 Red Rock Bldg.	Jackson 2284
BOSTON, MASS.,	131 State St.	Lafayette 5539
BUFFALO, N. Y.,	259 Delaware Ave.	Cleveland 3566
CHICAGO, ILL.,	130 North Wells St.	Central 6475
CINCINNATI, OHIO,	5901, C-Kennedy Ave.	Jefferson 3565
CLEVELAND, OHIO,	405 Caxton Bldg.	Main 4053
COLUMBUS, OHIO,	50 East Broad St.	
DALLAS, TEX.,	2227 Burt Building	
DAYTON, OHIO,	Gas & Electric Bldg. (P. O. Box 495)	
DENVER, COLO.,	1411-13 Court Place	Taber 5244
DETROIT, MICH.,	1240 Buhl Bldg.	Cadillac 1925
HOUSTON, TEX.,	523 First Nat. Bank Bldg.	Preston 6885
INDIANAPOLIS, IND.,	501 New City Trust Bldg.	Humboldt 4767
KANSAS CITY, MO.,	602 New England Bldg.	Main 0766
LOS ANGELES, CAL.,	1046 South Olive St.	Prospect 0776
LOUISVILLE, KY.,	1702 Bardstown Road	
MEMPHIS, TENN.,	1639 Vance Ave.	
NEW HAVEN, CONN.,	295 Sherman Ave	5-6495
NEW ORLEANS, LA.,	823 Perdido St.	Raymond 4189
OKLAHOMA CITY, OKLA.,	211 West 10th St.	7-8432
PHILADELPHIA, PA.,	1101 Architect Bldg.	Rittenhouse 2274
PITTSBURGH, PA.,	1200 Century Bldg.	Atlantic 8790
RICHMOND, VA.,	511 Atlantic Life Bldg.	Dial 3-5712
ROCHESTER, N. Y.,	703 Temple Bldg.	Main 3720
ST. LOUIS, MO.,	16th and O'Fallon	Chestnut 1395
SAN DIEGO, CAL.,	P. O. Box 727	Randolph 0541
SAN FRANCISCO, CAL.,	516 Call Bldg.	Douglas 7969
SCRANTON, PA.,	Cedar Ave. & Laurel Line	3-1271
SEATTLE, WASH.,	401 White Bldg.	Ma. 7650
SYRACUSE, N. Y.,	145 Harding Place	9-3244
TAMPA, FLA.,	805 Peninsular Telephone Bldg.	2868

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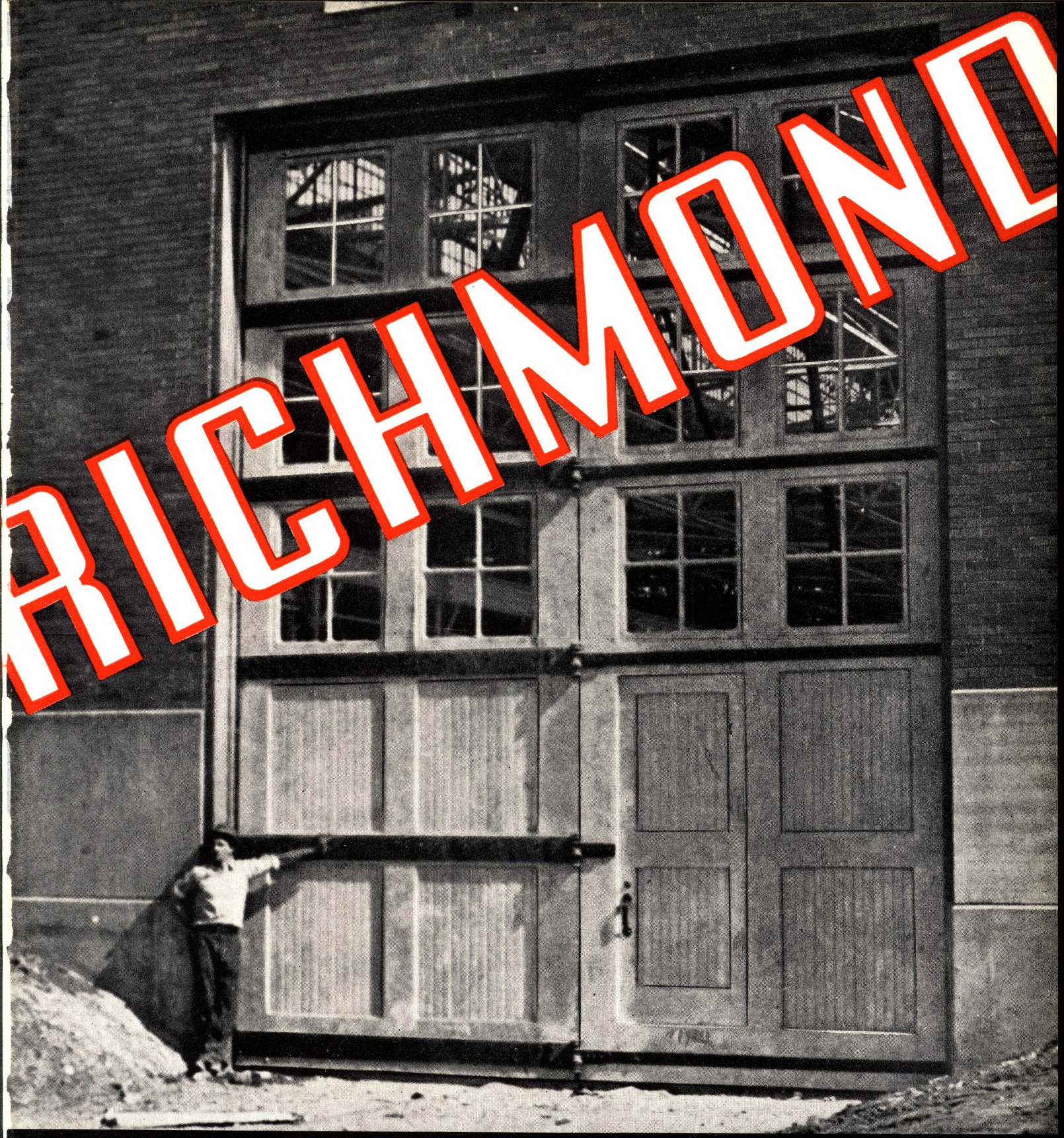


DOORS • FRAMES
HARDWARE • OPERATORS

THE RICHMOND FIREPROOF DOOR COMPANY

TRADE Fyrgard MARK
THE RICHMOND FIREPROOF DOOR CO.
RICHMOND, IND.

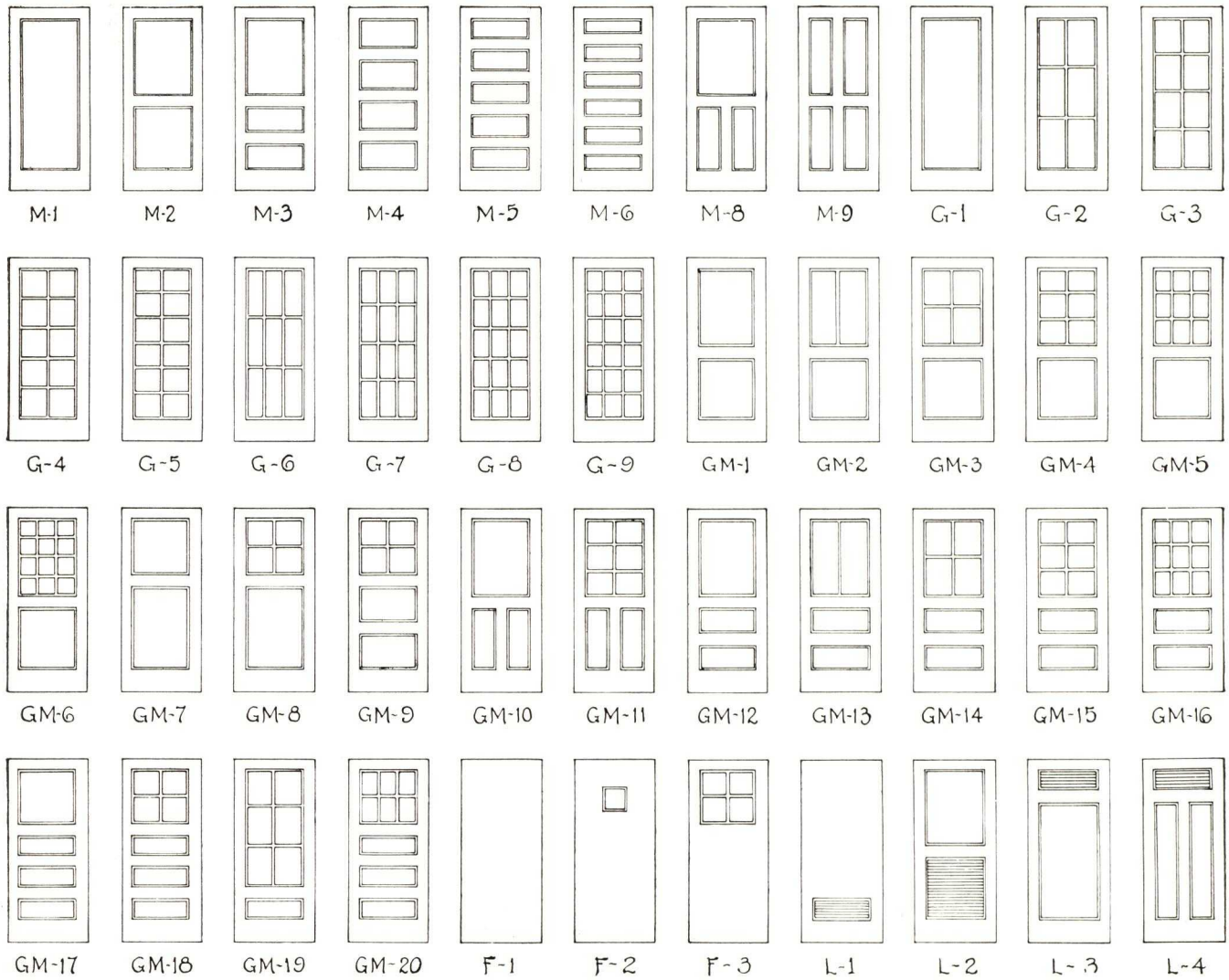
Since 1891 . . .

PIONEERING

THE RICHMOND FIREPROOF DOOR COMPANY has spent 46 years in developing construction and production methods that meet the exacting demands of this modern age. It is a recognized leader in the field of Industrial Firedoors, Elevator Doors, Steel Frames and Hardware.

Its spacious plant and modern equipment, its highly trained organization, its central location and shipping facilities assure high grade products and prompt delivery. These advantages and its many installations in all parts of the United States presents a standing guarantee of fire protection and satisfactory service to every architect, contractor and builder.

RICHMOND KALAMEIN DOORS

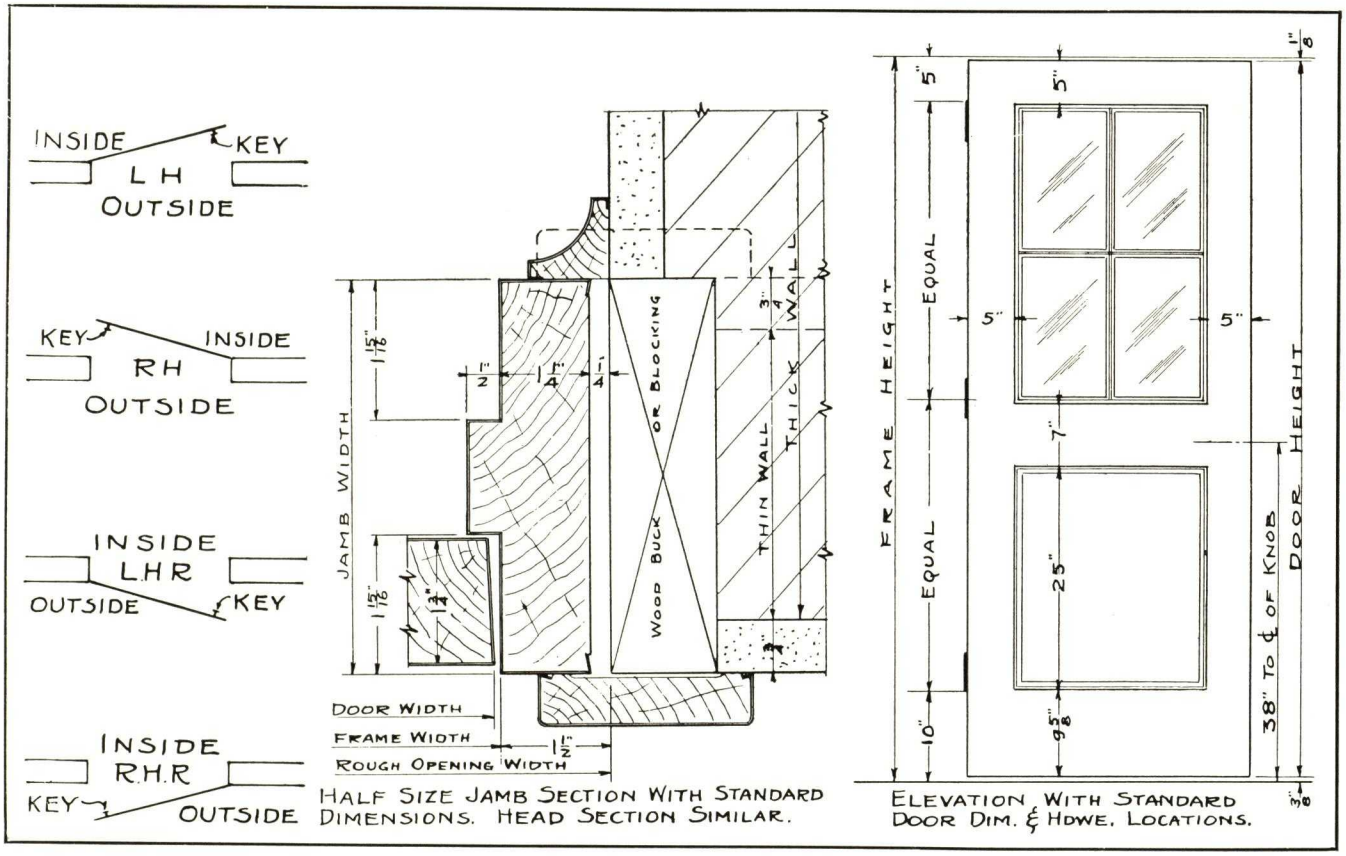


SUGGESTED TYPES OF DOORS

Many other types of doors can be developed by rearranging panel designs shown and making various panel combinations from these suggestions.

Installation Details of

KALAMEIN DOORS, FRAMES AND TRIM..



HALF SIZE JAMB SECTION WITH STANDARD DIMENSIONS. HEAD SECTION SIMILAR.

ELEVATION WITH STANDARD DOOR DIM. & HDWE. LOCATIONS.

LABELED AND NON-LABELED SPECIFICATIONS AND DETAILS

The wood cores of all Kalamein Doors to be treated with No-D-K, a termite proof appliance before priming to prevent dry rot.

All metal covered doors shall be of the "Fyrgard" type as manufactured by THE RICHMOND FIREPROOF DOOR COMPANY.

Wood cores shall be of selected non-resinous spruce or white pine, kiln dried by door manufacturer. Stiles shall extend full height of door, and rails shall be tenoned into stiles. Wood cores shall be covered with 24-gauge zinc coated sheet metal (16-oz. copper where permitted and specified) drawn tight so as to lay smooth. All joints between rail and stile metal shall be lapped and nailed to wood cores. Seams to be soldered and ground smooth.

Panels shall be covered with 24-gauge zinc coated sheet metal glued to 1/4-in. sheet asbestos (sheet rock for non-labeled doors) and held under high pressure until glue is set. Panels shall be set in hollow metal panel moulds, no nails, screws or clips to be used in moulds.

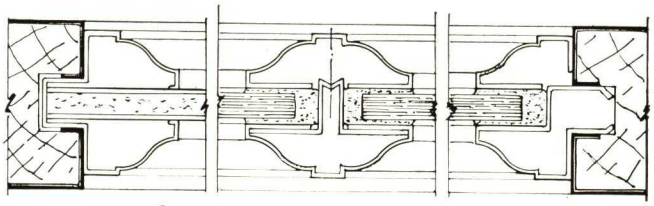
Glass shall be set in glass sash that is set in grooves of stiles and rails. Removable glass stops to be held in place with self-tapping sheet metal screws.

All doors shall be given one shop coat of gray metallic primer for galvanized iron.

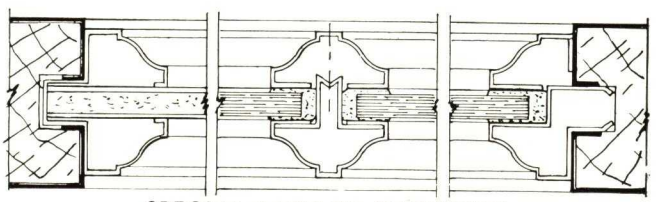
NOTE: Exposed glass area for labeled doors of this construction is limited to 225 square inches per single light.

Maximum door size all types except those with two solid panels is 3 ft. 6 in. wide by 7 ft. 6 in. high. Two panel doors limited to 3 ft. 10 in. wide by 7 ft. 6 in. high.

LABELED DOORS MANUFACTURED BY THIS METHOD COVERED BY U. S. LETTERS PATENT No. 2,021,375.



STANDARD UNDERWRITERS LABELED DOOR



SPECIAL LABELED (PATENTED) AND NON-LABELED DOORS

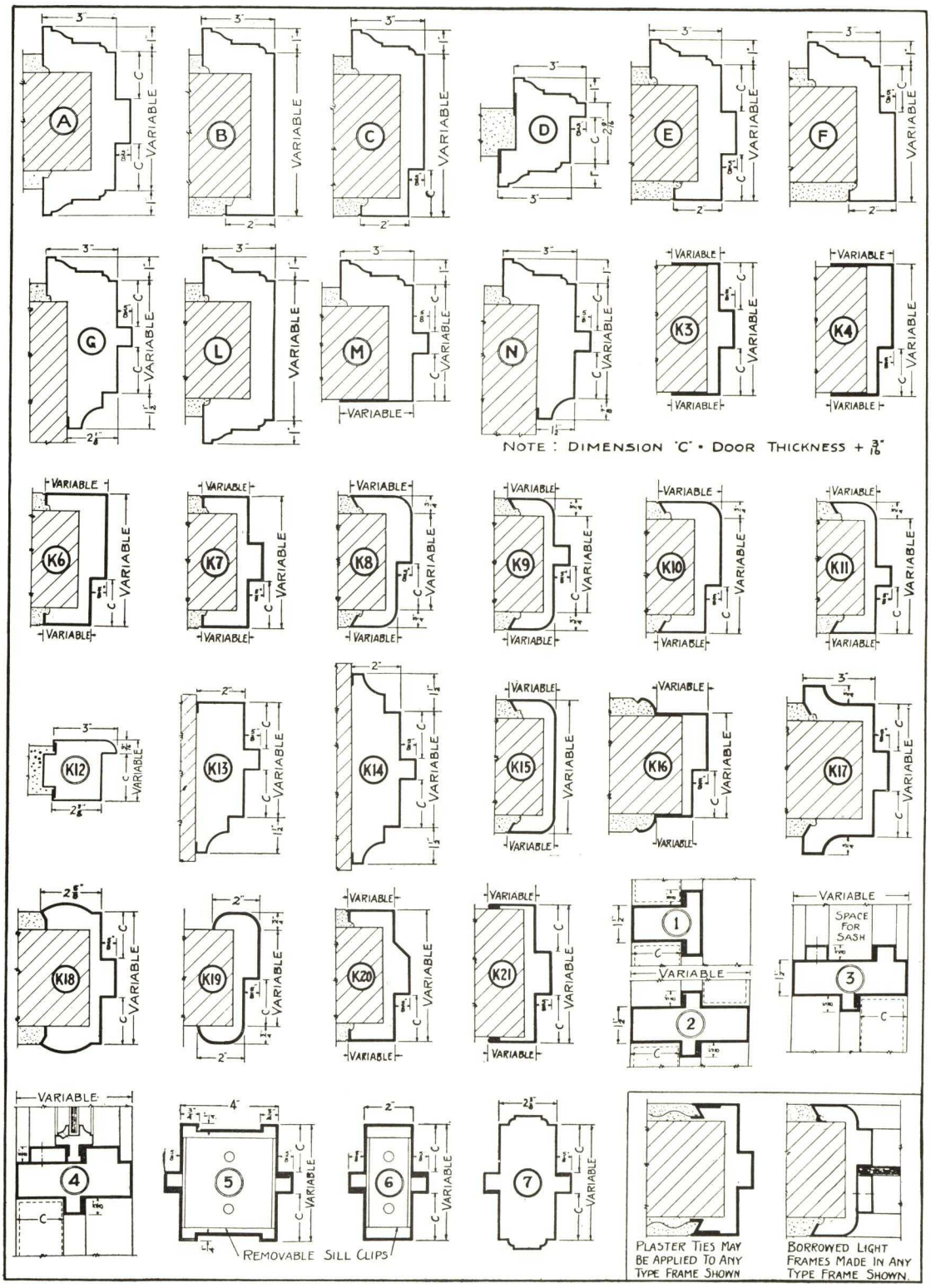
Types and Sizes of
RICHMOND DOOR FRAMES

Note: Many other types of frames can be developed by combining and rearranging contours and trim effects shown.

Types A, B, C, D, E, F, G, L, M, N, K12, K16, K18, K19, 5 and 7 can be made of 16 or 14-gauge only. All other types shown can be made of 10, 12, 14 or 16-gauge material.

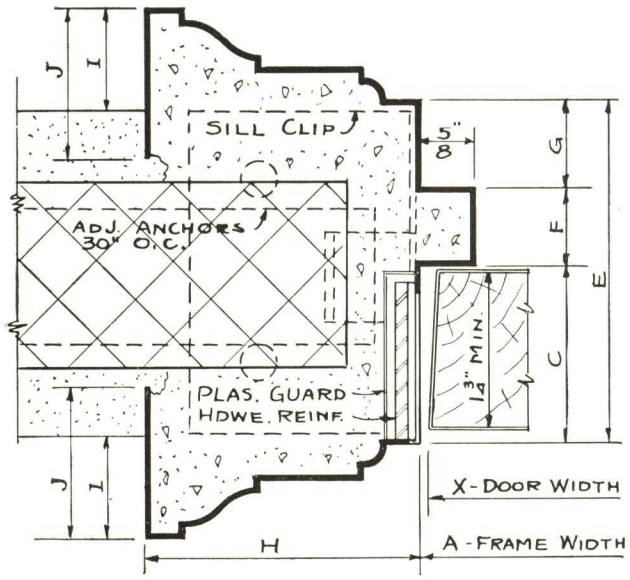
Types K3 and K4 are especially adaptable for use with rough bucks and applied casings.

All frames are rigidly reinforced to assure stability and alignment.

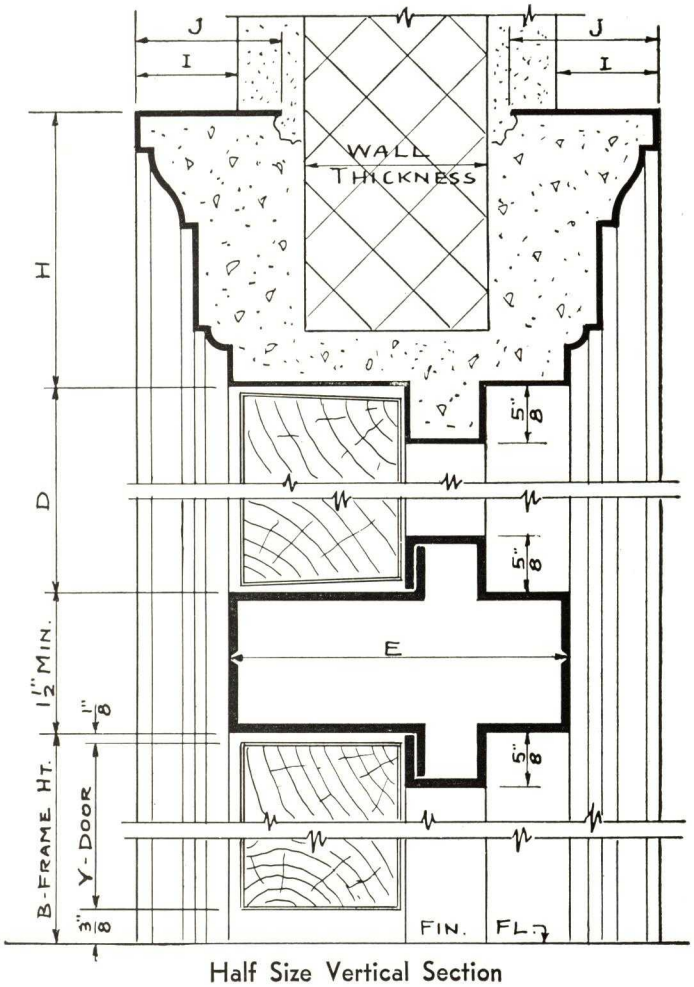


Underwriters' Standard Dimensions

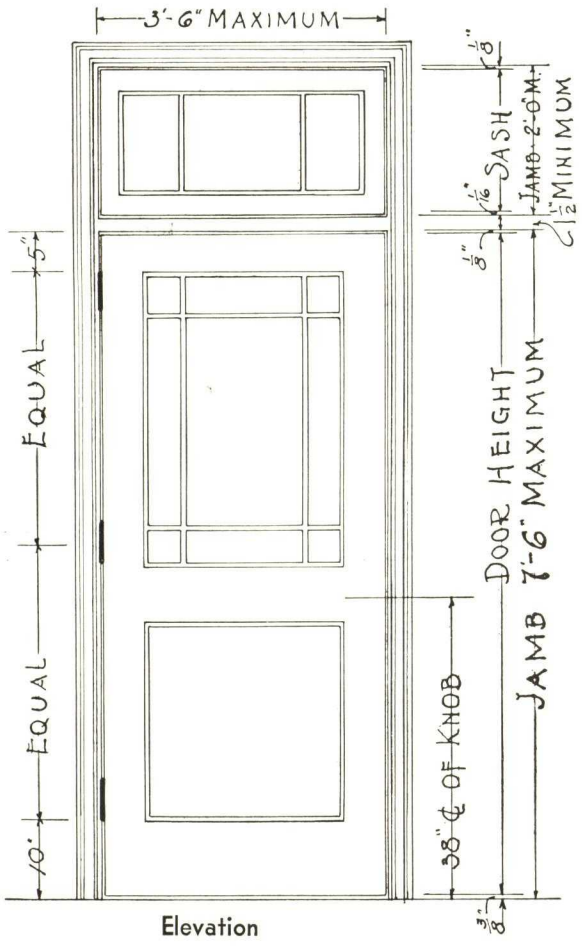
FOR RICHMOND HOLLOW METAL FRAMES WITH TRANSOM BAR FOR LABELED OR NON-LABELED CONSTRUCTION



Half Size Jamb Section



Half Size Vertical Section



Elevation

STANDARD DIMENSIONS FOR LABELED FRAMES

MAXIMUM AND MINIMUM DIMENSIONS **(see cut above)**

A—3-6 Single Door, 7-0 Doors in Pairs
B—7-6 Maximum
C—1 15/16 in. Minimum
D—2-0 Maximum
E—4 in. Minimum
F—7/8 in. Minimum
G—Variable
H—Rolled Trim 3 in. Wide Only
I—Variable (1 1/8 in. Standard)
J—Variable (1 5/8 in. Standard)
X—Dim A—3/16 in.
Y—B—1/2 in.

When Threshold is provided Y = B-(Threshold + 1/4 in.).

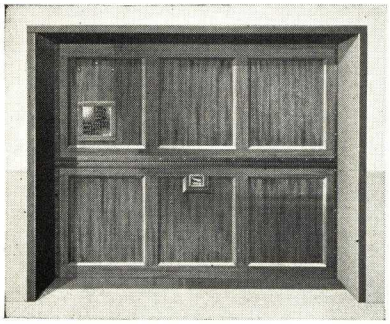
NOTE: Transoms may be fixed, hinged, or side pivoted. Transoms over doors in pairs must be separated by a vertical mullion.

Labeled Frames without transoms are limited to the following maximum sizes:

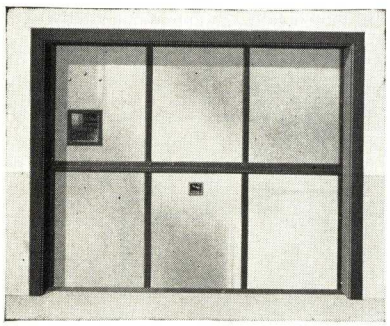
16 ga.: 3–6 x 7–6 Single Doors
5–0 x 7–6 Doors in Pairs

14 ga.: 4–0 x 10–0 Single Doors
8–0 x 10–0 Doors in Pairs

RICHMOND *Counterbalanced* FREIGHT ELEVATOR DOORS



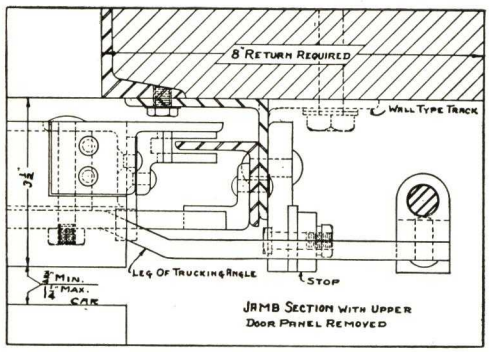
C-1 (without), CV-1 with Vision Light
Kalamein paneled



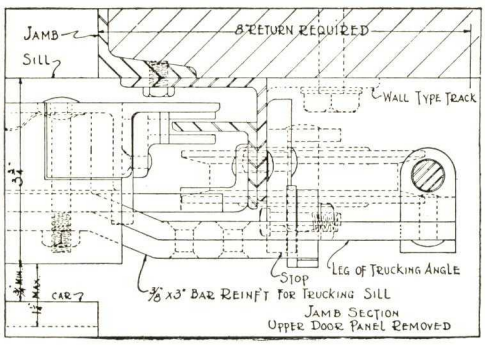
C-2 (without), CV-2 with Vision Light
Flush panel kalamein

Standard Specifications for "RICHMOND FYRGARD" LABELED *Counterbalanced* DOORS

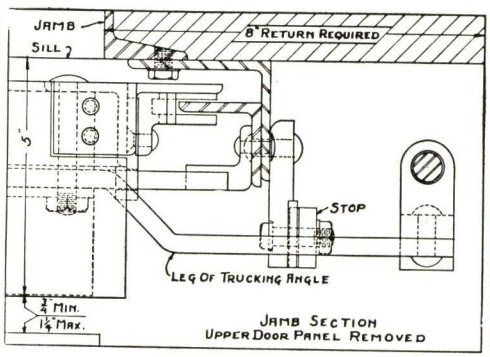
1. For all openings to freight elevator shafts, except as otherwise noted, furnish and install "Fyrgard" Counterbalanced doors manufactured by The Richmond Fireproof Door Company, of Richmond, Indiana.
2. Door paneling design to be Richmond Style—(CV-1), (CV-2).
   (a) Door panels to be covered with 24-gauge galvanized patent leveled steel, laid smooth and free from waves and buckles, upon white pine kiln dried core. Mouldings attached with concealed clips, corners mitred and welded. Cap type vertical seams for flush doors.
   (b) Corrugated door panels to be 18-gauge steel securely riveted to frame structure and reinforced with channel stays.
   (c) Standard 10x10-in. approved vision panels glazed with ¼-in. clear wire glass to be located adjacent to car control.
3. Door trucking sills to sustain a maximum load of . . . . . pounds, to rest upon rigid adjustable stops riveted to door guides.
4. Doors to be equipped with malleable antifriction milled groove guide shoes, to be hung upon ⅝-in. chain rods, and No. 6 cable chain running over 5-in. ball bearing machined malleable sheaves, and to operate in heavy structural angle guide rails, securely attached to shaft wall and opening frames.
5. (a) Doors to be provided with web strap closers for manual operation and equipped with [electro-mechanical interlocks] [Master interlocks] in accordance with car control. Interlocks shall be wired by [Door Contractor] [Elevator Contractor].
   (b) Doors to be equipped with DM Individual electric operators and interlocks arranged for [Push Button] [Automatic] control.
   (c) Doors to be equipped with (a) Penthouse Master Operator(s) and accessories complete arranged for [Push Button] [Automatic] control.
   (d) Doors to be arranged for prompt, easy manual operation in case of power failure.
   (e) Power operated doors shall be completely wired by door contractor.
6. All material shall receive a prime coat of metallic primer at factory.
7. Steel parts to be cadmium plated where desired.
8. All material to be guaranteed by The Richmond Fireproof Door Company against defective material and workmanship for a period of two years from date of installation.



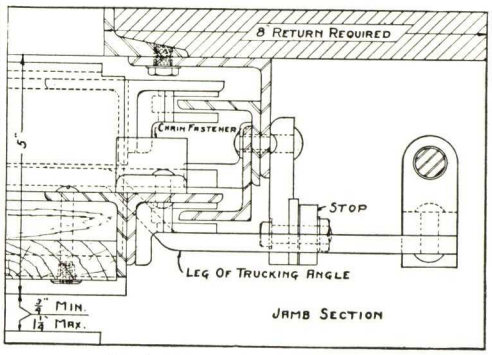
Jamb Section Regular Door



Jamb Section Regular Door Reinforced



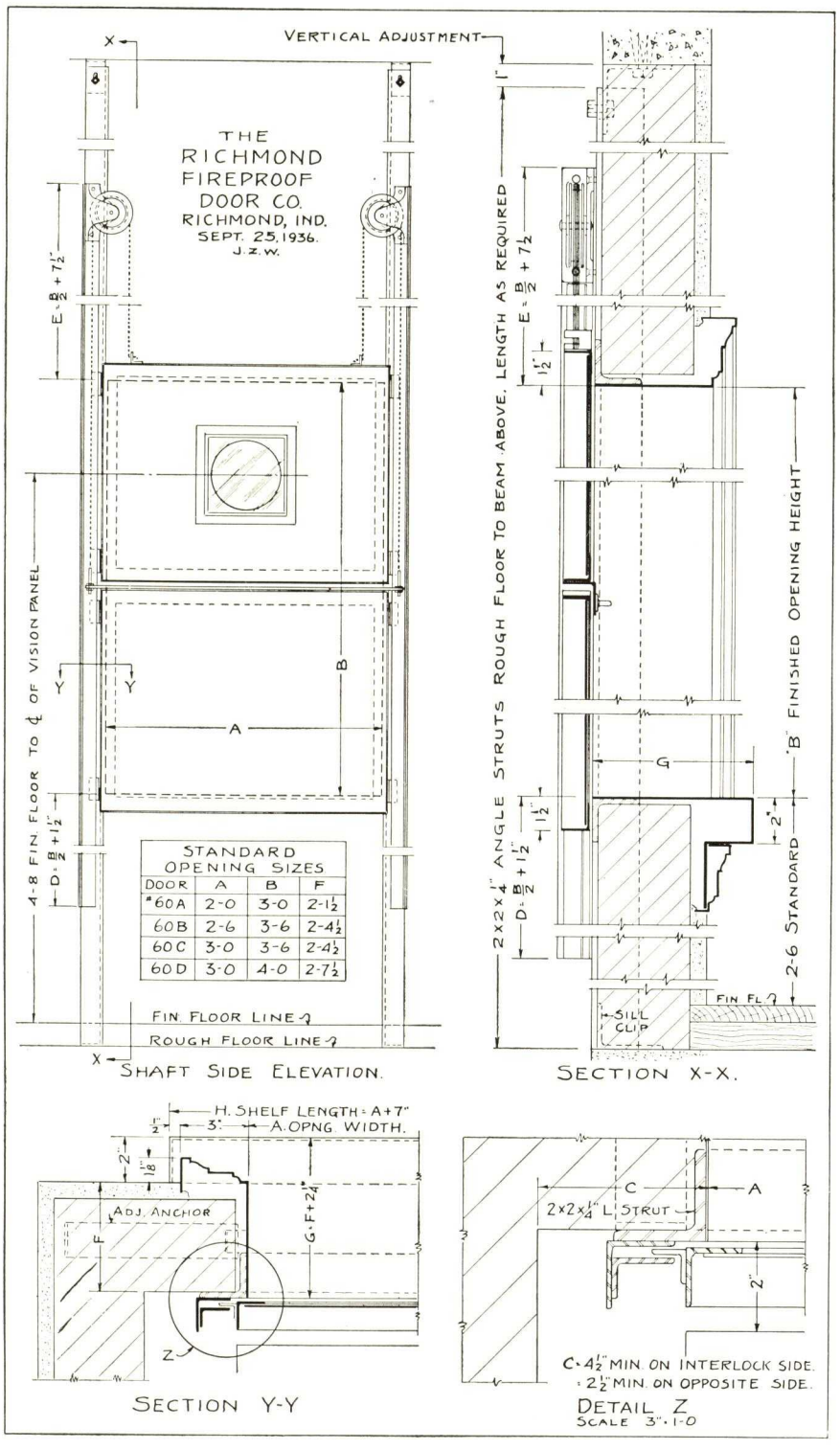
Jamb Section Regular Door with Extended Sill



Jamb Section Pass Type Door

RICHMOND *Counterbalanced* DUMBWAITER DOORS

RICHMOND COUNTERBALANCED DUMBWAITER DOORS are complete units ready to be set and walled in place. Each unit consists of the opening frame, supporting struts, door panels and guides, unless otherwise specified. Vision Panels and Frame Shelf are optional. Suitable Interlocks furnished when specified.



STANDARD OPENING SIZES			
DOOR	A	B	F
#60A	2'-0	3'-0	2-1½
60B	2'-6	3'-6	2-4½
60C	3'-0	3'-6	2-4½
60D	3'-0	4'-0	2-7½

Doors can be made with Steel, Aluminum, Stainless Steel, or Steel Cadmium Plated

Specifications

1. For all openings to dumbwaiter shafts, except as otherwise noted, furnish (and install) "Fyrgard" Counterbalanced Dumbwaiter Doors, manufactured by THE RICHMOND FIREPROOF DOOR COMPANY of Richmond, Indiana.

2. Doors to hang upon ball bearing sheaves with suitable flexible chain and to operate in substantial guides.

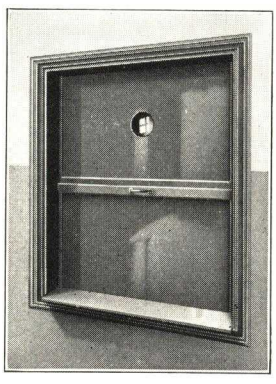
3. Opening frames to be (rolled) (pressed) metal with (without) shelf attached, mounted upon structural steel struts extending from floor to beam above.

4. Doors to have circular vision panels glazed with ¼-in. clear wire glass.

5. Doors to be equipped with suitable interlocks to prevent operation of car until all doors are closed.

6. Doors to be finished in gray metallic prime coat at factory.

7. Units to be assembled complete ready for installation and guaranteed by the manufacturer against defective material and workmanship for a period of two years.



Room Side View
Steel Plate Door

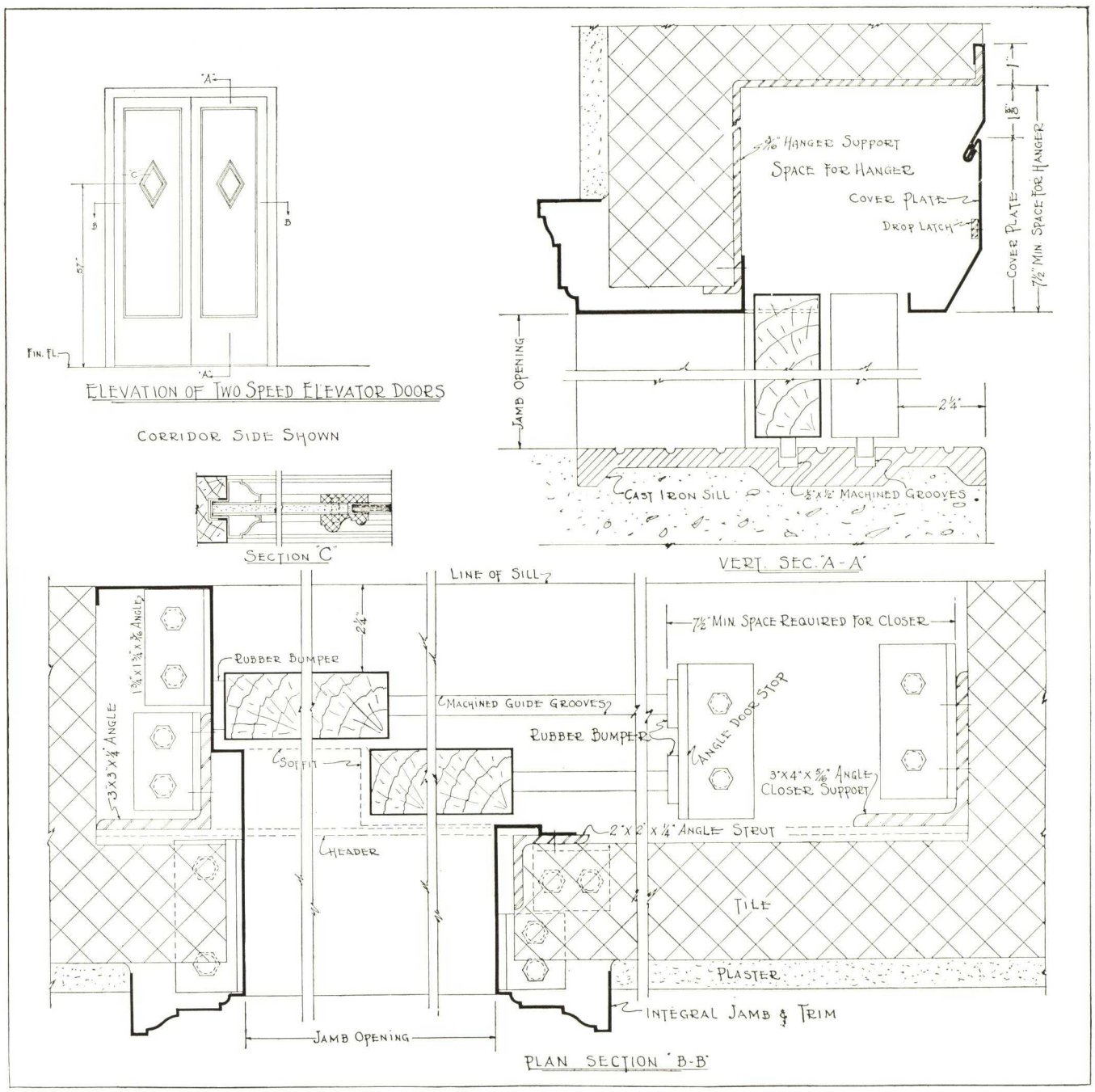
RICHMOND *Passenger* ELEVATOR DOORS . . .

These doors have been especially designed to meet the needs of efficient passenger elevator service. Their quietness of operation is especially noticeable.

The wood cores of these doors, heavily reinforced where necessary, assure the rigidity so essential in withstanding the terrific strain and shock placed upon doors designed to open and close in only a matter of seconds.

The light gauge metal which is used for Kalamein doors makes possible the sharp lines so desirable in carrying out architectural design.

This type of door is adaptable to single, two and multiple speed, sliding, center parting and combination slide and swing units. We are prepared to furnish these doors with hardware, opening frames (see page 4) and sills and equip them with "DM" Electric operators.

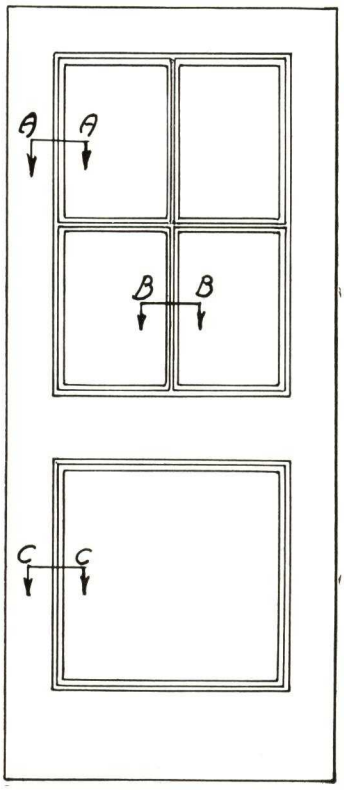


RICHMOND *Hollow* METAL DOORS . . .

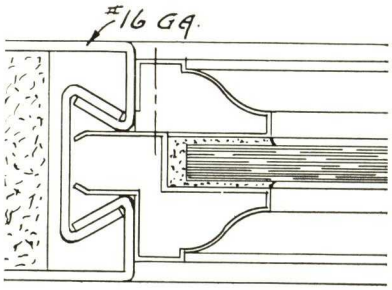
A building is only as fireproof as its doors. Fire control is as important as fire prevention. Hollow Metal Doors as manufactured by THE RICHMOND FIREPROOF DOOR COMPANY retards a fire and helps to confine it to the area in which it starts.

More than 40 types of doors have been shown on page 2 of this catalog to meet the needs of the architect and builder. The architecturally designed profiles of the mouldings present a wide range of styles. Practically any design can be developed from various combinations.

Doors, frames and trim are made from the finest grade of cold rolled steel. Each design is carefully worked out to produce well formed lines and contours that create a beautifully finished unit. All parts of the doors and frames are heavily reinforced where necessary. Mouldings and muntin bars are accurately mitered and welded to form invisible joints.

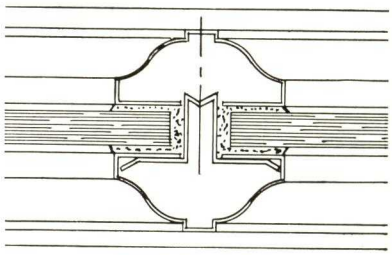


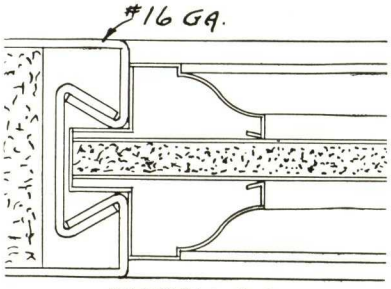
Elevation



SECTION A-A
Full Size

Our highly trained engineers and designers are at the service of architects and builders in working out special problems in construction or design.


SECTION B-B
Full Size



SECTION C-C
Full Size

Specifications

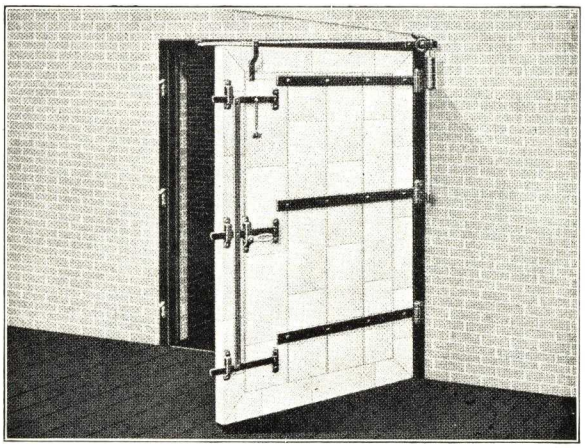
WORKMANSHIP: All Hollow Metal doors shall be in strict accordance with the established standards of high grade construction and workmanship as developed by THE RICHMOND FIREPROOF DOOR COMPANY. They shall be neat and clean in appearance, free from defects, delivered and erected in a satisfactory manner by skilled mechanics.

MATERIAL: Doors, frames and trim shall be of the best cold rolled, patent leveled furniture steel, free from scale or pits of U. S. Standard gauges as specified.

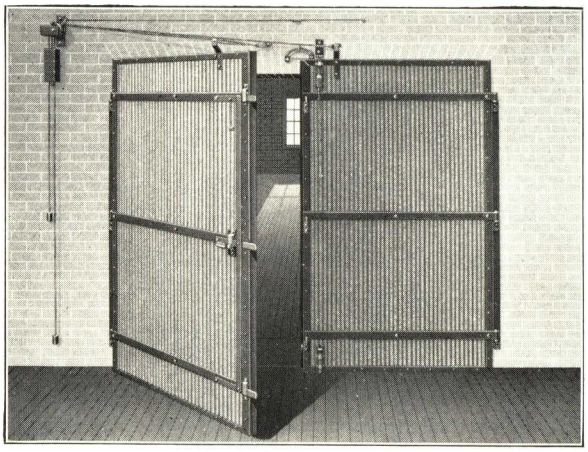
CONSTRUCTION: Stiles and rails of doors to be made from 16 gauge steel, insulated with cork to deaden sound. All joints to be carefully fitted, reinforced and properly welded to form an invisible seam.

Cold rolled mouldings to be mitered and welded into a frame with asbestos lined metal panels inserted. Where glass panels are required, mouldings to be welded into frames with one side removable. These moulded frames are recessed into the stiles and rails and securely fastened to them to form an integral part of the door. Stiles, rails and panels must be free from waves and buckles and finished clean and smooth. Doors and frames to be rigidly reinforced to assure stability and alignment. Proper provision to be made for mortising and reinforcing for hardware.

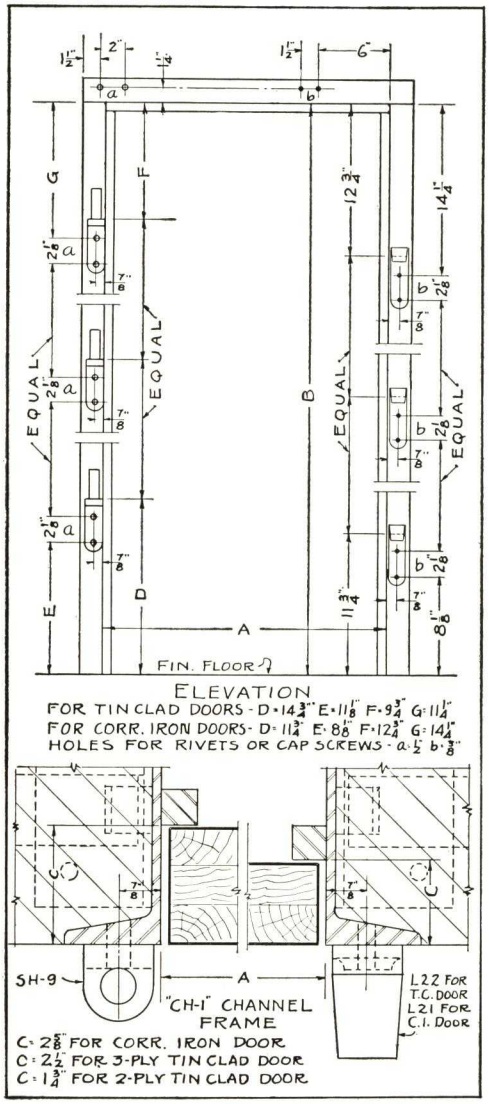
RICHMOND *Automatic* SWINGING FIRE DOORS...

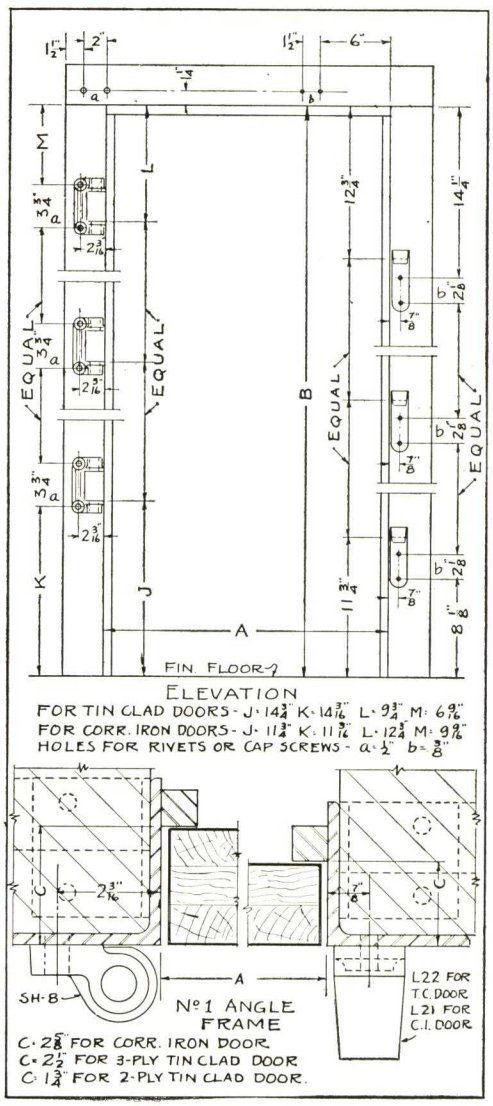


No. 125 DOOR AND HARDWARE (Tin Clad)



No. 335 DOORS AND HARDWARE (Corrugated Iron)





Note: Angle Frames cannot be labeled.

STANDARD HEAD ROOM REQUIRED

Swinging Doors Nos. 125, 135, 325, 335: Lap Type, 8 in.; Flush Type, 4 in.

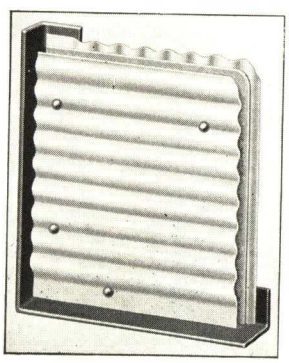
STANDARD RETURN REQUIRED

Swinging Doors Nos. 125, 325, 135, 335.

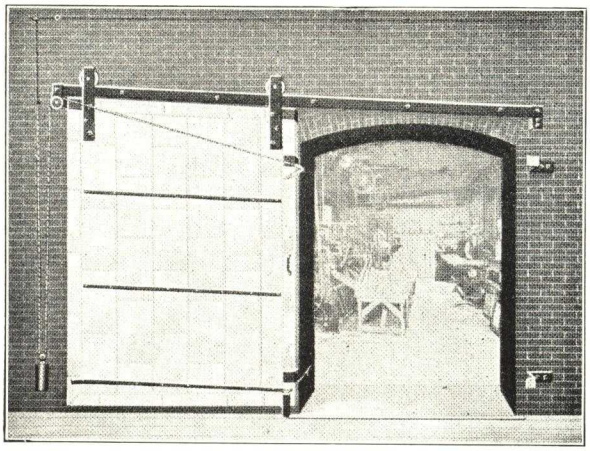
Lap Type—6 in. at one jamb for Automatic Closing device.

Flush Type—Width of frame flange only. 6¾ in. required at one jamb for Automatic Closing device.

If conditions are not Standard, consult Home Office or nearest Richmond Branch Office or Representative.

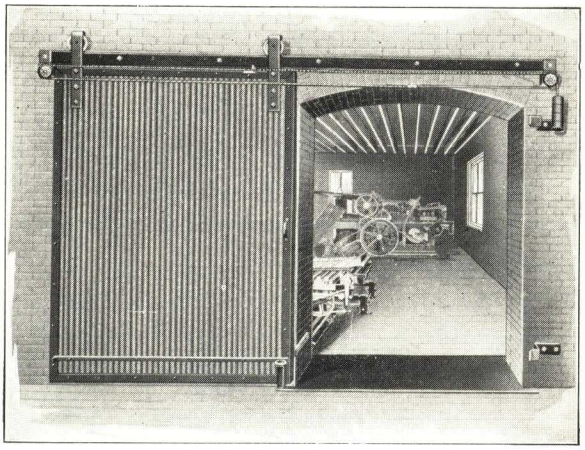


RICHMOND *Automatic* SLIDING FIRE DOORS...



No. 200A DOOR AND HARDWARE

No. 200A Door—Tin clad.
No. 400A Corrugated door similar, standard incline track types. Universally used where ample headroom and returns are available. Simple to install and operate.



No. 405 DOOR AND HARDWARE

No. 405 Corrugated door.
No. 205 Tin clad door similar, standard level track types. Used where limited headroom will not permit use of No. 200A or 400A. Numbers 406 and 206 with closing and counterweights furnished where No. 405 and No. 205 are not approved.

STANDARD HEADROOM REQUIREMENTS

Sliding Doors Nos. 205, 405: 14-in.
Nos. 200A and 400A Inclined Track, per following schedule:

Width of opening	Req. head-room	Width of opening	Req. head-room	Width of opening	Req. head-room
2′ 0″	17¾″	6′ 0″	23¾″	10′ 0″	29¾″
2′ 4″	18¼″	6′ 4″	24¼″	10′ 4″	30¼″
2′ 8″	18¾″	6′ 8″	24¾″	10′ 8″	30¾″
3′ 0″	19¼″	7′ 0″	25¼″	11′ 0″	31¼″
3′ 4″	19¾″	7′ 4″	25¾″	11′ 4″	31¾″
3′ 8″	20¼″	7′ 8″	26¼″	11′ 8″	32¼″
4′ 0″	20¾″	8′ 0″	26¾″	12′ 0″	32¾″
4′ 4″	21¼″	8′ 4″	27¼″	12′ 4″	33¼″
4′ 8″	21¾″	8′ 8″	27¾″	12′ 8″	33¾″
5′ 0″	22¼″	9′ 0″	28¼″	13′ 0″	34¼″
5′ 4″	22¾″	9′ 4″	28¾″	13′ 4″	34¾″
5′ 8″	23¼″	9′ 8″	29¼″	13′ 8″	35¼″

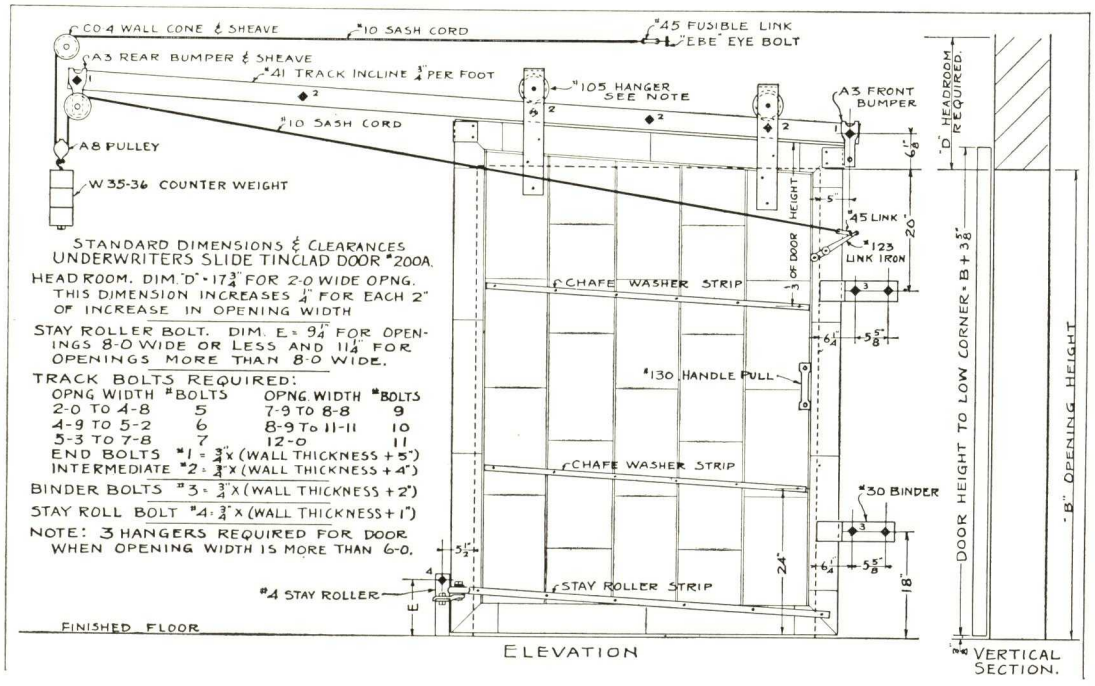
STANDARD RETURNS REQUIRED

Sliding Doors Nos. 200A, 400A, 205, 405. Return at opening jamb (past which door slides when opened). Opening width plus 20 in. Return at closing jamb, 14 in.

SPECIFICATIONS
TINCLAD DOORS

CORE: Well seasoned white pine, fir, or spruce, tongue and grooved, dressed both sides to $\frac{25}{32}$-in. two or three-ply as indicated by the plans, assembled with standard cut iron nails.

COVERING: Standard I. C. 20 pound fire door terne plate laid flat to core. All seams locked. All in accordance with Underwriters' Standards.



CORRUGATED STEEL DOORS

DOOR PANEL FRAME: to be 2½x2x$\frac{5}{16}$-in. angle mitre notched, bent, and welded.

PANEL: to be layers of 24-gauge galvanized corrugated steel laid with corrugations of one layer at right angles with those of the other with a $\frac{1}{16}$-in. thick layer of sheet asbestos between. Panels to be riveted to frame. Sliding doors to be provided with track binder angle.

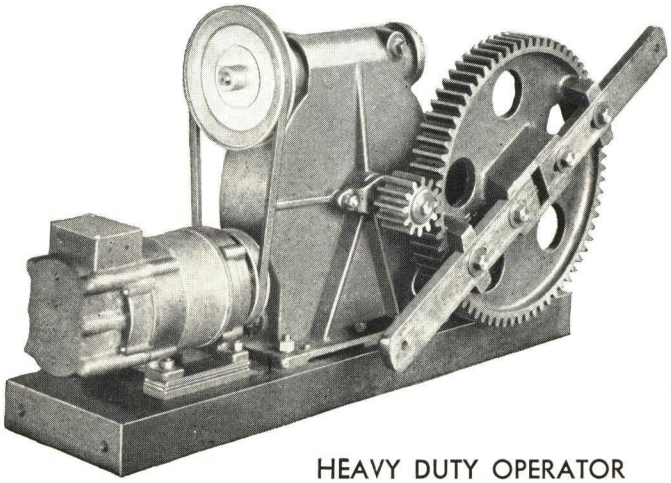
Doors to be manufactured by The Richmond Fireproof Door Company of Richmond, Indiana, and bear the Underwriters' label.

RICHMOND *Electric* DOOR OPERATORS . . .

Many attempts have been made to apply power operators to Bi-Fold Doors, but Richmond has developed and patented the only successful, positive and automatic method. The same movement of the operator arm that breaks the door from its closed position, if continued, also opens it to full height of opening. The reverse movement of the operator arm closes the door and holds it so tightly against the jambs that no additional catch or locking device is required.

Many old installations of Bi-Fold Doors may be motorized by the Richmond "DM" Operator method with little or no changes in existing equipment, regardless of who manufactured them originally. If doors are large, they should be fitted with new ball bearing hardware.

Consult your nearest Richmond Agency or write Home Office for further details.



HEAVY DUTY OPERATOR

RICHMOND TYPE "DM" ELECTRIC OPERATORS

AN OPERATOR FOR EVERY PURPOSE

The operator illustrated below is shown with crank arms for Swing Fold Doors. By substituting suitable arms and linkage the operator may be used for Bi-Fold doors as shown in cut above.

This unit will operate practically any type of door when provided with proper operating equipment.

Specifications

The Power Unit to be Richmond Type "DM" manufactured by THE RICHMOND FIREPROOF DOOR CO. All parts to be made to standard dimensions, using template jigs, to permit replacement of parts and insure perfect fitting of all parts in machines of same size.

MACHINE BASE: To be made from 10-in. structural channel and heavy steel plates welded thereto. Motor, brake and speed reducer to be attached to base with cap screws fitted with lock washers.

MOTOR: To be totally enclosed (.....) Volt (.....) Phase (.....) Cycle A.C. Squirrel cage induction type, instantly reversible, high starting torque; to develop not less than (.....) foot pounds when installed.

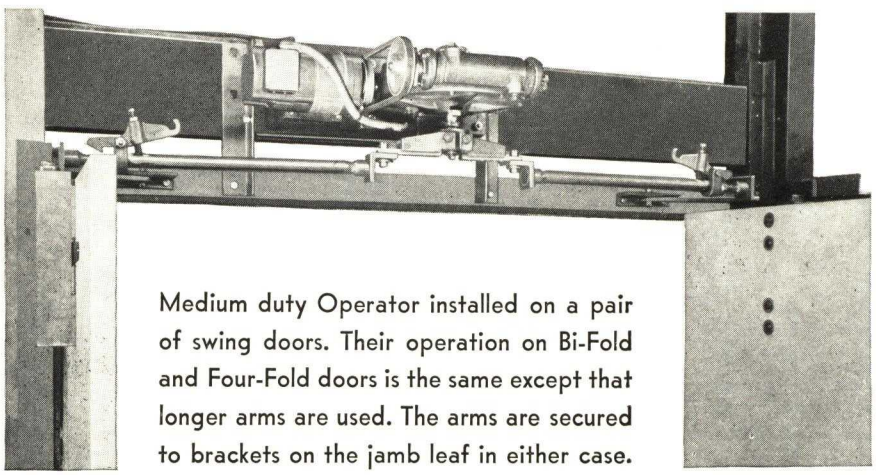
NOTE: Polyphase A.C. power supply preferred in all cases, but single phase A.C. or D.C. motors may be furnished at increased cost.

Motor shaft to run in precision ball bearings.

BRAKE: To be two disc type. Rotating disc to be securely pinned to motor shaft, and carefully balanced. Brake disc to be faced with special friction material.

Brake to be applied by spring pressure and released by electro-magnets. (A.C. magnets to have laminated cores with damping rings to prevent humming noise.)

Entire brake and releasing magnets to be totally enclosed in motor end bell.



Medium duty Operator installed on a pair of swing doors. Their operation on Bi-Fold and Four-Fold doors is the same except that longer arms are used. The arms are secured to brackets on the jamb leaf in either case.

Specifications of RICHMOND *Swing-Fold* DOORS

FOR HEAVY DUTY

DOOR SECTIONS: Stiles and Rails—to be 2¾-in. thick, 2-ply White Pine or Sitka Spruce glued and blind screwed together. Joints between members to be double mortised and tenoned. Bottom edges of panel and sash openings to be lined with oak watersheds.

Panels—To be 1⅛-in. thick tongue and groove "V" grooved White Pine or Fir Ceiling.

Sash—To be White Pine, moulded into openings, muntin bars machined from solid stock with loose glass mould to match.

Design—Panel and sash combination to be as shown on plans.

HARDWARE: Hinges—Three, four or six high for each leaf (see plans). To be malleable iron and steel, weather-proof, full ball bearing, spring cushioned, with vertical screw adjustment, grease gun lubrication and weather proof.

Jamb Hinges—Jamb leaf to be attached to jamb with four bolts or cap screws. The door leaf to be provided with two 6-in. steel straps to extend across both faces of Jamb Door-Section and be through bolted thereto.

Center Hinges—Female leaf to be riveted to exterior strap of jamb hinge. The male leaf to be provided with a 3-in. steel strap to extend across exterior with a companion washer strip on interior of Suspended Door Leaf and through bolted thereto.

Trusses—Diagonal I-Beam trusses and all required reinforcing to prevent distortion and warpage of door sections to be provided.

Astragal—All four section doors to be provided with Rubberized fabric and 5-in. steel plate astragals.

NOTE: For more complete specifications and data write Home Office or consult local representative.

FOR MEDIUM DUTY

DOOR SECTIONS: Stiles and Rails—To be 2½-in. thick solid White Pine or Sitka Spruce, machined with integral mouldings. Joints between members to be mortise and tenon, reinforced with hardwood dowels.

Panels—To be ¾-in. thick tongue and groove "V" grooved fir ceiling, set in grooves in stiles and rails.

Sash—Glass openings to be formed by integral moulding in the stiles, rails, mullions and muntin bars with loose glass moulds to match.

Design—Panel and sash combination to be as shown on plans.

HARDWARE: Hinges—To be malleable iron and steel, weatherproof, full ball bearing and spring cushioned, with vertical screw adjustment and grease gun lubrication.

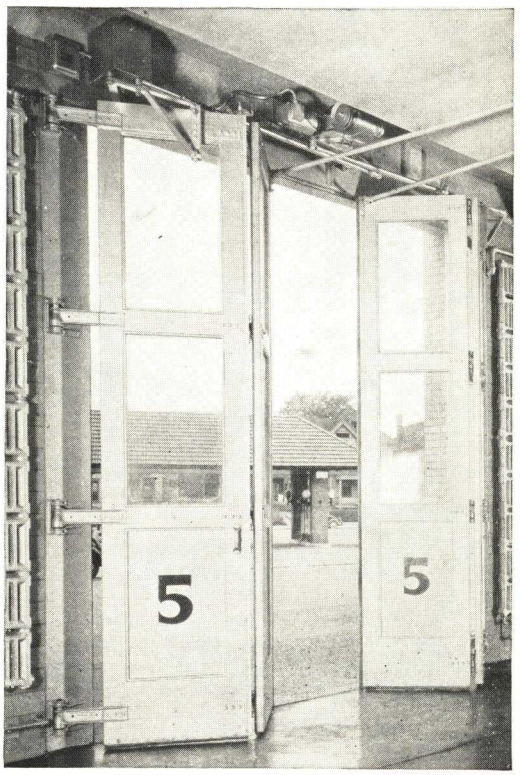
Jamb Hinges—Jamb leaf to be attached to jamb with four bolts or cap screws. The door leaf to be provided with two 3-in. steel straps to extend across both sides of Jamb Door Section and be through bolted thereto.

Center Hinge—Female leaf to be riveted to exterior strap of jamb hinge. The male leaf to be provided with a 3-in. steel strap to extend across exterior with a companion washer strap on interior of Suspended Door Leaf and be through bolted thereto.

Trusses—Where size of door requires, suitable trusses and reinforcements to be provided.

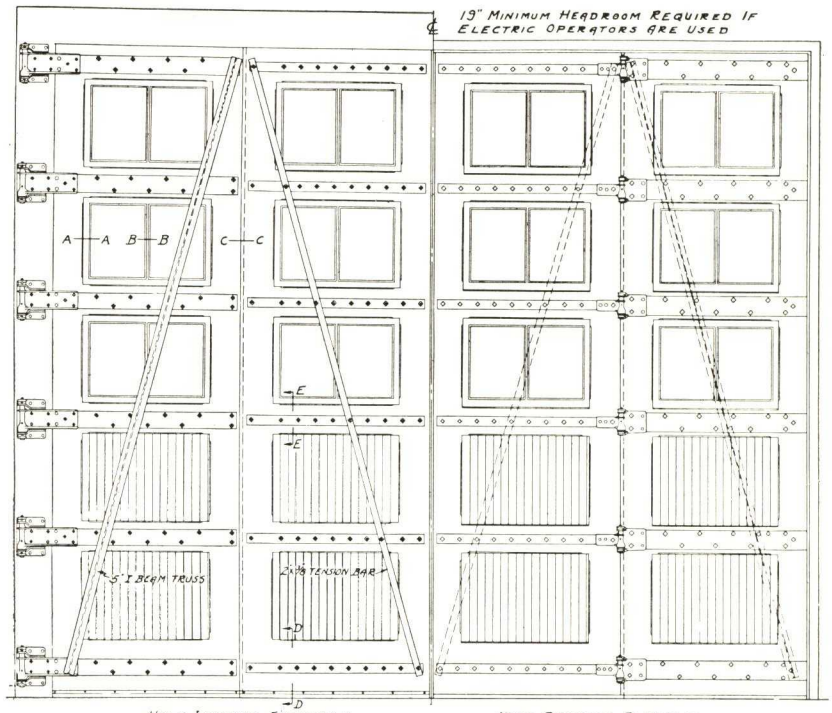
Astragal—All four section doors to be provided with Rubberized fabric and 5-in. steel plate astragals.

NOTE: For more complete specifications and data write home office or consult local representative.



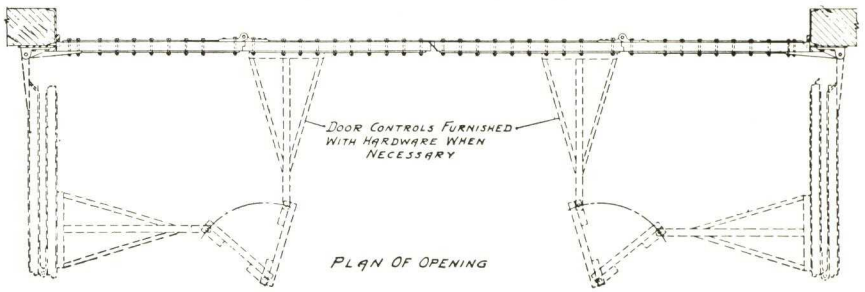
MEDIUM DUTY SWING-FOLD DOORS

RICHMOND *Swing-Fold* DOORS

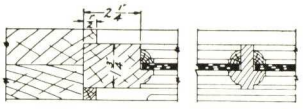


HALF INTERIOR ELEVATION

HALF EXTERIOR ELEVATION



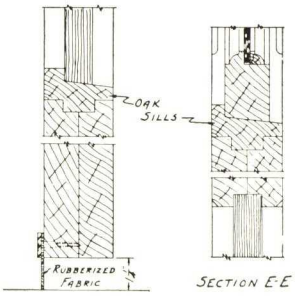
PLAN OF OPENING



SECTION A-A

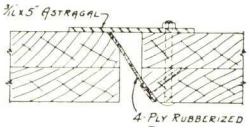
SECTION B-B

SECTION C-C

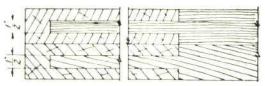


SECTION D-D

SECTION E-E

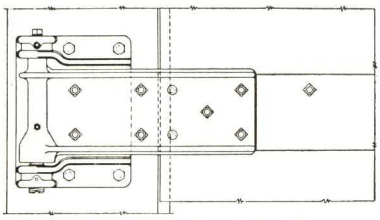


SECTION THROUGH MEETING STILES

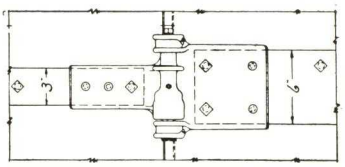


SECTION SHOWING MORTISE AND TENON JOINT BETWEEN RAILS AND STILES

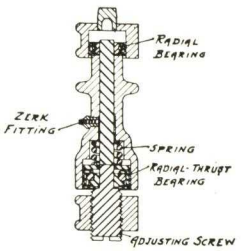
NOTE
DOORS ARE MADE OF 2 PLY WHITE PINE BLIND SCREWED AND GLUED TOGETHER



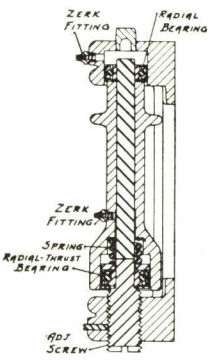
ELEVATION OF JAMB HINGE



ELEVATION SHOWING CENTER HINGE

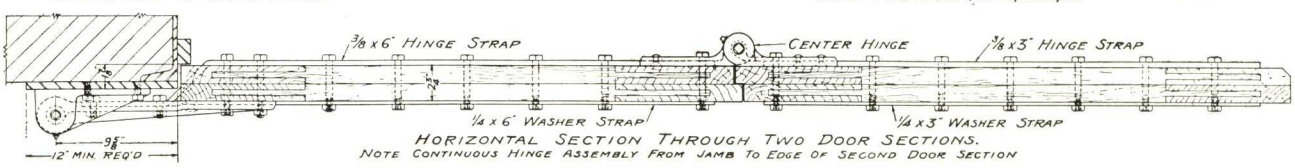


VERTICAL SECTION THROUGH CENTER HINGE



VERTICAL SECTION THROUGH JAMB HINGE

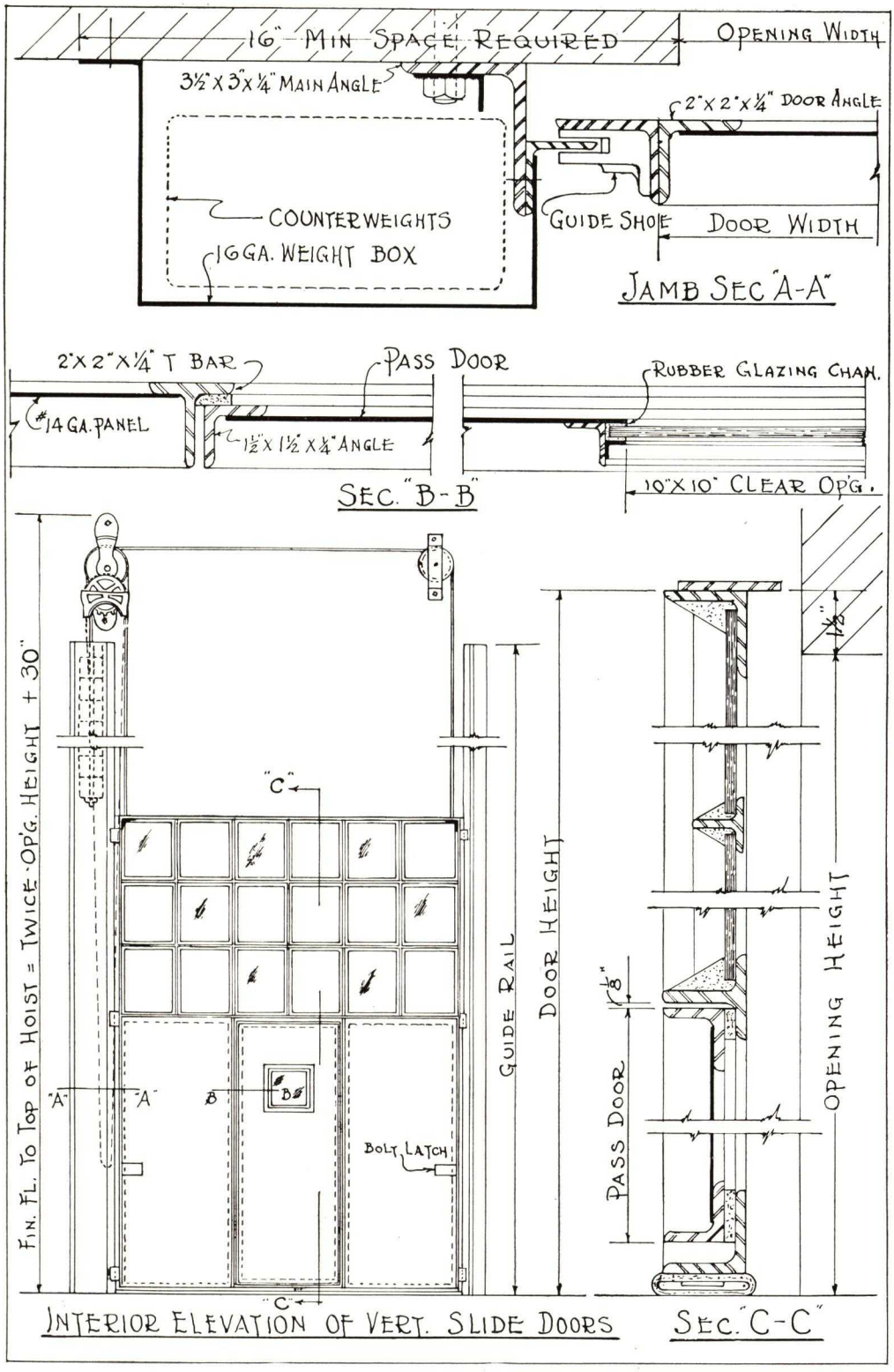
SWING-FOLD DOORS AND HARDWARE



HORIZONTAL SECTION THROUGH TWO DOOR SECTIONS.
NOTE CONTINUOUS HINGE ASSEMBLY FROM JAMB TO EDGE OF SECOND DOOR SECTION

RICHMOND *All-Steel*
INDUSTRIAL VERTICAL SLIDE DOORS

This type of door is used where there is not sufficient return on either side of the opening to accommodate doors of the sliding types and where it is not desired to reserve the floor space required by a swinging door.



Specifications

Provide a 16-in. return on one side of opening only as space for weight pocket and door track where hoist is used to operate doors. Provide 6¾-in. space on opposite side of opening for track only.

Door tracks to be made of structural angles.

Guide shoes to be provided with ball bearing rollers.

Hoist and sheaves to have bronze bushing or provided with ball bearings where required.

Openings not over 8 ft. in height can be manually operated and to be provided with webb closer straps to close doors when out of reach.

Pass door as shown furnished only where required.

Lower half of door to be of steel plate construction.

Upper half of door to have glass panels with T bar muntins.

This equipment can be completely cadmium plated at slight extra cost.

THE RICHMOND
FIREPROOF DOOR COMPANY
RICHMOND • INDIANA

Branch Offices • Agents • Representatives

AKRON, OHIO, Fred J. Crisp, Inc., 710 N. Main St.
ALBUQUERQUE, NEW MEX., A. C. Weigerding, P. O. Box 173
ALLENTOWN, PA., Geo. K. Halteman & Co., Allen & St. Cloud Sts.
AMARILLO, TEXAS, Jenkins Mantel & Brick Co., 816 Harrison St.
ASHEVILLE, N. C., General Bldg. Products Co., J. A. Thompson
ATLANTA, GA., E. P. Hoffman, 212 Red Rock Bldg.
ATLANTIC CITY, N. J., Building Supply Co., 1207 Atlantic Ave.
BALTIMORE, MD., Wm. E. Gambrill & Co., 213 East St.
BINGHAMTON, N. Y., Babcock, Hinds & Underwood, 174 Washington St.
BIRMINGHAM, ALABAMA, D. P. Barrett Co., 320 Brown Marx Bldg.
BLUEFIELD, W. VA., Bluefield Hardware Co.
BOISE, IDAHO, J. G. Doerr, 501 S. 8th St.
BOSTON, MASS., H. W. Pedersen, 131 State St.
BUCYRUS, OHIO, Patterson Iron & Wire Works
BUFFALO, N. Y., Shults Engr. Co., Morgan Bldg.
CAMBRIDGE, OHIO, Hanse H. Griswell, 306 N. 7th St.
CANTON, OHIO, L. G. Peter, 715 Shorb Ave., N. W.
CHARLESTON, S. C., Carolina Supply & Cement Co.
CEDAR RAPIDS, IOWA, O. W. Latimer & Co., 701 Security Bldg.
CHARLOTTE, N. C., R. R. Robertson, 212 Latta Arcade, P. O. Box 56
CHATTANOOGA, TENN., Currin-Andrews Co., 821 East 11th St.
CHICAGO, ILL., The Richmond Fireproof Door Co., 130 N. Wells St.
CINCINNATI, OHIO, Durbrow & Otte, 1424 Clay St.
CLEVELAND, OHIO, The Richmond Fireproof Door Co., 405 Caxton Bldg.
COLUMBIA, S. C., Columbia Steel Co., P. O. Box 741
COLUMBUS, OHIO, Alvan Tallmadge, 63 Parkwood Ave.
DALLAS, TEXAS, Maisey & Paige, 208 Construction Bldg.
DAVENPORT, IOWA, Austin Crabbs, Inc., 715 East River St.
DAYTON, OHIO, Dayton Fabricated Steel Co., 1300 E. Monument Ave.
DECATUR, ILLINOIS, C. J. Gandy, 245 N. Westlawn Ave.
DENVER, COLO., Colorado Bldrs. Supply Co., 1534 Blake St.
DES MOINES, IOWA, Des Moines Stair Co., 610 Polk Bldg.
DETROIT, MICH., The Richmond Fireproof Door Co., 2211 Woodward Ave.
DULUTH, MINN., H. D. Bullard, 410 Builders Exchange
ELMIRA, N. Y., Elmira Bldg. Units, Inc., 1898 Grand Central Ave.
EL PASO, TEXAS, C. C. Gaines, 1002 Mills Bldg.
ERIE, PA., Geo. H. Kraft & Son, 602 Schenley Drive
FLINT, MICHIGAN, Flint Iron & Wire Works
FT. WAYNE, IND., Jones & Moss, 215 Standard Bldg.
FT. WORTH, TEX., Chas. F. Williams Co., Inc., 328 Lipscomb St.
GRAND RAPIDS, MICH., Haven-Busch Co., 501 Front Ave., N. W.
GREAT FALLS, MONTANA, Harold R. Hewitt, 3500 Fourth Ave., N.
GREENSBORO, N. C., J. D. Wilkins, W. Lee St. at Glenwood Ave.
GREENVILLE, S. C., Frank R. Henry Co., Masonic Temple
HARRISBURG, PA., Atherton Bowen, 222 North St., P. O. Box 853
HOUSTON, TEX., Maisey & Paige, 2911 Dalton St.
HUNTINGTON, W. VA., James J. Weiler & Sons, 202 Elm St.
INDIANAPOLIS, IND., Stackhouse Bldg. Spec. Co., 6117 College Ave.
JACKSONVILLE, FLA., Louis Aichel, c/o Florida Brick & Tile Co.
JOHNSON CITY, TENN., Eustis A. Lancaster, Jr., John Sevier Hotel Bldg.
KANSAS CITY, MO., E. C. Marqua Co., 2728 Jarboe St.
KNOXVILLE, TENN., R. G. Jefferies, 409 Clinch Ave.
LOS ANGELES, CALIF., Kenneth C. Gaines, 1046 S. Olive St.
LOUISVILLE, KY., Equipment & Supply Co., 420 Baxter Ave.
MANSFIELD, OHIO, Mansfield Structural Erecting Co.
MARIETTA, OHIO, E. A. Williams Bldg. Service Co., 200 St. Clair Bldg.
MEMPHIS, TENN., Mr. J. W. Peete, 1639 Vance Ave.
MIAMI, FLA., The Aufford Kelley Co., 144 N. E. 21st St.
MIDLAND, TEXAS, Chas. F. Williams Co., 311 W. Florida St.
MILWAUKEE, WISC., Wm. M. Heinz, 720 N. Jefferson St.
MOBILE, ALA., Underwood Coal & Supply Co.
NASHVILLE, TENN., John Williams, Room 1207 Warner Bldg.
NEW HAVEN, CONN., Hans Dumelin, 295 Sherman Ave.
NEWARK, N. J., Yunker Metal Products Co., 17 Cypress St.
NEW ORLEANS, LA., Nachary Bldrs. Supply Co., 318 Carondelet St.
NEW YORK, N. Y., The Richmond Fireproof Door Co., 1 E. 42nd St.
NORFOLK, VA., Globe Iron Construction Co., Princess Anne Rd. & Park Ave.
OKLAHOMA CITY, OKLA., Town-Sco Equip. Co., 211 N. W. 10th St.
OMAHA, NEBRASKA, Earl S. Lewis, 601 Redick Tower
ORLANDO, FLA., A. N. Goodwin, P. O. Box 1104
PADUCAH, KY., Paducah Iron Co., 216 So. 1st St.
PEORIA, ILL., Samuel J. Smith & Co., 510 Lehmann Bldg.
PHILADELPHIA, PA., N. R. Guilbert, Jr., 1722 Sansom St.
PHILADELPHIA, PA., H. A. Porter (elevator doors only), 1101 Architects Bldg.
PITTSBURGH, PA., James R. Pitcairn, 1052 Century Bldg.
PORTLAND, ME., Edward A. Gillerin, 30 Cherry Road
PORTLAND, ORE., E. E. Gilmer, 316 S. E. Madison St.
PORTSMOUTH, OHIO, Earl C. Hayes & Co., 1042 So. 20th St.
POUGHKEEPSIE, N. Y., Hudson Valley Bldrs. Steel Co., 178 Cottage Street
READING, PA., John H. Millard, 8 S. 20th St.
RICHMOND, VA., J. S. Archer, 511 Atlantic Life Bldg.
ROANOKE, VA., A. L. Horwitz, 208 Boxley Bldg.
ROCHESTER, N. Y., E. W. Maurer, 703 Temple Bldg.
ROCKFORD, ILL., Capitol Ornamental Iron Works, 1012 Ninth St.
SALT LAKE CITY, UTAH, Manufacturers Spec. Co., 26 Exchange Bldg.
SAN ANTONIO, TEX., John A. Williamson Co., 804 Avenue A
SAN DIEGO, CALIF., Chas. H. Lentz, P. O. Box 727
SAN FRANCISCO, CALIF., Persons-Dwan & Co., 516 Call Bldg.
SAN JUAN, PUERTO RICO, Earl K. Burton, Inc.
SCRANTON, PA., Labar & Evans, 711 Linden St.
SEATTLE, WASH., Tourtellotte-Bradley, Inc., 401 White Bldg.
SHREVEPORT, LA., The Meriwether Co., 1312 Jordan St.
SIOUX CITY, IOWA, Otto F. Bridge, 513 Jackson St.
SOUTH BEND, IND., Builders Agency, 1809 E. Fox St.
ST. LOUIS, MO., Lasar Mfg. Co., 16th & O'Fallon Sts.
ST. PAUL, MINN., Builders Engr. Co., 2694 University Ave.
SYRACUSE, N. Y., B. R. Johnson, 145 Harding Place
TAMPA, FLA., Stovall & Archer, 805 Peninsular Telephone Bldg.
TOLEDO, OHIO, S. L. Everitt, 619 Edison Bldg.
TUCSON, ARIZ., Construction Service Co., 423 N. Forth St.
TULSA, OKLA., Murray R. Womble, 316 Atco Bldg.
UTICA, N. Y., American Hard Wall Plaster Co., 728 Broad St.
WASHINGTON, D. C., Wm. E. Gambrill & Co., 410 Bond Bldg.
WICHITA, KANS., C. L. Anderson, P. O. Box 1143
WILMINGTON, DEL., J. Francis Blaine, Inc., 25th St. near Broom
WORCESTER, MASS., Haskins-Haire Wire Works, 9 May St.
YOUNGSTOWN, OHIO, G. A. Doeright, Jr., 355 E. Wood St.

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SIMPLEX DOOR CO.

612 N. Michigan Avenue, CHICAGO, ILL.
REPRESENTATIVES IN ALL PRINCIPAL CITIES

SIMPLEX TRUCKABLE COUNTERBALANCED FREIGHT ELEVATOR DOORS

Metal Clad, Kalamein or Corrugated Steel Panels

Simplex Counterbalanced Doors embody the latest improved features in freight elevator door construction. They are in use in factories, warehouses, mercantile buildings, hospitals, schools —in fact in every type of building equipped with a freight elevator.

Special features that reduce friction guarantee easy operation. Reinforced trucking bars that set flush with the opening sill provide a smooth trucking surface between elevator car and opening sill. All parts are designed to provide simple, smooth and continued operation under the severest service requirements.

Simplex Doors are usually furnished with F-6 flush type metal clad panels having two-ply wood cores. These have proven to be the strongest and most practical for freight elevator use. Vision panels are furnished when specified.

Simplex Doors can also be furnished with kalamein or corrugated steel panels.

Adjustable Shoes—The door sections are provided at each side with special friction reducing patented Adjustable Shoes. This is a very important feature. Through the use of Adjustable Shoes it is possible to erect the doors easily with a minimum amount of clearance between the door sections and guides and to maintain the doors in this manner after long, continued use.

Ball Bearing Sheaves—The door sections operate in heavy steel guides, and are hung on heavy adjustable steel rods and flexible steel cable chains operating over 5-inch double race ball bearing sheaves.

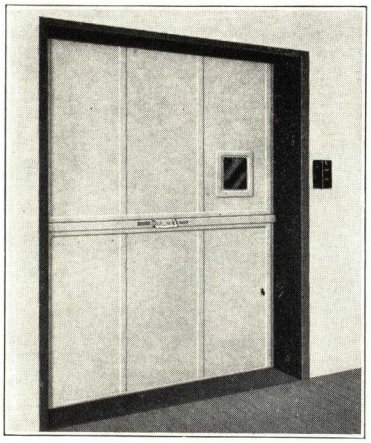
Latches—Simplex Doors are provided with specially designed anti-pinch center hook latches, easily operated both when opening and closing the door.

When room side handles are specified or required for Push Button elevators, a simple bow type handle is attached to the room face of angle astragal. A slight upward pull on this handle releases the hook latch and permits raising of the door with the same upward thrust.

Interlocks—Simplex Doors are equipped with electric interlocking devices that prevent the operation of the elevator until all doors in shaft are closed. For push button elevators special latch devices are furnished in addition to the interlocking devices so that the door cannot be opened from either the room or shaft side until the elevator car is at the floor level and special latch is released by the cam attached to the elevator car.

Trucking Bars—(See diagrams below).

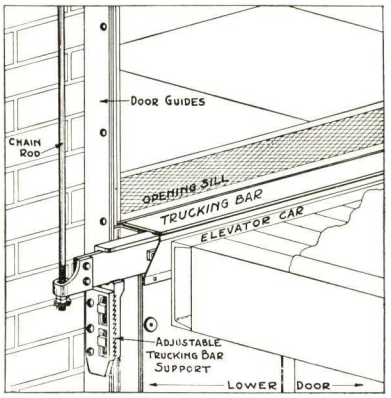
Vision Panels—Vision panels are furnished when specified. A vision panel is necessary when Simplex Doors are used with a Push Button or Hold On Button elevator having room side operating buttons. Vision panels having a clear 8x10-in. opening are furnished unless otherwise specified. Larger openings are not permitted in labeled doors.



Room Side View F-6 Metal Clad Panels

(Showing glass vision panel)

Strongest and most practical construction



Shaft Side View

Showing special adjustable stops for door trucking bar. Door is kept in alignment with opening sill

Simplex Metal Clad Counterbalanced Doors

These Metal Clad Simplex Doors with the steel frames around the door sections, are of fireproof construction, thereby protecting the elevator shafts not only against accidents, but, also, against the spread of fire from one floor to another.

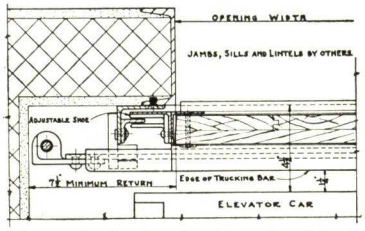
The Metal Clad panels are made of two thicknesses of white pine, clinch nailed together and covered on both sides with smooth, galvanized steel sheets securely fastened to the wood cores and with special reinforcing clips at the vertical joints between the sheets so as to provide flush type panels.

The majority of architects and users now specify the type of construction, known as our F-6, for they have found from experience that this type of door is attractive in appearance as well as being built for service.

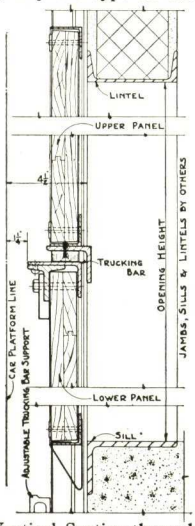
Simplex Metal Clad Doors are of rugged construction throughout. Simplex Doors for large openings are properly reinforced, and when the elevator capacity is indicative that heavy trucking loads will pass over the door the Trucking Bars are also heavily reinforced to properly sustain the trucking load.

Simplex Metal Clad Doors can be labeled for openings that do not exceed 8 ft. 0 in. in width or 10 ft. 0 in. in height.

The structural steel frames and sills for all freight elevator openings should be specified in Miscellaneous Iron or Structural Steel Work.



Plan at Jamb—Regular Type Metal Clad Simplex Door



Vertical Section through Regular Type Metal Clad Simplex Door

Simplex Pass Type Metal Clad Counterbalanced Doors

Simplex Pass Type Doors with Metal Clad panels are used where low story heights do not permit the use of Regular Type doors.

The Pass Type can be used where the story height from finished floor to finished floor is only eighteen inches greater than the opening height, provided openings directly above each other are of equal height.

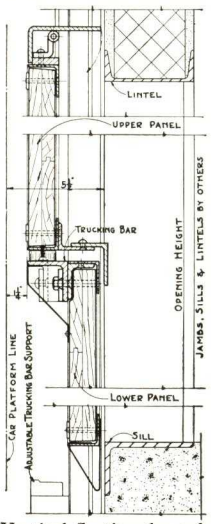
For openings of varying heights, some additional space allowance is necessary.

Simplex Pass Type Metal Clad Doors are especially adaptable for garages, warehouses and industrial plants where high openings are required.

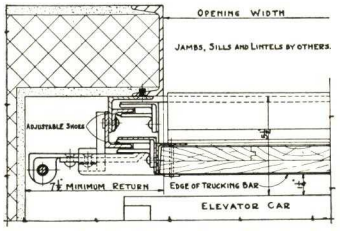
Pass Type doors require larger size Trucking Bars due to the fact that the doors are staggered and operate in double guides to permit the upper door section on one floor to pass the lower section of the door on the floor above. The gap between the upper edge of the upper door section and the lintel of the opening is closed by means of a hinged Movable Lintel or Filler Plate attached to the top rail of upper door section.

Pass Type and Regular Type doors can be installed one above the other by providing the Regular Type doors with extended or Pass Type Trucking Bars.

Simplex Pass Type Doors are labeled by the Underwriters for openings not exceeding 8 ft. 0 in. in width or 10 ft. 0 in. in height.



Vertical Section through Metal Clad Pass Type Simplex Door



Plan at Jamb—Pass Type Metal Clad Simplex Door

SECURITY FIRE DOOR CO.

Counterbalanced Truckable and Other Fireproof Freight Elevator Doors

3036-3048 Lambdin Avenue, ST. LOUIS, MO.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Security Products

SECURITY COUNTERBALANCED FREIGHT ELEVATOR DOORS ("SECO" Doors) with metal clad, corrugated, kalamein or steel plate panels.

SECURITY UNI-MOTOR ELECTRIC OPERATORS for freight elevator doors and car gates.

SECURITY DUMBWAITER DOORS.

"SEC-TEL" metal clad, corrugated and kalamein two-section slide up freight elevator doors.

SECURITY ELECTRIC INTERLOCKS.

"HORIFOLD" (bi-folding) warehouse doors for freight houses, shipping platforms and garages.

"VER-TEL" two-section slideup door for exterior warehouse, freight house and shipping platform openings.

Engineering Service

Our competent engineers are willing to serve you in connection with your door problems. You may secure this service by consulting our nearest representative or by directly communicating with us.

Write for our new catalog covering SECURITY Freight and Dumbwaiter Doors and UNI-MOTOR Operators. Our catalog "C" gives complete information about our "HORIFOLD" Doors (horizontal or bi-folding type) and our "VER-TEL" Doors.

Underwriters' Approval

All SECURITY and "SEC-TEL" Freight Elevator Doors are inspected and labeled by the Underwriters' Laboratories, Inc., and the Factory Mutuals, when so desired, provided they are within the size limits that permit labeling: viz., 8 ft. wide by 10 ft. high.

Security Sales Policy

SECURITY doors are sold on an erected basis only, the installations being made by our own or our representatives' experienced erectors.

Security Counterbalanced Freight Elevator Doors

SECURITY doors are of the *truckable* counterbalanced type, being made in two sections which slide in opposite directions on the shaft face of the wall. The sections evenly counterbalance each other without separate counterweights.

SECURITY doors can be furnished with metal clad, kalamein, corrugated steel or steel plate panels.

SECURITY doors are provided with heavy steel *angle trucking bars*. The *trucking bars* form the top edge of the lower section and are supported in *perfect alignment* with the opening or floor sill when the door is in the open position by means of heavy *angle trucking bar supports* at each end of the trucking bar.

These sill or trucking bar supports rest on the solid opening sill and will remain in the same permanent position. The supports are designed to act as gusset plates in the upper corners of the lower section, reinforcing it and securely joining the section frame to the trucking bar.

SECURITY doors are hung with heavy adjustable chain rods and cable chains operating over large double race ball bearing sheaves. No safety gates are required when SECURITY doors are used.

Photo by Dallin Aerial Surveys, Philadelphia

Aerial View of Philadelphia—Showing Some Prominent Buildings Equipped with Security Doors

1. New Philadelphia Post Office
2. New York Pennsylvania Railroad Station
3. Pennsylvania Railroad West Philadelphia Office Bldg.
4. Pennsylvania Railroad Warehouse
5. University of Pennsylvania
6. Pennsylvania Railroad Pullman Bldg.
7. Benjamin Franklin Memorial and Franklin Institute
8. Pennsylvania Railroad Center City Suburban Station and Office Bldg.
9. John Wanamaker Department Store (Lincoln Liberty Bldg.)
10. Center City Terminal Reading Railroad
11. N. Snellenburg & Co. Department Store
12. Campbell Soup Co., Camden, N. J.
13. RCA Victor Corp., Camden, N. J.

Metal Clad Panels—These are constructed of two thicknesses of white pine covered on both sides with patent leveled galvanized steel sheets and securely bolted into heavy angle frames. See illustration showing our type M-6 Door. This type, with the flush metal clad panels, is generally used on account of its neat appearance and sturdy construction.

Kalamein Panels—This type of door is used when architectural design requires a more elaborate type of paneling to harmonize with the surrounding building construction. The room side of the door is covered with smooth kalamein iron with drawn steel mouldings around the sunken panels, these mouldings being fastened in place so no nail or screw heads show. The shaft side of the door is covered with flat galvanized steel sheets. All seams between stiles and rails are clipped, filled with solder and ground smooth.

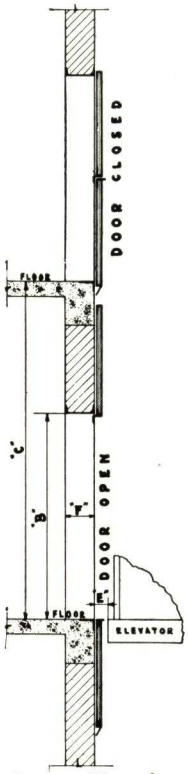
Adjustable Shoes (Patented)—SECURITY doors are equipped with patented adjustable shoes. These eliminate friction and permit adjustment to reduce side play between the doors and guides caused by wear and spreading of guides.

Security Interlocks (Patented)

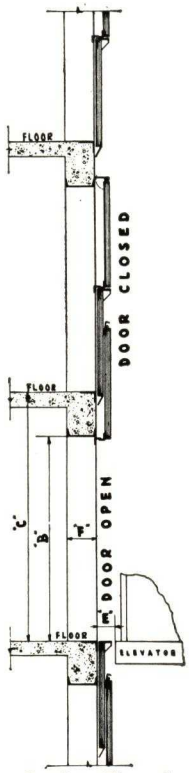
SECURITY doors when equipped with Security patented electric interlocks provide maximum protection against fire and accident.

SECURITY electric interlocks are especially designed for vertically sliding doors and have been approved by the Underwriters and various State and municipal departments, assuring low casualty insurance rates.

Specify Type "C" or Type "D" Interlocks for Car Switch controlled elevators, Type "DL" Interlocks for Push Button or Double Button operated elevators. Type XFE and XHE Explosion Proof Interlocks for hazardous locations Class I Group D, Class II Group G.



Section Through Opening Showing Security Door, Regular Type



Section Through Opening Showing Security Door, Pass Type

Space Requirements for Security Doors

Schedule should be consulted in order to determine highest opening obtainable in certain story heights for Regular and Pass Type SECURITY DOORS.

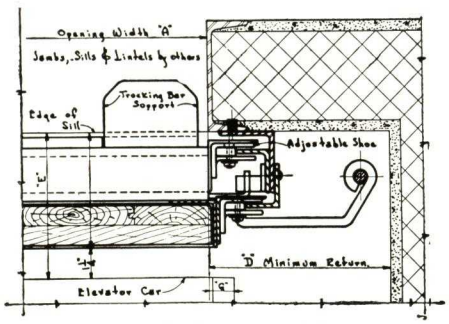
Also note other space requirements.

SCHEDULE OF MAXIMUM OPENING HEIGHTS SECURITY DOORS

For Various Floor Heights

Opening height "B" ft.	in.	Minimum "C" for regular type ft.	in.	Minimum "C" for pass type ft.	in.
6	0	9	6	7	3
6	6	10	3	7	9
6	8	10	6	7	11
6	10	10	9	8	1
7	0	11	0	8	3
7	6	11	9	8	9
8	0	12	6	9	3

Note: Minimum "C" for Regular Type doors can be slightly decreased in special cases. Consult factory.



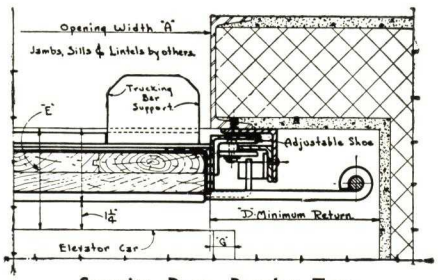
Security Door, Pass Type
Plan of shaft at jamb

CLEARANCE REQUIRED FOR SECURITY DOORS

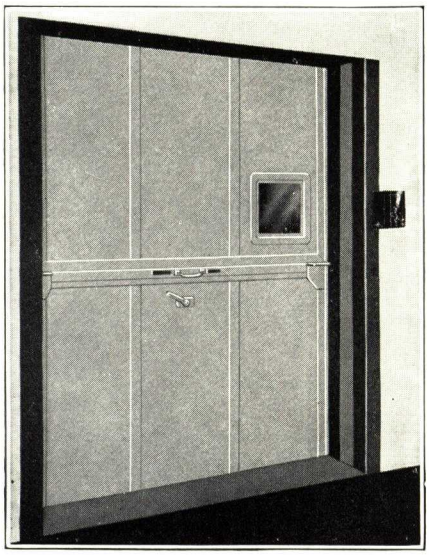
Type	D., in.	E., in.
Regular type	7½	*4½
Pass type	8	6½

*Minimum.

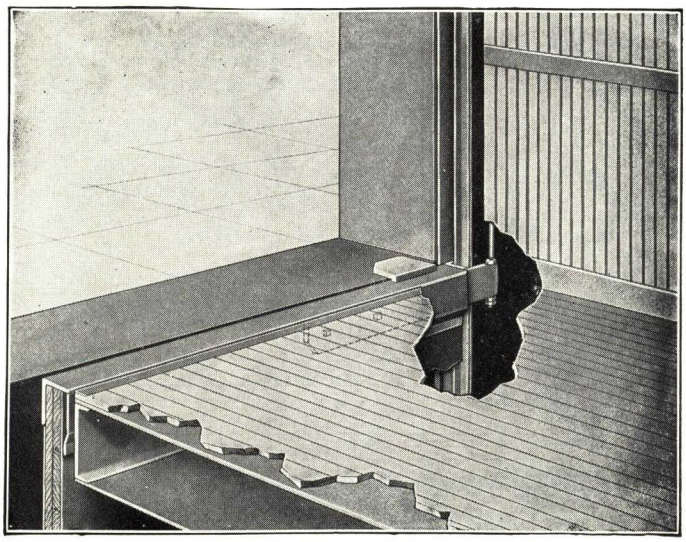
Note: For wide openings or for heavy trucking loads, Regular type doors, both metal clad and corrugated, may require 5 or 5½ in. for clearance E.



Security Door, Regular Type
Plan of shaft at jamb



Room Side of Type M-6 Security Door
Arranged for room side operation in connection with double Button elevator



Security Door with "Stay-set" Trucking Bar Support
Note that trucking load is supported by opening sill

Security Uni-Motor Electric Operators

A single unit applies power equally at both sides of the door. A motor of ample size is assembled compactly with its gears and sprockets.

Should the door meet an obstruction while opening or closing, the motor will stall without injury to the apparatus. It is guaranteed to withstand stalling, at full voltage, without injury for short periods.

The doors and gates can be operated manually as easily as if the power drive were not attached. Car gates can be equipped with similar operators. The gate will be raised simultaneously with the door so that both reach the full open position at about the same time.

The cross-drive is covered to protect it against dirt. All gears are enclosed. Ball bearings are arranged for pressure gun lubrication.

Failure of one unit will not affect the others. A motor can be removed for inspection or replacement without blocking up the door.

Only normal shaft space is needed, see drawing below. Operators can be applied to old elevator doors. If space is limited, the cross-drive, and even the drive unit, can be placed on the room side, being entirely enclosed and not interfering with the space around the opening.

The motor has capacity to operate the doors at approximately ½ second per foot of opening height.

Specially designed zone switches, with electro-mechanical interlocks, actuated by a cam on the car, prevent operation of the elevator unless all the doors are closed and latched.

Rugged, door operating buttons are placed near the car control. The "open" button requires momentary pressure; the "close" button requires constant pressure. An emergency "stop" button will stop all door movement. With leveling type elevators, the doors may be opened automatically as the car stops at the floors. The doors may be closed by the car switch if desired. Doors and the car gate, when used, are operated by the same buttons.

Motors are available for 208 or 220 volts, 2 or 3-phase, alternating or 230 volts direct current, power.

Security Door and Uni-Motor Specifications

For all openings to freight elevator shaft, except as noted, furnish and install metal clad SECURITY Doors as manufactured by the SECURITY FIRE DOOR Co., St. Louis, Mo. Door panels to be Type M-6, covered with flat galvanized steel sheets [or kalamein paneled] as shown on plans.

Furnish trucking bars to sustain a load of .... pounds and designed to transfer trucking load to opening sill.

Doors shall be provided with adjustable shoes and shall be hung on ⅝-in. adjustable rods and heavy Security steel chains operating over 5-in. double race ball bearing sheaves. Doors shall work in heavy angle guides securely fastened to opening frames and walls.

Doors shall be provided with web straps for manual opening and closing. Doors shall be equipped with electro-mechanical interlocks, with the necessary wiring for same. In lower corner of upper door provide 8x10-in. glass vision panel.

Where indicated on the plans, furnish and install Security Uni-Motor electric door and car gate operators, complete with all necessary wiring, limit switches, operating buttons and master control.

The door movement shall be retarded near the end of travel, in both directions, to prevent slam or jar.

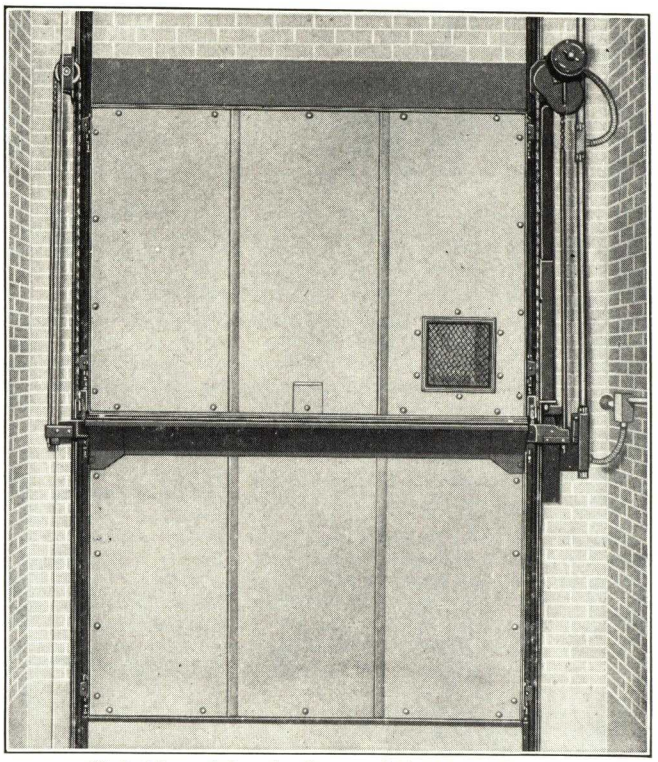
The operating equipment shall permit easy manual operation of doors and car gates in case of power failure without the use of any clutch or special releasing mechanism.

All shall receive priming coat of paint at shop.

Door contractor shall have the free and uninterrupted use of the running elevator when installing the doors.

All to be guaranteed against defects in material and workmanship for two years.

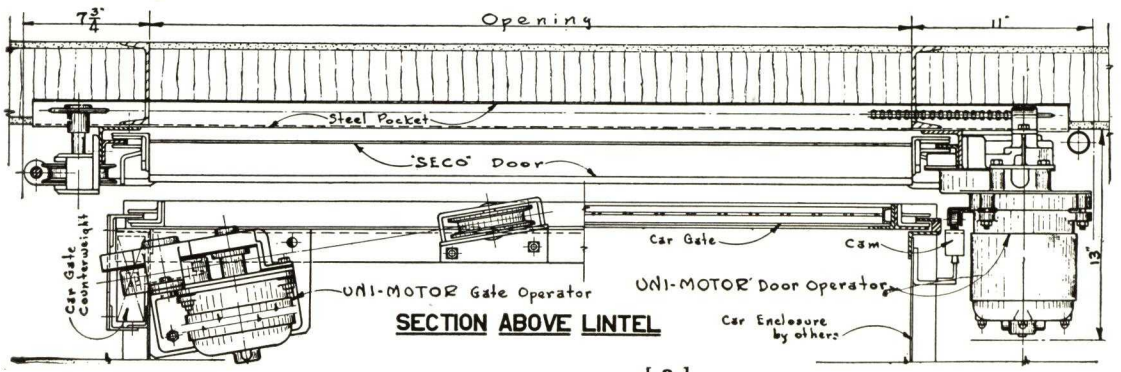
Steel frames and sills shall be furnished under Miscellaneous Iron Work. Power line to penthouse with fused switch, by others.



Shaft View of Security Door and Uni-Motor Operator

A Few Security Uni-Motor Operated Door Installations

Cold Storage Plant, State Docks, Mobile, Ala.
U. S. Post Office, Sacramento, Cal.
U. S. Post Office, Miami, Fla.
Wilson & Company, Chicago, Ill.
Celanese Corp., Cumberland, Md.
U. S. Post Office, Detroit, Mich.
Minnesota Mining & Mfg. Co., St. Paul, Minn.
Schunemans & Mannheimers, St. Paul, Minn.
Kansas City Terminal Ry. Co., Kansas City, Mo.
Central Terminal Co., St. Louis, Mo.
U. S. Post Office, Atlantic City, N. J.
Agfa Ansco Corp., Binghamton, N. Y.
Chevrolet Motor Co., Buffalo, N. Y.
Johns' Pretzel Bakery, Buffalo, N. Y.
U. S. Post Office, Mt. Vernon, N. Y.
U. S. Postal Stations B, W and Y, New York, N. Y.
Madison Square Postal Station, New York, N. Y.
U. S. Postal Station Garage, Rochester, N. Y.
U. S. Post Office, Winston-Salem, N. C.
Fisher Body Corp., Cleveland, Ohio
The May Company, Cleveland, Ohio
Delco Corp., Dayton, Ohio
U. S. Post Office, Philadelphia, Pa.
American Ice Co., Philadelphia, Pa.
Frankford Grocery Co., Philadelphia, Pa.
Pennsylvania Railroad, 30th and Market Sts., Philadelphia, Pa.
Vocational School, Philadelphia, Pa.
Maiden Creek Filter Plant, Reading, Pa.
Texas & Pacific Baggage & Express Bldg., Fort Worth, Tex.
U. S. Post Office, San Antonio, Tex.
Bureau of Engraving and Printing, Washington, D. C.

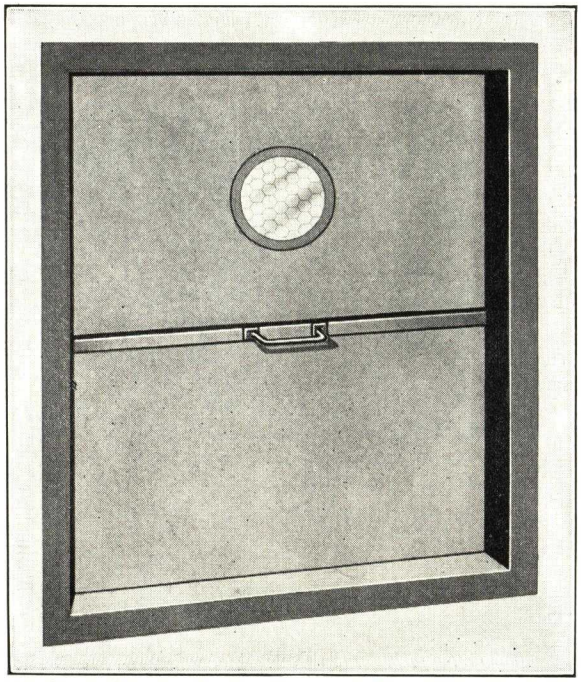


Plan View Giving Space Requirements for Uni-Motor Installation Shown at Left

Merchandise Mart, Chicago, Ill.
241 SECURITY freight elevator doors used

A Few Security Dumbwaiter Door Installations

St. Francis Hospital, Wilmington, Del.
Florida State Hospital, Chattahoochee, Fla.
S. H. Kress Co., Atlanta, Ga.
Swift & Co., Chicago, Ill.
Ball Memorial Hospital, Muncie, Ind.
W. T. Grant Co., New Orleans, La.
Louisiana State University Cafeteria, Baton Rouge, La.
Massachusetts Memorial Hospital, Boston, Mass.
Boston City Hospital, Boston, Mass.
Sears-Roebuck & Co., Detroit, Mich.
F. W. Woolworth Co., St. Louis, Mo.
Sisters of Mercy, St. Louis, Mo.
Washington University, St. Louis, Mo.
Lutheran Orphans Home, Des Peres, Mo.
University of New Hampshire, Durham, N. H.
J. J. Newberry Co., Atlantic City, N. J.
Princeton University, Princeton, N. J.
F. W. Woolworth Co., Newark, N. J.
Eastman Kodak Co., Rochester, N. Y.
S & W Cafeteria, Charlotte, N. C.
John R. Thompson Restaurant, Columbus, Ohio
H. L. Green Co., Philadelphia, Pa.
Franklin Memorial, Philadelphia, Pa.
University of Texas, Austin, Tex.
F. W. Woolworth Co., Dallas, Tex.
S. S. Kresge Co., Wheeling, W. Va.
International Harvester Co., Chicago, Ill.
Federal Reserve Board, Washington, D. C.
White House Kitchen, Washington, D. C.
Peoples Drug Store, Washington, D. C.
U. S. Supreme Court Bldg., Washington, D. C.



Security Steel Plate Dumbwaiter Door with Glass Vision Panel Showing Flush Steel Trim

DUMBWAITER DOORS

SECURITY dumbwaiter doors are usually furnished of 16-gauge steel plates securely fastened to angle frames. Insulated panels can be furnished if desired. When doors are labeled by the Underwriters, the panels are insulated.

The panels are fastened in channel or angle frames. The doors slide easily in steel guides and are hung on steel cable chains operating over double race ball bearing sheaves. No counterweights are required, each section of door balancing the other.

SECURITY doors are usually furnished with combination 16-gauge steel frames and flush trim for room side of opening. These frames are reinforced at the head and sill with 14-gauge steel channels. Ornamental trim can be attached to the flush trim if desired. Projecting sills or shelves can also be furnished. Consult our local representative.

SECURITY dumbwaiter doors have proven their adaptability and efficiency for hospitals, department stores, hotels, restaurants and factories.

For restaurants and hospitals we recommend the use of stainless steel for the door panels and frames.

SECURITY dumbwaiter doors are furnished with vision panels when specified. Labeled doors have a 3-in. round vision panel, other doors a 6-in. vision panel.

SECURITY doors are furnished, with prime shop coat of paint, f.o.b. destination. They are assembled on frames, ready to be built into the wall of dumbwaiter shaft. They can be set by the general contractor.

For electric dumbwaiters, we furnish our Type "E" Electric Interlocks and latches operated by a stationary cam on the car.

Suggested Specifications — For all dumbwaiter door openings shown on plans and as noted, furnish Security dumbwaiter doors as manufactured by the SECURITY FIRE DOOR CO.

(A) The door sections shall have 16-gauge steel panels riveted into angle frames.

Provide the necessary steel guides, ball bearing sheaves, cable chains and other hardware. Doors to be attached to combination steel frames having flush trim on the room side all ready for setting into the masonry wall. Doors and parts to receive prime coat of paint at the factory.

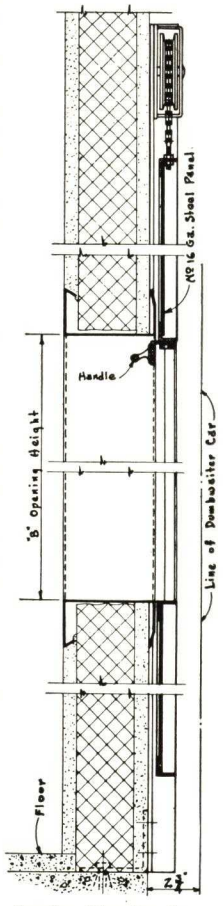
(B) The door sections shall have insulated steel panels interlocked with the metal frame at head and sills. Door to be labeled by the Underwriters' Laboratories, Inc. Provide 3-inch diameter vision panel.

For electric dumbwaiters specify Security Type "E" Interlocks and latches. The wiring and cam for interlocks should be installed by the dumbwaiter contractor.

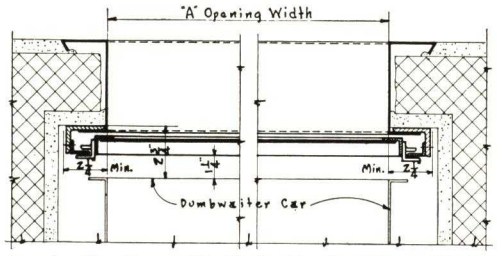
The angle guides for both the labeled and unlabeled doors are attached to the sheet steel frames and extend to the floor to provide proper support when setting dumbwaiter door unit.

Structural channel frames can be furnished when specified.

Note: Metal clad or kalamein dumbwaiter doors require 3-in. of space from car to wall.



Section Showing Door in Open Position



Security Dumbwaiter Door with Flush Trim for Tile or Plastered Walls

MEMORANDA

ESTABLISHED 1909

BABCOCK-DAVIS CORPORATION

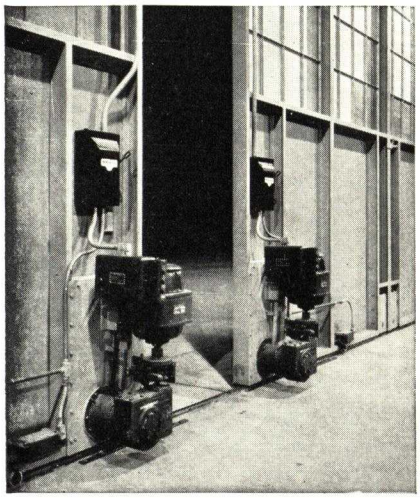
474 Dorchester Avenue, BOSTON, MASS.

For our pages on other Mechanical and Electrical Specialties and Flag Poles, see File Index

BABCOCK-DAVIS MONO-WHEEL DRIVES FOR AIRPLANE HANGAR DOORS

(Patent 1960860)

Mono-Wheel Drives have met the demand for operating sliding doors for airplane hangar doors, bus garage, shipping areas, gates, roofs and any object to be moved.



Mono-Wheel Units As Applied to Airplane Hangar Doors

For large openings, such as hangar doors we have a patented system of banding which makes all the doors operate in unison.

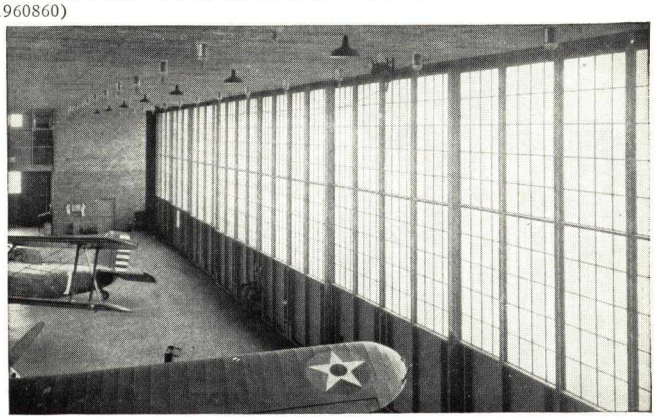
Heating problem is helped by motorizing the doors, as they can be opened and closed in a short period of time by the touch of a finger. Mono - Wheel Units can be installed on existing doors in a very short time without interfering with usual traffic.

If the hoisting cables of lift style doors, which are exposed to the weather and vandalism, are broken, the doors remain closed and inoperative. Mono-Wheel Drive type of doors are always operative by hand in case of power failure.

This type of door eliminates the heavy trusses that span the opening which have to be designed to carry the entire weight of the door panels and roof when they are of the overhead or canopy types. The Mono-Wheel doors are supported on ball bearing wheels which travel on steel rails that are built into the floor construction. This means considerable saving in the structural part of the building and also keeps the headroom down to a minimum.

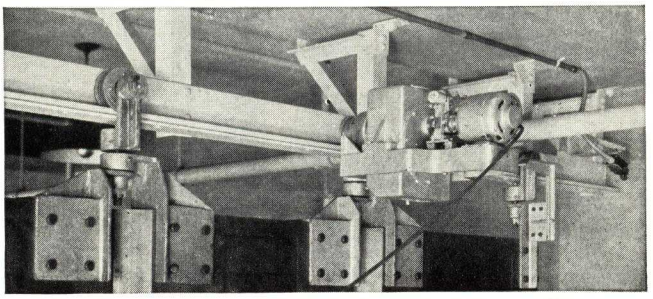
Mono-Tandem Units

Mono-Wheel Units for train drive type of doors can be adapted for one or more panels depending on the size of the opening. There are no operating cables or chains required and the doors can be partially opened or closed in a few moments from any control station.



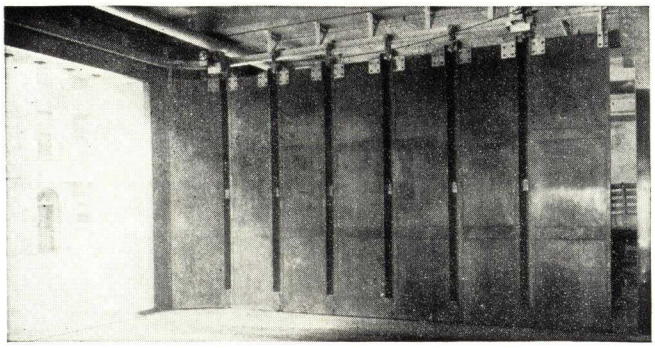
Opening Controlled by Two Mono-Wheel Units at Spokane, Wash.
Opening 158 ft. 2 in. wide by 25 ft. high

These drives come in single or tandem styles and will operate doors of either straight line or round the corner types of doors.

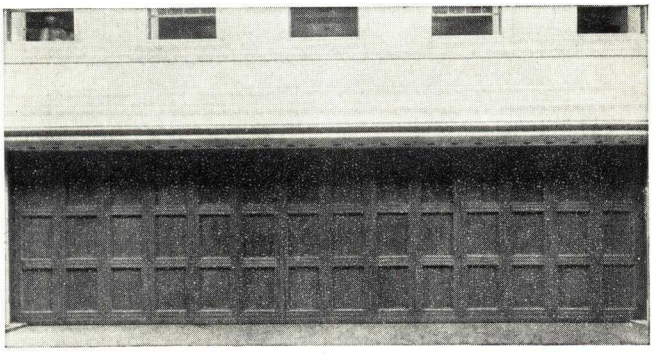


Mono-Tandem Unit and Ball Bearing Swivel Hanger Hinges

Shipping areas protected by doors with Mono-Wheel Drives are being specified by far-sighted engineers and architects because working space behind these doors can be heated in extreme cold weather, thus facilitating quicker handling of materials and protecting the space against inclemency of the weather and undesirables.



Inside View Showing Door Opening Around Corner



Outside View Showing Door Closed

Shipping Doors Christian Science Publishing Society (5 openings), Boston, Mass.

CHESTER LINDSAY CHURCHILL, Architect — LOCKWOOD GREEN ENGINEERS, INC., Engineers

SOME RECENT INSTALLATIONS

Movable Roofs—Club Mayfair and Cocoanut Grove, Boston, Mass.
Light-Proof Curtains—Massachusetts Institute of Technology, Cambridge, Mass. (Stone & Webster, Engineers); Wellesley College, Wellesley, Mass.
Movable Blackboards—Massachusetts Institute of Technology, Cambridge, Mass. (Stone & Webster, Engineers); Wellesley College, Wellesley, Mass.
Bleachers—Washingtonville High School, N. Y. (Galen H. Nichols, Architect).
Mono-Wheel Units—Washington National Guard Hangar, Spokane, Wash.; Christian Science Publishing Society, Boston, Mass. (Chester Lindsay Churchill, Architect; Lockwood Green Engineers, Inc., Engineers).
Fire House Door Operator—4 Four-fold Door Operators, City of Cambridge, Mass. (Sturgis Associates, Architects).
Garage Doors—Cambridge Police Headquarters (Putnam & Cox, Architects); Bowdoin Square Garage, Boston, Mass.

THE STANLEY WORKS

MAGIC DOOR DIVISION

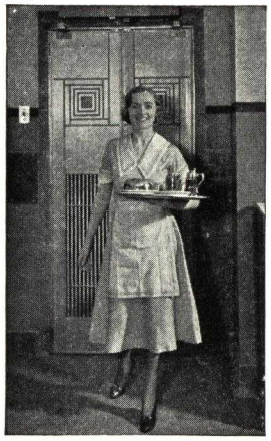
NEW BRITAIN, CONN.

NEW YORK REPRESENTATIVE: George Lowe, 100 Lafayette Street (Telephone: CAnal 6-0500)

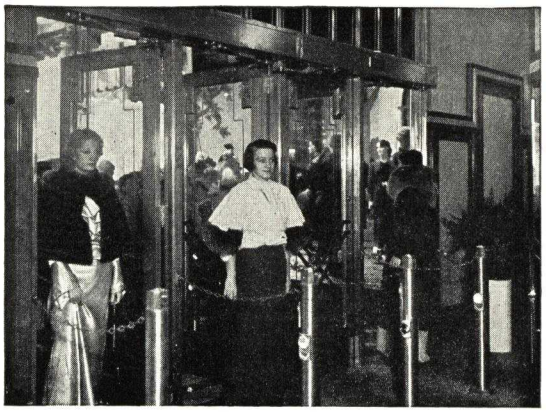
For Stanley "Roll-up" Doors, see File Index

Railroad Station

Building Entrance



Chain Restaurant



Shop Entrance

STANLEY MAGIC DOORS

(Patented)

Open at Your Approach—Close Automatically

Doors of Any Size, Weight and Materials

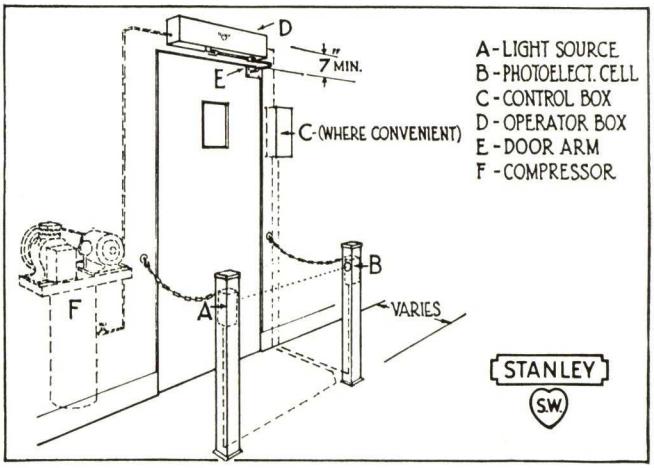
Stanley Magic Door equipment is available for the economical operation of heavy entrance doors, single or double types, in stores, office buildings, hotels, factories, hospitals, railway stations, clubs, garages, etc. They are thoroughly practical in application and dependable in operation.

With this equipment doors are made completely automatic. They operate when a ray of light, falling on a photoelectric cell, is interrupted—the door opens long enough for a person to pass through, then closes automatically. If the door is partly closed when the next person approaches, it immediately re-opens from any degree of closing. When a number of people pass through in quick succession, the door stays open until the last person passes through.

For Single or Two-part Doors of Any Size

Doors of any size, weight or material may be operated. Where maximum speed is desired, as in restaurants, two-leaf doors operated in one direction in pairs are generally recommended. Two-leaf doors may also be operated with one part opening *"out"* and the other *"in"* if desired. Doors already in place are easily equipped with Stanley Magic Door Operators without rehanging.

In addition to the photoelectric control mentioned above, push button, ceiling pull cord, and various other types of controls can be supplied to meet special conditions. Recommendations and prices will be submitted on receipt of working drawings or sketches of the door and all conditions surrounding the door, including electric current available.



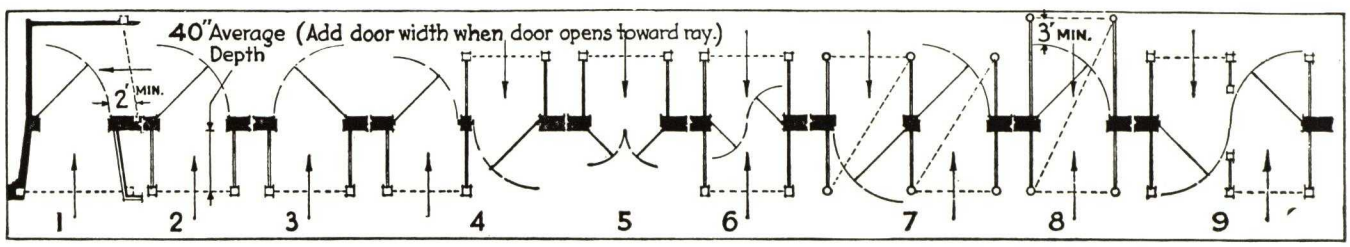
Operation of Stanley Magic Doors

The equipment consists of four parts—Operator, Control, Railings or Posts for housing the Photoelectric Control and Air Compressor. The operation is best explained by reference to the diagram above.

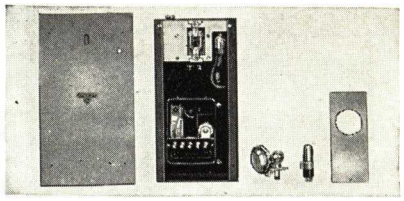
Light Source (A) in post projects a beam of light which falls upon photoelectric cell (B) in opposite post or railing. Interception of this beam causes cell to actuate photoelectric relay (C) which in turn causes air to be released through air valve controlled by a solenoid in pneumatic operator (D). Motion is transferred to door through bracket (E).

At the limit of the opening stroke, air valve permitting entrance of air is closed by a cam, and the door is then closed by springs contained in the operator. Automatic air compressor (F) supplies air at a constant pressure through pressure regulating valve.

In actual operation, the door opens quickly to approximately a wide open position, pauses at the full open position, after which it closes with a gentle checking motion. Operator is designed so that it may be adjusted for slow opening if preferred



Equipment for Stanley Magic Doors



Control

Operator—The entire mechanism, completely assembled, is enclosed in a cadmium-plated steel case or other material, as desired.

Control—Includes photoelectric relay, steel relay box, switch, transformer for light source.

Also photoelectric cell and complete light source ready to fit into railings.

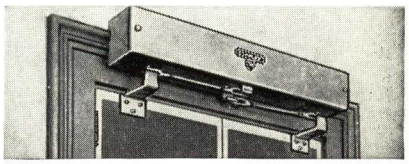
Railings or Posts—Available in a wide range of designs, metals and finishes.

Compressor—Complete with motor, air compressor with automatic switch, steel storage tank, air filter, pressure regulating valve and gauges.

Doors—Furnished by others.

Current—110 volts, 60-cycle, single-phase a-c. Rotary converter furnished where alternating current is not available.

Stanley also offers electric motor operators with various forms of control for Swinging, Sliding, Swing-up, and Roll-up Garage Doors and for the operation of Gates.



Operator

Consulting Service

Our engineers are always available to discuss the adaptability of Stanley Magic Doors to any specific problem, to recommend the most suitable type for the traffic to be handled and to furnish estimates or any pertinent information desired.

OTHER TYPES OF CONTROL AVAILABLE TO USE WITH STANLEY MAGIC DOOR OPERATORS

Diagonal Beam Control (Patent Applied For)

On doors constantly used by the public—some passing quickly and some slowly (in a wheel chair, on crutches, etc.), this auxiliary control is practically a necessity. This diagonal beam holds the door open as long as the beam is intercepted. A person starting through the aisle intercepts the cross light beam—the door opens. Almost immediately in continuing his passage he intercepts the diagonal light beam—holding the door open as long as it is intercepted. The second he steps out of the light beam door closes.

Hardware Control

Illustration shows a shop entrance, where photo-electric control is used on outside and hardware control on the inside. This is particularly desirable where space is limited. A person leaving the store grasps the handle which is connected electrically to the door operator. Contact with the handle opens an air valve in the operator, setting the door in motion. Speed of the door may be regulated, opening slowly to avoid danger to persons using it.

A practical use for Hardware Control is on heavy entrance doors which, due to weight or draft, would ordinarily require such heavy spring pressure to keep closed that it would be difficult to open manually.

Hardware Controls can be built into door handles, push bars, push plates, door knobs, or panic bolt bars.

Floor or Wall Switch Control

A practical installation of this kind has been made at the door to a lacquer room in an industrial plant—air conditioning necessitates keeping door closed. Previously, door was manually operated necessitating one free hand to open door, or foot type door holder to keep it open. In both cases efficiency of air conditioning was reduced. Most industrial plants have conditions similar to this.

On this particular job control is by means of a plate switch (may be located in either floor or wall), which allows the worker to approach the closed door with both hands full, step on the switch and door opens—then closes.

Pull Cord Control

Pull Cord Control is practical in industrial plants on passage doors between departments—especially where doors are used for truck passage. The truck operator, in approaching door, pulls cord switch located at any point convenient to route of traffic—door opens, truck passes through, and door closes after a pre-determined period, or it can be arranged to close by pulling cord switch on either side of the door.

Variations of Photoelectric Control

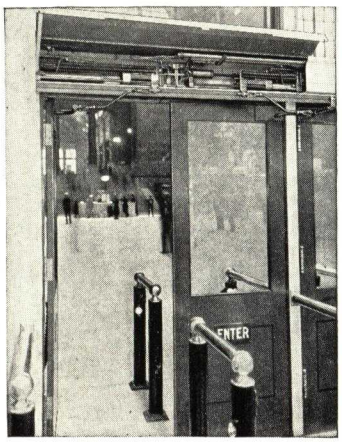
Illustrations on preceding page show the photoelectric control apparatus located in either posts, railings or walls—horizontally in front of doorways. In industrial plants, controls located in posts are inconvenient, as there is always the possibility of their being struck by trucks. An installation on doors leading from shipping room to loading platform has been made by us, which eliminates posts. A beam of light runs from an overhead point on the inside of the building to a floor box on the outside, diagonally through a window in the doors. An operator or truck approaching the doors, intercepts the path of light—doors open and remain open until operator has passed through—then they close.

Another suitable installation where posts are undesirable is running a beam of light in front of the doorway from overhead to a floor or wall outlet. A more suitable location for the outlet than on floor is a low point on wall where it will not be walked on, accumulating dirt. This type of installation is practical where the same people use the door repeatedly, routing their path through the beam of light, but for doors being used by the public the definite aisle approach is more practical.

Protective Rope Feature

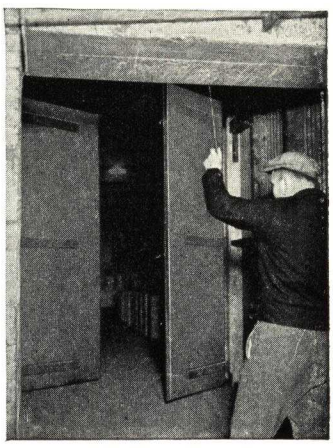
Rope is attached from outer stile of door diagonally back to a post or wall; when door opens this rope drops in back of the door and entirely out of the way. A person approaching from the wrong direction sees this rope and realizes this door is not for his use and is shied over to the next door, which is marked—"Enter."

Hardware Control



Diagonal Beam Control

Protective Rope Feature



Pull Cord Control

Stanley Magic Doors Are Displayed at Architect's Samples Corporation, 101 Park Avenue, New York

SINCE 1828

CORNELL IRON WORKS, INC.

TELEPHONE
Stillwell 4-3880-1-2-3

36th Avenue and 13th Street
LONG ISLAND CITY, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

Products

CORNELL ROLLING DOORS in Steel, Bronze, Aluminum, Stainless Steel or with Cornell Non-corroding Curtain Bottoms.

UNDERWRITER'S LABELED ROLLING FIRE DOORS.

ROLLING STEEL ESCALATOR COVERS.

FLOAT-OVER OVERHEAD DOORS in Galvanized Tubular Steel; and in Wood, 2⅝ and 1¾-in. thickness.

ROLLING GRILLES and GATES in Steel or other metals; SLIDING GRILLES in Steel or other metals.

CANOPY; BI-FOLD; VERTICAL LIFT; and TURN-OVER DOORS in Steel or Wood.

ELECTRIC MOTOR DRIVES for all above products.

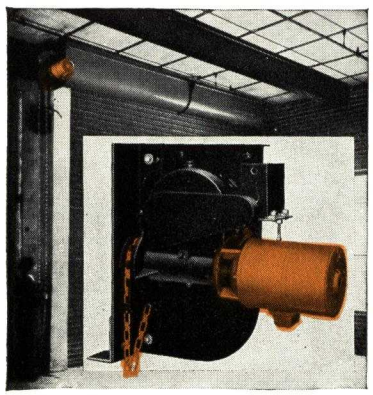
CORNELL ROLLING DOORS

SINCE 1854

Since 1828

Makers of fine doors for over one hundred years, CORNELL IRON WORKS, INC. owes its origin to George Cornell, who purchased his employer's metal business July 29th, 1828, in New York City. With completely equipped modern one-story factory buildings in Long Island City, occupied in 1925, the Company is in a position to produce all parts with the greatest efficiency and dispatch.

Upward Acting Doors and Grilles for All Purposes



Cornell Motor Operator and Door

Listed on these pages is a most complete line of upward acting doors and grilles suitable for the most exacting specifications.

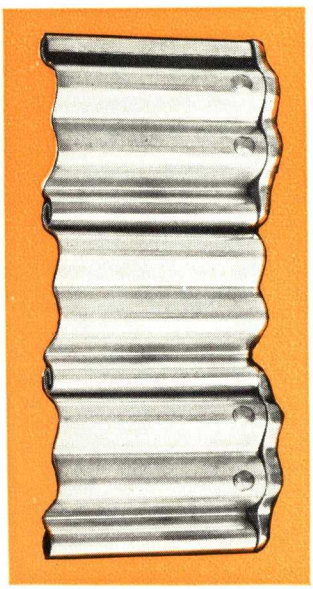
CORNELL IRON WORKS, INC. is the originator of the Rolling Grille in America. Over 90% of all rolling grilles installed between 1931 and 1936 are Cornell Rolling Grilles.

Dimensions for Cornell Rolling Doors and Cornell Rolling Grilles are shown on page 3.

Motor Operation—Cornell motor drives are especially designed for the most severe service and are completely assembled in their shops with electric brakes and an emergency hand chain operator disengagable from the floor, locking in with the circuit and the brake. The usual control is by push button stations operating through automatic starters.

Underwriters' Labeled Rolling Steel Fire Doors

Carry the Laboratories' labels for fire walls, vertical shafts, partitions, or for exterior doors and shutters. The doors operate independently of the operating device for normal service. The closing action is extremely positive and entirely dependable. Any type of operation can be used and the doors can be easily raised and reset after automatic closure.



Cornell Special Design Slats
With interlocks to shed water and allow frictionless coiling

Clearances

The minimum headroom should be figured 15 in. for nearly every type of door or grille. This increases in proportion to the height for rolling doors and grilles as indicated in tables on page 3. Big Float-over Doors, Canopy Doors and Bi-fold doors need 18-in. headroom. Vertical Lift Doors, of course, require headroom equal to the height of opening, one-half or one-third the height, plus 8 to 15 in. for the sheaves and cable. Less than standard headroom can often be accomplished to meet special conditions; apply to the factory.

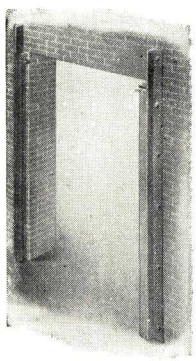
Side room on the jambs varies from 3 to 6 in. for doors counterbalanced by overhead springs. Where counterweights are used allow from 8 to 18 in. on one jamb, depending on weight of door.

Engineering layouts and complete catalogs of all products are available without obligation.

Erection of a Cornell Chain Gear Face of Wall Rolling Door Type CGF

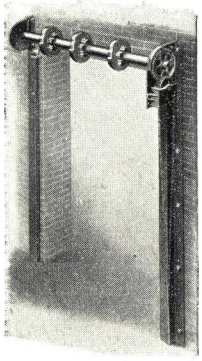
Four steps in the erection of a Cornell **Chain Gear Face** of wall door. Abbreviation "CGF" specifying type. The chain and gearing may be placed on the left side if preferred. The pipe shaft contains the counterbalancing springs. This is the standard door for openings over 80 sq. ft., up to the large motor driven installations.

1st STEP



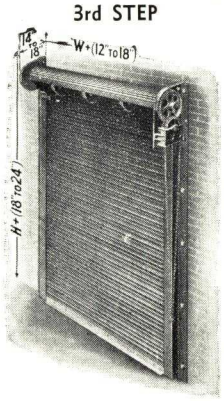
Channel shaped guides in place, fastened at the top with a through bolt, expansion bolts below.

2nd STEP



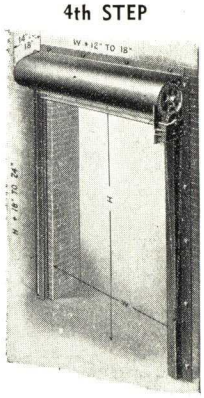
Steel brackets, attached to the guides, support the shaft. Makes for easy, accurate erection.

3rd STEP

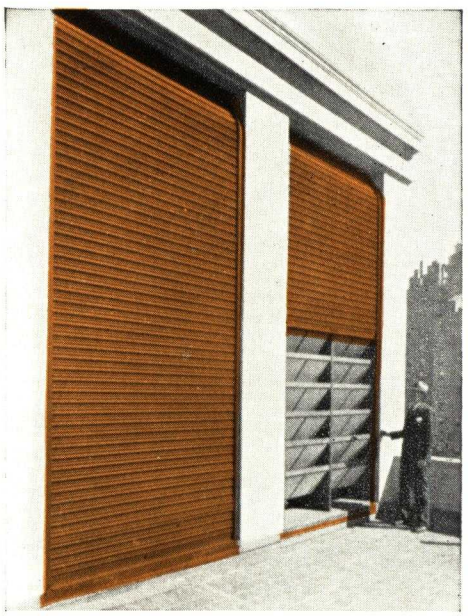


Curtain in place fastened to shaft. Note dimensions: H equals height, W equals width.

4th STEP

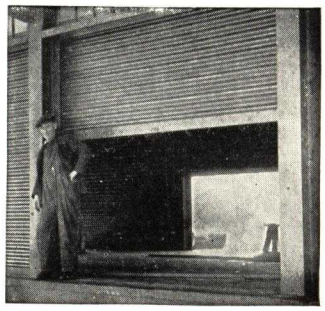


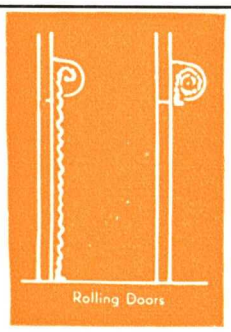
Curtain rolled up with galvanized steel covering hood fastened to brackets.



Cornell Non-corrodible Bronze Doors on Exterior Louvres, Museum Building

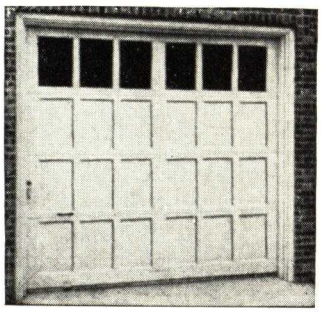
TYPES OF CORNELL DOORS

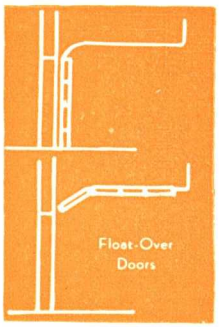




Rolling Doors

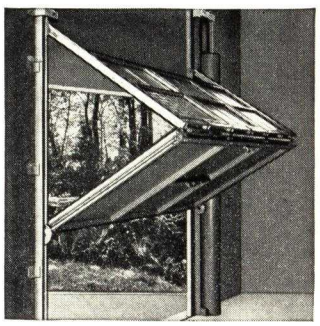
Made of interlocking metal slats running in vertical steel side guides and flexible to coil around an overhead pipe shaft. May be automatic closing and labeled by Underwriters' Laboratories for fire walls, etc. Suitable for small windows, and door openings up to 50 ft. wide and 100 ft. high. Conveniently motorized. Does not permit of glazing.

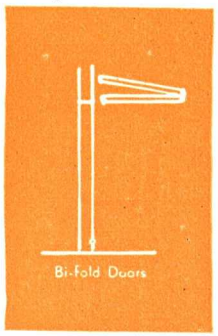




Float-over Doors

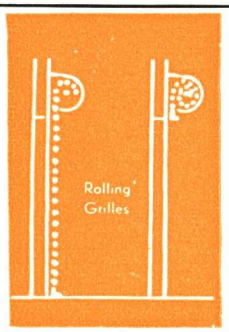
Composed of horizontal sections about 2 ft. high connected by hinges. Made in wood, steel or other metals. Usually glazed. Lie overhead on the horizontal extensions of the side tracks. Counterbalanced by springs and readily adaptable to motor operation. Made in stock sizes for residence garages, and in more rugged construction for larger openings. A very fast and light operating door.





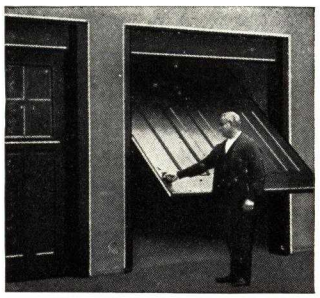
Bi-fold Doors

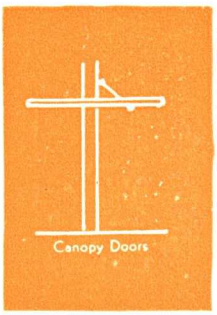
Two-piece doors made in either wood or steel. Can be glazed. A heavy duty door for industrial installations. Counterbalanced by weights, or springs in an overhead shaft. Suitable for openings as large as 20 ft. or more.



Rolling Grilles

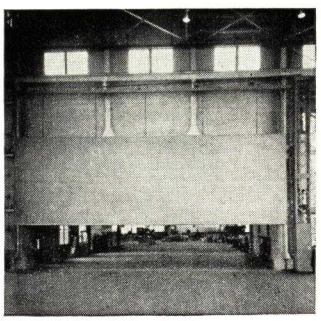
Made like rolling doors, but admit free passage of light, air and vision. Suitable for corridors, store fronts, gates, windows, counters, etc. Clearances and operation similar to rolling doors. Counterbalanced with springs, they operate very easily, while presenting an impassable barrier to intrusion. Made in steel, aluminum, bronze or stainless steel.

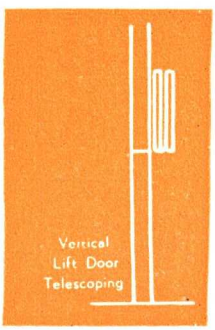




Canopy Doors

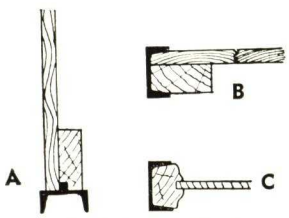
One-piece doors made in either wood or steel. Swing up half in and half out of opening. Can be glazed. A very economical construction, with few moving parts. Operating with great smoothness and ease they offer a wide range in design. Very adaptable for wicket, or pass doors. Used for small garages, and industrial openings up to 20 ft. or more. Counterbalanced by weights.





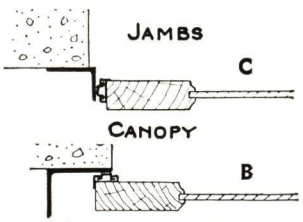
Vertical Lift Doors

Made in one section where headroom permits, otherwise in two or three sections telescoping. Wood or steel. Counterbalanced by weights they offer a perfect counterbalance. For openings up to 60 ft. or more.



Steel-Framed Wood Construction

A distinctive Cornell type permitting the use of any type of paneling for any size door and giving the rigidity of steel without the high cost.



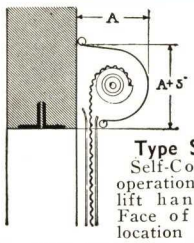
Bifold, Vertical Lift and Float-Over Doors

Feather-touch spring weatherstrip as shown, (patented) is an exclusive feature of all Cornell doors of sectional and rigid types.

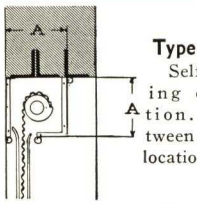
TYPES OF CORNELL COMMERCIAL SERVICE ROLLING DOORS AND ROLLING GRILLES

All Types

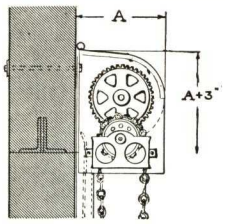
A = 14 in. up to 7 ft. opening height. Add 1 in. for each 3 ft. additional height.



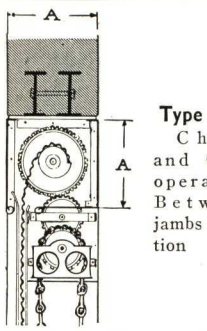
Type SCF
Self-Coiling operation with lift handles. Face of wall location



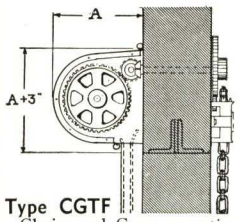
Type SCB
Self-Coiling operation. Between jambs location



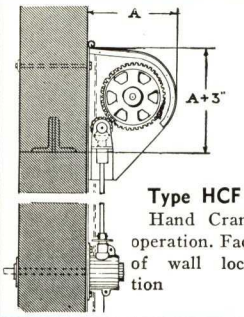
Type CGF
Chain and Gear operation. Face of wall location



Type CGB
Chain and Gear operation. Between jambs location

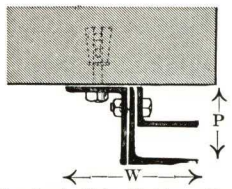


Type CGTF
Chain and Gear operation. Through wall

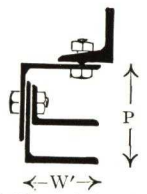


Type HCF
Hand Crank operation. Face of wall location

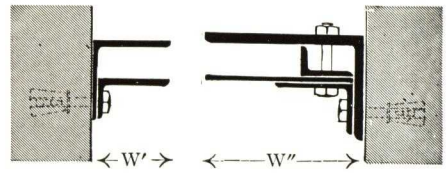
CORNELL ROLLING DOOR GUIDES



Standard Side Guide. Face of Masonry Wall



Side Guide and Steel Buck



Side Guides between jambs: Standard, to left. Wide guide, to right, on chain, crank or automatic side

Commercial Service Doors Types SCF, CGF, HCF

W = 5¼" to 15' wide opening. Add ½" for every 5' additional.
P = 3" to 15' high opening. Add ½" for every 5' additional.

Underwriters Doors Types Llenroc 1, 11, 21

W = 5¼" to 6' wide opening. Add ½" for every 2' additional.
P = 3" to 15' high opening. Add ½" for every 5' additional.

All Types
W' = W − 2½"

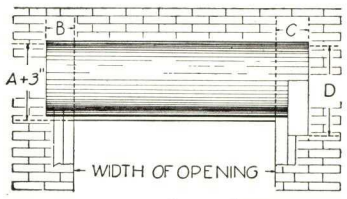
Types SCB, CGB
SCB W" = W'
CGB W" = W

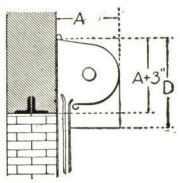
All Types
W' = W − 2½"

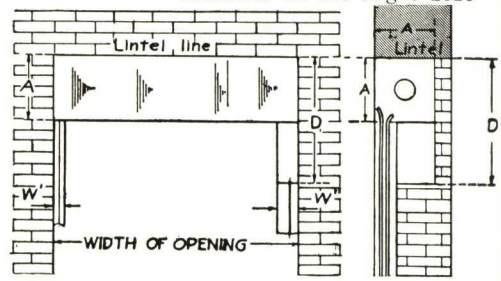
Types Llenroc 101, 111
101 W" = W
111 W" = W
W' = W

CLEARANCES—ROLLING DOORS AND ROLLING GRILLES

Operator or Automatic Indicated on the Right Side







Face of Wall

Type			
SCF:	A = 14"	B = 5½"	C = B	D = A
CGF:	A = 15" to 20"	B = 5½" to 8"	C = 6" to 12"	D = 26" to 30"
HCF:	A = Ditto	B = Ditto	C = 12" to 16"	D = Ditto

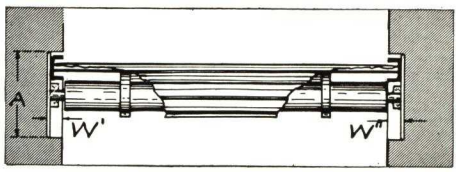
Underwriters (Doors only, no grilles)

Llenroc 1:	A = 15" to 18"	B = 8" to 9"	C = 8" to 10"	D = A
Llenroc 11:	A = 18" to 24"	B = 9" to 10"	C = 9" to 12"	D = 30" to 36"
Llenroc 21:	A = Ditto	B = Ditto	C = 12" to 16"	D = 30" to 36"

Between Jambs

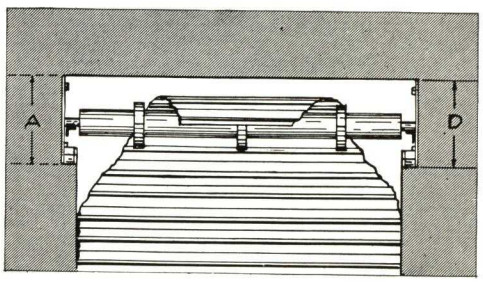
Type SBC:	A = 14"		D = A
Type CGB:	A = 15" to 20"		D = 30" to 34"
Llenroc 101:	A = 15" to 18"		D = 20" to 24"
Llenroc 111:	A = 20" to 24"		D = 36" to 40"

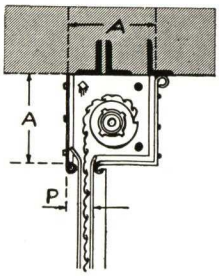
ROLLING DOOR OR GRILLE PLACED IN WALL



Plan of Section Above Shaft
Top of curtain cut away to illustrate construction

Masonry Openings Must Be Provided as Shown Recessed for Both Brackets and Guides





Sectional Elevation

(for dimensions between jambs see tables above)

List of Types—Service Doors or Grilles—Face of Wall Location

Use **Type SCF**—Self Coiling push up operation up to 80 sq. ft. for doors; to 120 sq. ft. for grilles.

Llenroc 1 *for self-coiling Underwriters labeled doors* only.

Type CGF—Chain and Gear operation for larger sizes.

Llenroc 11 *for chain operated labeled doors* only.

Type HCF—Hand Crank operation. **Llenroc 21** for crank operated labeled doors.

Between the Jambs Location

Use **Type SCB**—Self Coiling operation, within above limits.

Llenroc 101 *for self-coiling labeled doors* only.

Type CGB—Chain and Gear operation for larger sizes.

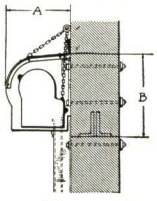
Llenroc 111 *for chain operated labeled doors* only.

Motor Drives can be supplied for any one of the above types.

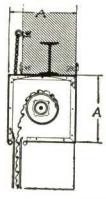
TYPES OF CORNELL LABELED UNDERWRITERS ROLLING DOORS

All Types

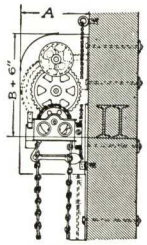
A = 15 in. up to 7 ft. opening height. Add 1 in. for each 2 ft. additional height. B = A + 3 in.



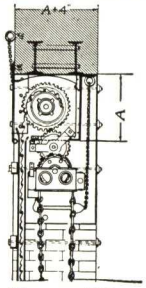
Llenroc 1
Self coiling operation with handles. Automatic door on face of wall



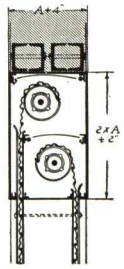
Llenroc 101
Self coiling operation with handles. Automatic door under lintel



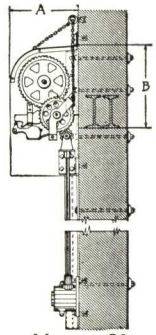
Llenroc II
Hand chain operation. Automatic door on face of wall



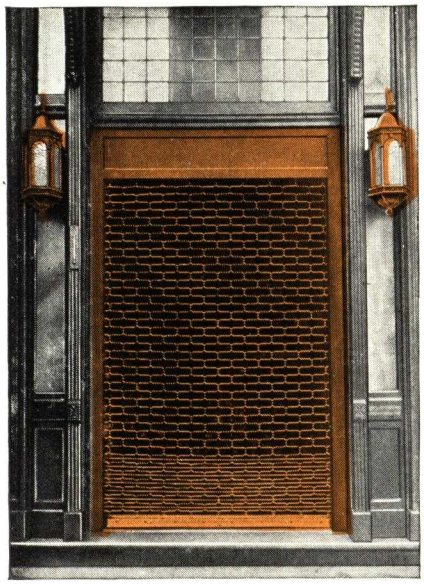
Llenroc 111
Hand chain operation. Automatic door under lintel



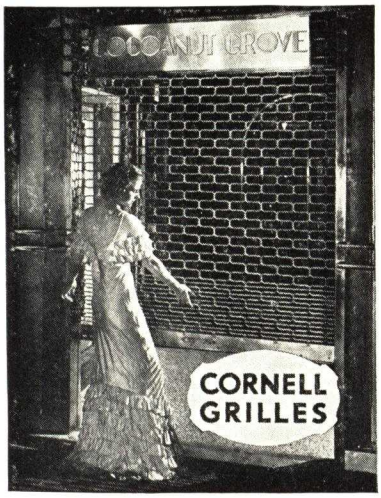
Llenroc 101
Double doors in a fire wall. One coiling above the other



Llenroc 21
Hand crank operation



Bronze Rolling Grille, Restaurant



Aluminum Rolling Grille, Night Club
An eight-page catalog sent upon request, shows further details and illustrations.

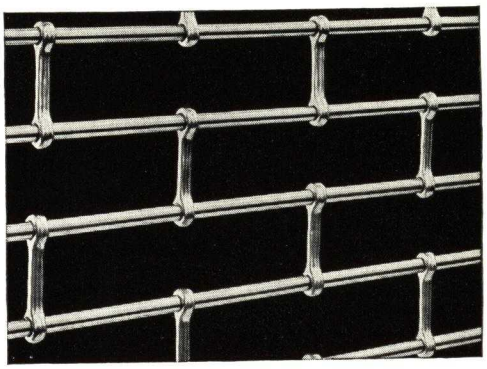
CORNELL ROLLING GRILLES

Cornell Rolling Grilles operate like Cornell rolling doors but are used to give equal security without blocking light, air, or vision. They may be completely concealed in the wall, as shown on opposite page.

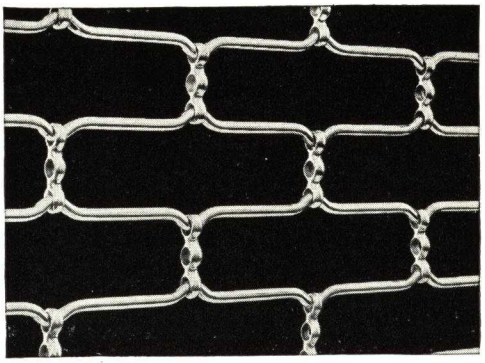
Cornell Iron Works introduced the Rolling Grille in America in 1931. One of the earlier installations consisted of four large Cornell grilles in the Century of Progress Exhibition at Chicago.

Cornell Rolling Grilles are made of 5/16-in. round hard drawn galvanized steel bars running continuous horizontally from jamb to jamb and locked into rolled steel vertical side guides. The horizontal bars are flexibly connected by unbreakable vertical certified malleable iron or steel links, or diagonal chain links, which permit the entire grille to coil overhead. The weight of the grille is counterbalanced accurately by fine oil tempered springs located in the overhead horizontal pipe shaft.

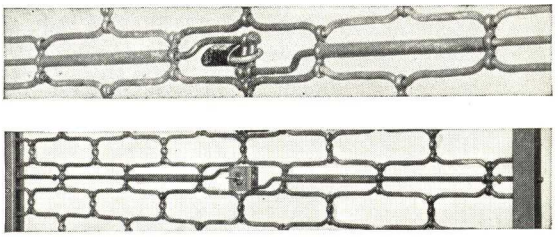
Rolling Grilles take the same bracket, hood and overhead clearances as rolling doors. See opposite page. Types SCF, CGF, HCF, SCB and CGB.



Standard Design
Straight bar type—malleable iron links with tubular spacers



Crimped Bar Design
Standard for aluminum, bronze or stainless steel grilles



Locking Devices
Bars throw to both sides and engage holes in backs of the side guides. Either padlock or cylinder lock can be furnished, operable from either side. Springs return the bars to position when the lock is released

CORNELL FLOAT-OVER DOORS

Cornell Float-Over doors slide overhead under the ceiling and take up no floor or sidewalk space and no wall or window space at the sides. They are not affected by ice, banked snow or wind. Out of the way of damage when up—they cannot blow shut or open, wedge or jam.

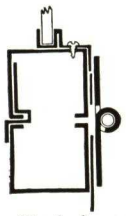
Doors roll on floating ball bearing wheels operating in cold rolled steel tracks fastened to continuous steel angles from sill to lintel. The doors are hung on high test preformed cables running over roller bearing sheaves. Each section carries patented feather-touch, self-adjusting, metal weatherstrip insuring a perfect metal to metal seal.

Designs—To suit architectural treatment. Tubular metal doors are furnished in black or galvanized steel, aluminum, bronze or stainless steel. Wood doors with plywood panels, raised panels, slab or V-joint surfaces, segment top and metal covered wood. Wicket or pass doors can be furnished in all types. Mullion posts either swinging, sliding or removable.

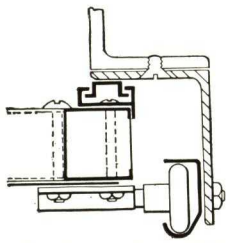
Clearances—15 in. headroom is standard, but 8 in. can be used if 12 in. side room is available. Standard minimum jamb clearance is 3 in.

Standard Details for Type S Tubular Steel Float-Over Door

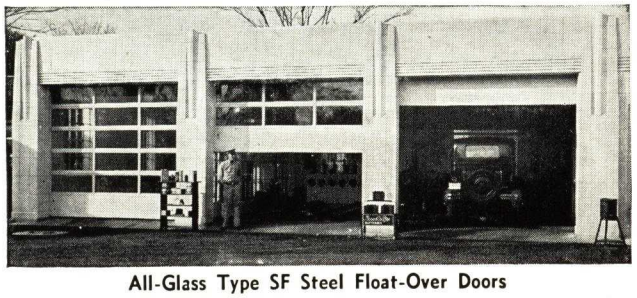
Steel doors are made on frames of 2-in. cold rolled copper bearing galvanized steel tubes, machine mortised and tenoned. Galvanized steel sheets are electrically welded to the frames to make up the panels. Tubes are 20 or 16-gauge; sheets 22-gauge or heavier. Paneled either side, flush the other side.



Vertical section through meeting rails, with glass above and sheet below



Horizontal section through stile showing jamb construction applied to steel buck



All-Glass Type SF Steel Float-Over Doors

GEO. W. JOHNSON MFG. CO.

For 35 Years Manufacturers of Rolling Doors and Shutters

GENERAL OFFICE AND FACTORY
KANSAS CITY, MO.
REPRESENTATIVES IN PRINCIPAL CITIES

TYPES, USES AND CONSTRUCTION

Rolling Doors are individually designed for their particular openings. They are of two general types —Service for ordinary commercial use, and Underwriters' Labeled for fire protection and insurance credit. Service types are ideal for a wide variety of uses as they are easily operated even in large sizes, are not affected by climatic changes and take up no floor space in either open or closed position. Labeled types are also suitable for ordinary use and furnish a high degree of resistance to fire. They are more expensive than Service types and should not be specified unless there is a definite need for fire doors bearing Underwriters' Labels. Both types are most frequently constructed for installation on the face of wall but may be arranged for installation under lintel and between jambs.

DESCRIPTION

Curtains—Made of interlocking slats rolled without sharp bends from rust-resisting cold rolled steel. Endlocks are double riveted to slat ends to prevent lateral movement and provide wearing surface in the guides. Top slat is reinforced with a steel band to avoid possibility of its tearing loose from the drum and lower edge is stiffened by a bottom bar formed of two angles bolted back to back.

Guides—Made of angle or bar sections with bell-mouths formed in their upper ends providing a continuous groove for the curtain edges. They are suitably arranged for attachment directly to the wall or to steel frames and are bolted to the end brackets to insure perfect alignment.

End Brackets—Of unbreakable steel plates well reinforced, which readily permits them to be properly designed for each opening condition; provides great strength without excessive weight and avoids danger of breakage by careless handling during erection or from excessive heat.

Drums—Full-floating full *roller-bearing* mounted, revolving around a stationary center shaft. Misalignment of end brackets cannot interfere with the perfect freedom of *roller-bearing* construction. Highest quality oil tempered motor springs are contained in the drum and form an exact and responsive counterbalance for every point of the curtain travel with ample margin of reserve power.

Hoods—Formed from steel sheets to the profile of the end brackets. Top and bottom edges are stiffened by beading or forming and formed angle supporting hoops are furnished for doors of any considerable width.

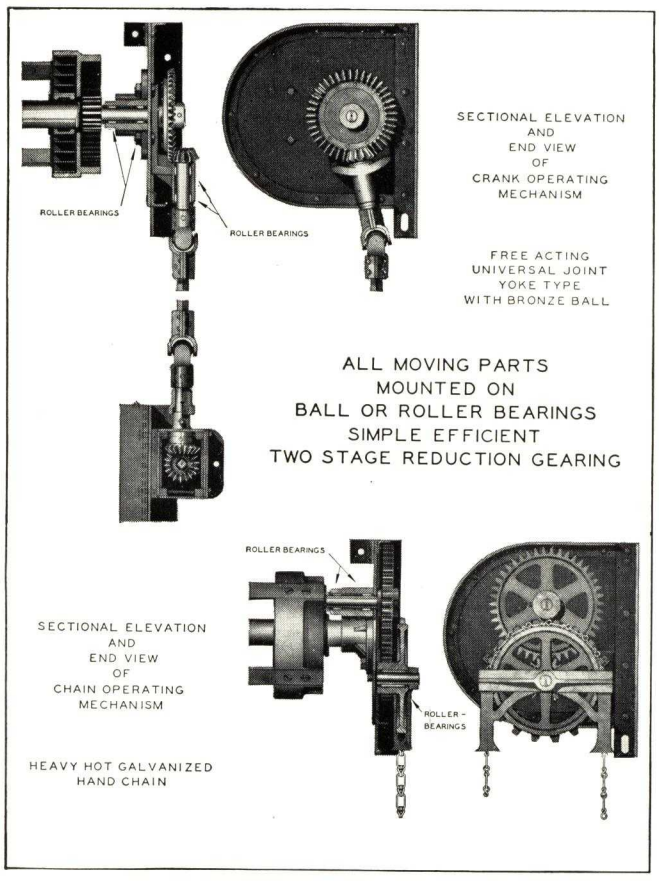
Operation—Doors of smaller sizes are easily operated by handles on the bottom plates. Larger sizes (over 8 ft. in height or 100 sq. ft. in area) usually should have endless chain or crank operation. Gearing is simple and efficient in design, of ample strength and arranged for fast and easy operation.

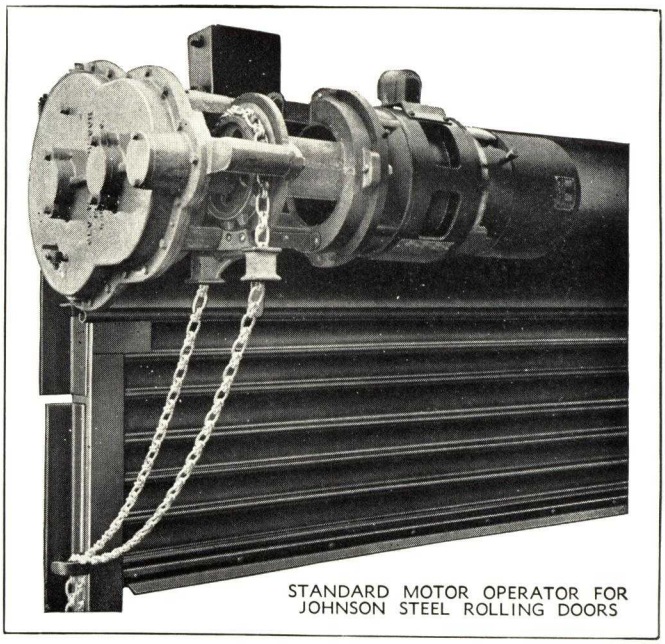
Bearings—All parts of every style of operating mechanism are full mounted on grease sealed *ball* or *roller bearings*. This, with Johnson full *roller-bearing* curtain drum, provides anti-friction bearings for every revolving part of a Johnson door, increasing ease and speed of operation and reducing lubrication maintenance to the minimum.

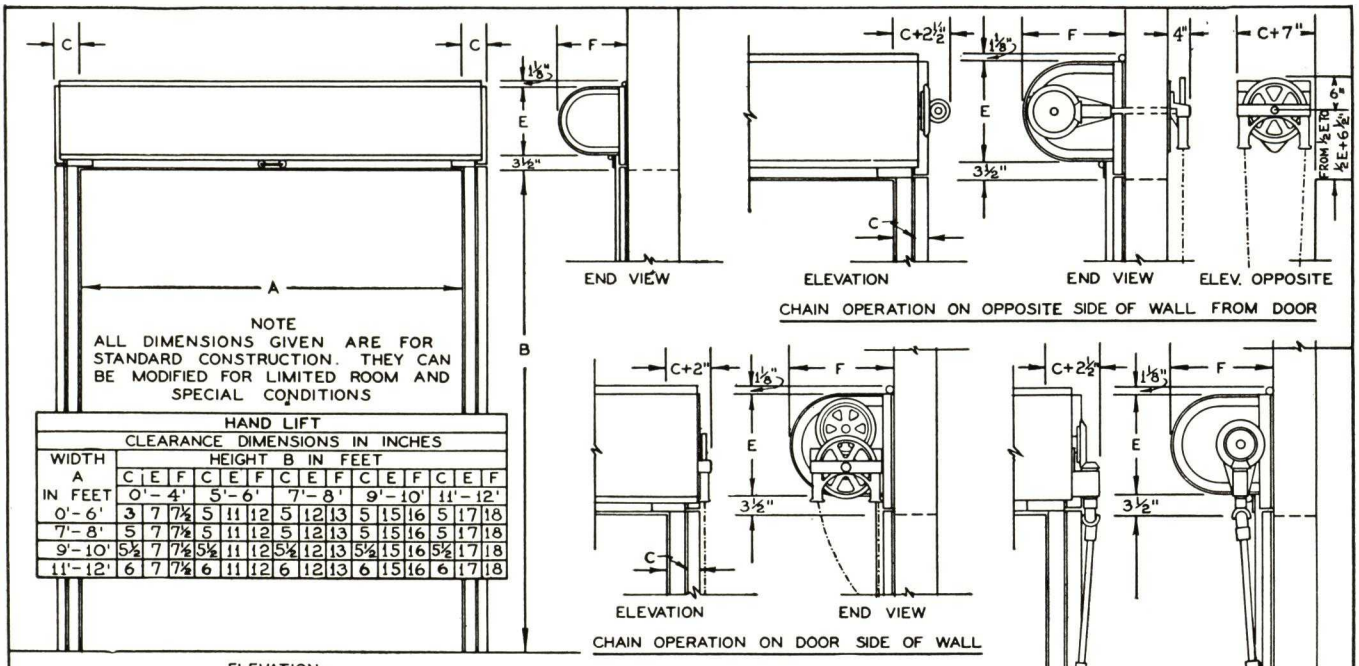
Motor Operators—Simple and rugged in construction and suited for severe industrial use. Units consist of hoist type motor with built-in magnetic brake, cut-tooth reduction gears *ball* or *roller-bearing* mounted in an enclosed oil reservoired case, and gear-driven limit switch. Reversing starter and 3-button pushbutton station are usually furnished for control. Emergency operation is entirely independent from motor making it possible to remove motor without interference with manual operation. A positive mechanical feature makes operation by motor impossible when manual operation is engaged, and shifting from one to the other does not affect adjustment of timing switch.

Automatic Closing—Mechanisms used on Underwriters' Labeled doors control speed of closing, and on doors of excessive sizes an auxiliary checking device is added as an additional precaution.

Galvanizing and Painting—Curtains and hoods are regularly furnished of galvanized steel with coating not exceeding .9 oz. per sq. ft. of flat metal. Other parts can be galvanized or a heavier coating furnished at extra cost. All parts are given a prime coat of paint at factory, and necessary bolts for erection are included with shipments.



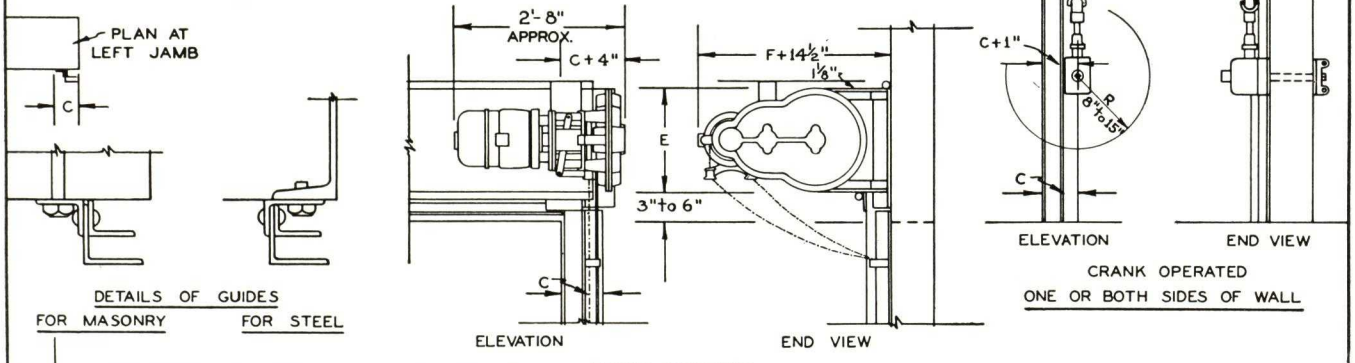

STANDARD MOTOR OPERATOR FOR JOHNSON STEEL ROLLING DOORS

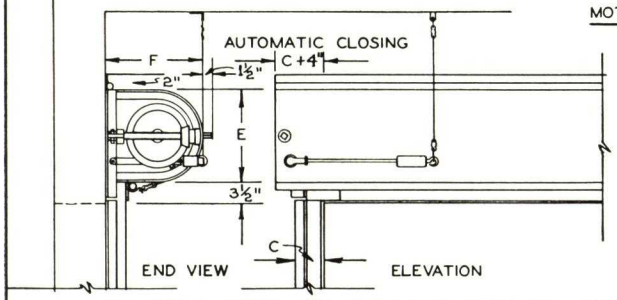


NOTE
ALL DIMENSIONS GIVEN ARE FOR STANDARD CONSTRUCTION. THEY CAN BE MODIFIED FOR LIMITED ROOM AND SPECIAL CONDITIONS

HAND LIFT
CLEARANCE DIMENSIONS IN INCHES

WIDTH A IN FEET	HEIGHT B IN FEET															
	C	E	F	C	E	F	C	E	F	C	E	F	C	E	F	
	0'-4'			5'-6'			7'-8'			9'-10'			11'-12'			
0'-6'	3	7	7½	5	11	12	5	12	13	5	15	16	5	17	18	
7'-8'	5	7	7½	5	11	12	5	12	13	5	15	16	5	17	18	
9'-10'	5½	7	7½	5½	11	12	5½	12	13	5½	15	16	5½	17	18	
11'-12'	6	7	7½	6	11	12	6	12	13	6	15	16	6	17	18	



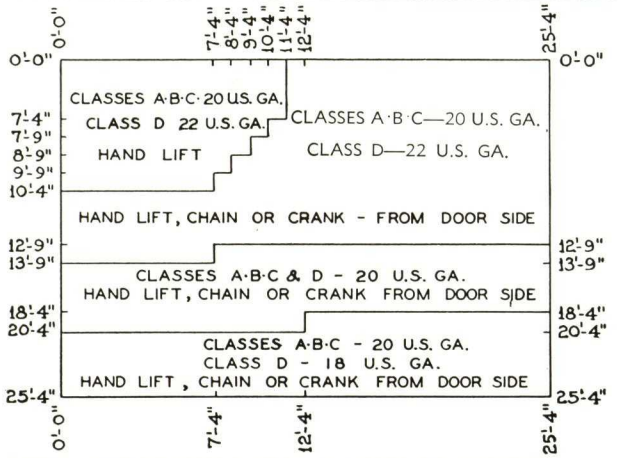


SEE TABLE ABOVE FOR HAND LIFT AUTOMATIC TYPES
SEE TABLE AT RIGHT FOR CHAIN AND CRANK AUTOMATIC TYPES

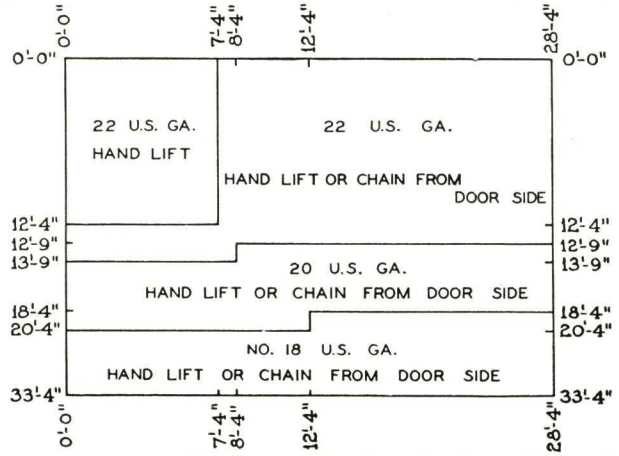
NOTE - ALL DIMENSIONS GIVEN ARE FOR STANDARD CONSTRUCTION THEY CAN BE MODIFIED FOR LIMITED ROOM & SPECIAL CONDITIONS.

CHAIN CRANK AND MOTOR OPERATED
CLEARANCE DIMENSIONS IN INCHES

WIDTH A IN FEET	HEIGHT B IN FEET																				
	C	E	F	C	E	F	C	E	F	C	E	F	C	E	F	C	E	F	C	E	F
	0'-9'			10'-11'-12'			13'-14'			15'-16'-17'			18'-19'-20'			21'-22'-23'			24'-25'		
0'-6'	5	15	16	5	16	17	5	16	17	5½	20	20	5½	21	21	5½	21	21	5½	21	21
7'-10'	5½	15	16	5½	16	17	5½	17	18	6	20	20	6	21	21	6	21	21	6	22	22
11'-15'	6	16	17	6	17	18	6	17	18	6	21	21	6	22	22	6½	23	23	6½	23	23
16'-18'	7	16	17	7	17	18	7	18	19	7	21	21	7	23	23	7	23	23	7	24	24
19'-21'	9	16	17	9	18	19	9	19	20	9	22	22	9	23	23	9	24	24	9	25	25
22'-24'	10	17	18	10	19	20	10	20	20	10	22	22	10	24	24	10	24	24	10	25	25



STANDARD CURTAIN GAUGES & STANDARD MEANS OF OPERATION FURNISHED ON JOHNSON UNDERWRITERS LABELED TYPES.



STANDARD CURTAIN GAUGES & STANDARD MEANS OF OPERATION FURNISHED ON JOHNSON SERVICE TYPE DOORS & SHUTTERS.

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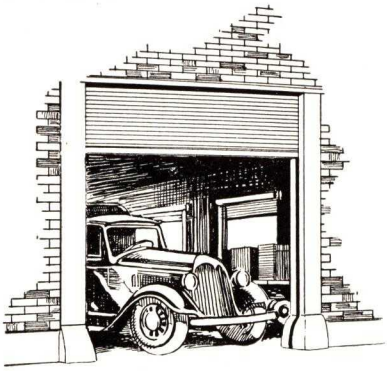
EXCLUSIVELY DOOR MANUFACTURERS

KINNEAR

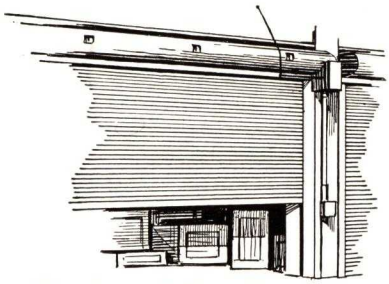
ROLLING DOORS

KINNEAR DOORS AND DOOR PRODUCTS

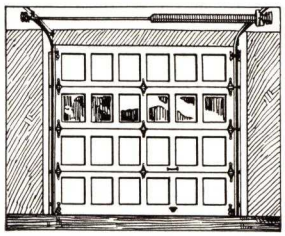
A GRAPHIC SUMMARY OF KINNEAR DOORS



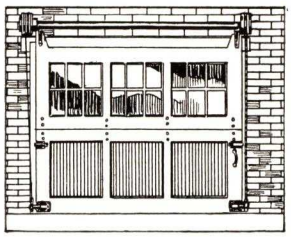
Steel Rolling Service Doors



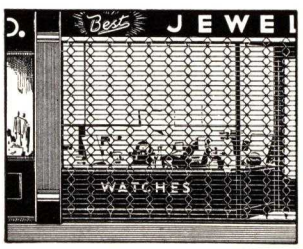
Fire Doors & Fire Shutters



Wood & Steel Rol-Top Garage Doors



Wood & Steel Bifolding Doors



Metal Rolling Grilles

Foreword

THE KINNEAR MANUFACTURING COMPANY, since its founding 42 years ago, has devoted its exclusive efforts to the manufacture of doors and door operating equipment. By pioneering the practicability of the upward-opening type of door, both in the field and in the factory, Kinnear has developed a door of ingenious design, constructed of high quality materials by competent and skilled mechanics. Through this leadership in the field, they have naturally originated the most important improvements in door design. And today, Kinnear Doors are recognized the world over for their efficiency and economy, for both service and fire protection purposes.

While designed primarily for doorways and window openings in all classes of buildings, they are also now being successfully adapted for a wide range of special uses. So, wherever a closing device is required, the possible application of Kinnear economies should be investigated.

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NOTE: Kinnear also manufactures Wood and Steel Vertical Sliding Doors and Tip-Top Hardware for converting garage doors into upward-action; as well as upward-acting doors for many special applications. Bulletins on these products will be sent upon request.

THE KINNEAR MANUFACTURING CO.
820-870 Field Avenue Columbus, Ohio

Branch Offices

BOSTON, MASS., 6 Jersey St.
NEW YORK, 30 Rockefeller Plaza, R.C.A. Bldg.
PHILADELPHIA, PA., 1321 Arch St.
WASHINGTON, D. C., 410 Bond Bldg.
NEW ORLEANS, LA., 529 Hibernia Bank Bldg.
PITTSBURGH, PA., 1200 Century Bldg.
CLEVELAND, OHIO, 7704 Carnegie Ave.
CINCINNATI, OHIO, 1357 Delta Ave., Hyde Park.
DETROIT, MICH., 7710 Woodward Ave.
CHICAGO, ILL., 1919 Randolph Wells Bldg.
SAN FRANCISCO, CALIF., 361 Brannan St.
BALTIMORE, MD., 210 Fidelity Bldg.

AGENTS IN PRINCIPAL CITIES

A Complete Door Service

ITS IMPORTANCE TO ARCHITECTS, CONTRACTORS AND OWNERS

To specify Kinnear Doors means more than the selection of a superior product . . . it is your assurance of a complete door service. The Kinnear Organization assumes complete responsibility. A staff of experienced Door Engineers designs the door to most efficiently meet the conditions of the particular requirements. After the design has been approved the door is especially built by experienced door mechanics in the largest and best equipped plant in the industry. Kinnear trained erection crews are available then to see that it is properly installed and put in perfect operation. After that, Kinnear still remains on the job, from standpoint of service. Records and patterns of every Kinnear Door sold are kept in fireproof vaults. In case of accidental damage, duplicate parts can be promptly supplied . . . and because of Kinnear's design, replacements can be easily and economically made.

Experience has shown that an orphan door is like an orphan car; it quickly loses its value. But through a nation-wide service organization, Kinnear is as close as your telephone, and will always be found to be equally interested in servicing present installations as to sell new doors.

TO ARCHITECT

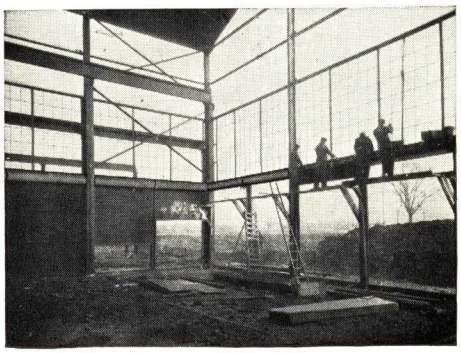
Besides operating efficiency and economy, Kinnear Doors offer the compactness, safety and simplicity and high quality that is vital to the Architect in designing and specifying equipment. In addition, the long service records of Kinnear Doors provide a reputation sufficiently reliable to permit him to readily specify "Kinnear" without exhaustive study. Architects also highly regard the co-operation and assistance Kinnear Engineers offer, in the solution of door problems.

TO CONTRACTOR

Quick and accurate estimates, accurate designs and working drawings, entire co-operation of a trained construction crew at the time of installation in complying with the building procedure plan, are a few of the reasons Kinnear Doors have won such favor with Contractors. By being relieved of the responsibility of speedy and proper installation they have learned that by accepting the Kinnear bid they are money ahead . . . and protect their reputation for delivering quality.

TO OWNER

In addition to the numerous operating economies, the first cost of Kinnear Doors is generally the final cost. Inherently durable, they give years of uninterrupted, efficient service. This is evidenced by hundreds of doors that are still in daily service after more than 30 years of hard usage. For a sound investment, the performance of Kinnear Doors, coupled with Kinnear's permanently available replacement service for cases of accidental damage, cannot be overlooked.



Scope of Kinnear Service

1. Branch offices and sales representatives, trained and experienced in door engineering, strategically located throughout United States and many foreign countries.
2. Study of your opening problem to determine your exact requirements.
3. Staff of experienced door engineers prepare drawings of doors to meet your individual needs.
4. Doors are carefully fabricated in a completely equipped plant by experienced mechanics and of the finest quality materials.
5. Erection Service by trained workmen.
6. Maintenance of records and patterns of every Kinnear Door installed makes replacement parts always available in case of accidental damage.
7. Nation-wide service organization.
8. Every door is backed by the integrity of a company which has faithfully served the public for the best part of a half century.

DESIGNED *and* BUILT *to* MEET K INDIVIDUAL REQUIREMENTS

THE KINNEAR MANUFACTURING CO.

Time Tested Advantages

OF KINNEAR ROLLING DOORS

As Reported by Users Throughout the World

With thousands of doors giving dependable service in all classes of buildings—Industrial and Mercantile Buildings, Public and Private Edifices of Classic Design, Piers, Ware and Freight Houses and numerous special types of structures—users in every part of the world have had an opportunity to witness the efficiency and economy of Kinnear Rolling Doors. Besides the convenience, low cost of maintenance and reliability of manufacture, advantages briefly listed below are the most important of those for which Kinnear Rolling Doors are universally endorsed. Thoroughly consider each of these advantages in terms of resulting economy.

1. EASY, QUICK OPERATION

Operating upward, clearing all ground obstructions and accurately and permanently counterbalanced, Kinnear Doors operate with speed, ease and smoothness . . . effecting substantial savings in time and effort.

2. SAVING SPACE

When open, Kinnear Doors are stowed overhead, where space is cheap—not requiring expensive floor or wall space. Merchandise or materials can be stored within a few inches of either side of the door, without hampering its operation.

3. GREATER DURABILITY

By virtue of their upward-action, Kinnear Doors are out of the way, less subject to damage from moving objects, wind and elements. Designed by experienced door engineers, no point has been overlooked in fabricating a door that will best withstand the effects of the elements and hard, rough usage. This, coupled with Kinnear's nation-wide servicing organization, means negligible maintenance costs.

4. FIRE PROTECTION

Kinnear Metal Rolling Doors are fire resisting, providing an effective guard in case of fire. When fire protection is of primary importance, the use of Kinnear Automatic, Labeled Rolling Doors reduces insurance premiums substantially. Through endorsement by the Underwriters as a fire door and bearing their label, they can also be used for service purposes.

5. MAXIMUM SAFETY

Kinnear Doors are built with strength and quality in excess of mechanical requirements. Springs are individually tested. Automatic Doors are provided with a governor safety device and other special safety features.

6. WEATHER GUARD

The curtain or panels are of weather-resisting materials and given a high grade protective coating. If special weathertight features are required, this is accomplished by the use of weather-seal guides, special endlocks, etc.

7. ECONOMICAL INSTALLATION

Kinnear Doors are designed to be installed with the minimum preparation of the opening, and to facilitate rapid and economical erection.

8. NEAT APPEARANCE

Open or closed, Kinnear Doors give the openings a clean-cut appearance to harmonize with the architectural treatment of the building. All mechanism is neatly arranged, with concealed parts wherever possible.

9. THEFT PROOF

Strongly built and with provisions for locking, Kinnear Doors are dependable guards against thieves, marauders and rioters.

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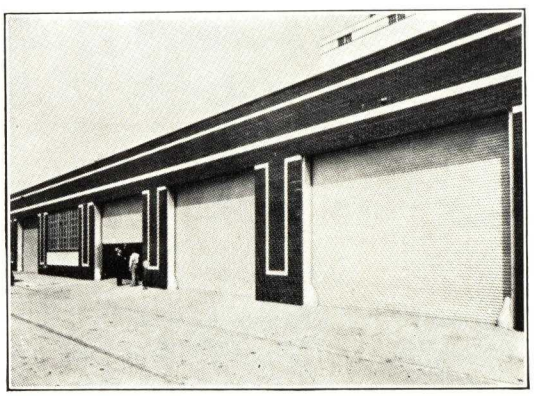
At Extreme Left:

Protection afforded the Bessemer Building, Springfield, Illinois, by the use of Kinnear Steel Rolling Fire Shutters on all windows on the fire exposure side, is self-evident. All the shutters automatically closed when the fire started.

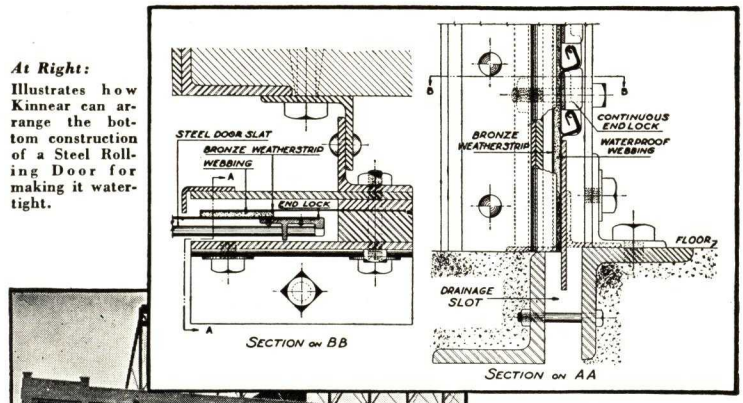


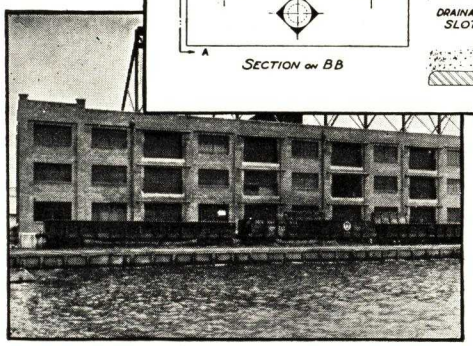
At Left:

Illustrating how Kinnear Doors harmonize with any modern architectural design. Through the use of various metals, very attractive effects can be obtained. This battery of doors is found in daily operation on the Hecht and Company's modern Washington, D. C., warehouse.

Steel Rolling Service Doors

At Right:
Illustrates how Kinnear can arrange the bottom construction of a Steel Rolling Door for making it watertight.





At Left:
A large battery of Kinnear Steel Rolling Doors that provide complete weather protection by the addition of the above provision.

GENERAL CONSTRUCTION

Kinnear Steel Rolling Doors and Shutters are sold under two distinct classifications, viz: Service Doors that are designed for openings which do not require an Underwriters' label, and where insurance is not a consideration; and Automatic Doors which are built for places where the protection of human life and property against fire is of prime importance. However, the Service Doors described here, by the very nature of their construction, are fire-repellent and afford a certain amount of fire protection. Details of the Fire Door will be found on pages 10 to 14 inclusive.

The curtain proper is made of open hearth, copper-bearing steel interlocking slats heavily galvanized by the Kinnear Tite-Cote hot process (also of pure iron, stainless steel, aluminum, bronze and other metals) and equipped with endlocks of suitable material. This curtain is coiled upon a barrel journalled in heavy cast iron brackets and travels in steel guides mounted on the side of the opening. Helical springs enclosed in the barrel provide perfect counterbalancing. A hood of suitable design and metal is furnished for covering the barrel and coil.

To fully understand the designing skill and the high quality materials and workmanship put in this door, see pages 6 and 7. Though built to this high standard, every Kinnear Door is especially tailored to meet the individual requirement—no doors being carried in stock.

In case the type of door suited to your exact needs is not illustrated in this catalog, write Kinnear Engineers for special recommendations. Those illustrated are only the types in most general use.

METHODS OF OPERATION

The methods of operation most commonly used in Kinnear Steel Rolling Doors are:

Push up
Manually opened and closed by means of handles in bottom plate. (Not recommended for doors exceeding 80 sq. ft. in area.)

Chain
Mechanically operated by hand chain, sprocket and reduction gearing.

Crank
Mechanically operated by hand crank, shafting and reduction gearing.

Power
Driven by electric motor, controlled by one or more conveniently located control stations.

Easy and rapid operation of every Kinnear Service Door is obtained by careful calculation of size of spring employed in counterbalancing, the liberal use of annular roller and thrust bearings, machine molded gears and other refinements of this character. Springs are carefully tested before being applied to doors.

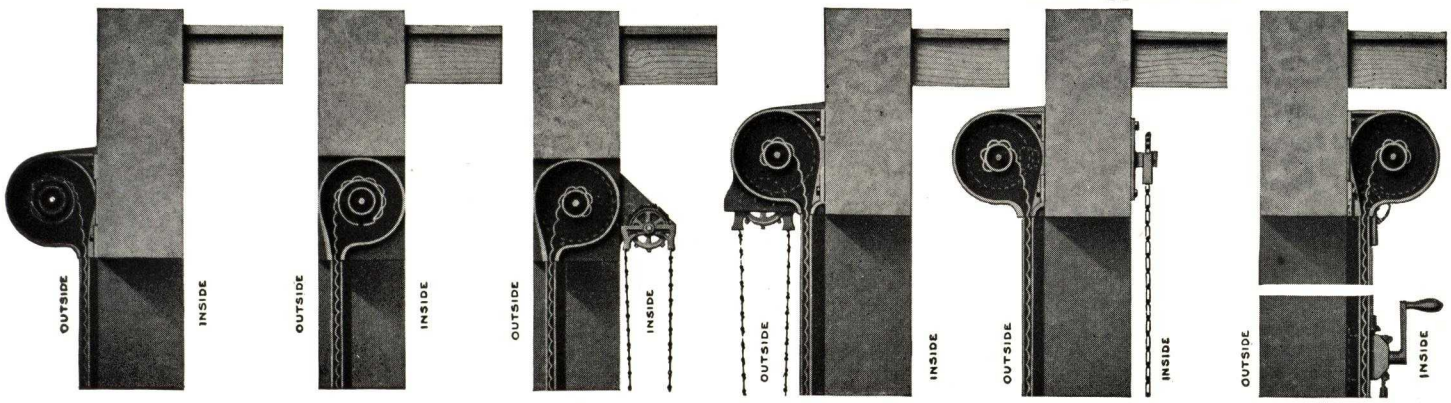
The selection of the type of operation is usually determined by the size of door and service required.

INSTALLATION OF KINNEAR STEEL ROLLING DOORS

The illustration below shows the most common methods of installing Kinnear Steel Rolling Doors. When the coil is mounted on the face of the wall, as in the case of old buildings and where headroom is ample, the brackets and coil are entirely above the bottom of the lintel and the edges of the guides are flush with the face of the opening jambs. Where headroom is limited, the door is then mounted in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

If Kinnear Engineers have the opportunity to work with the Architect and Engineer during the designing period of the job, it is frequently possible to conceal all working parts of the door, making the curtain when in the closed position, the only visible part. The door may be encased by wood, marble, bronze and other materials when appropriate.

1. Face of Wall— Manual Operation | **2. Between Jamb— Manual Operation** | **3. Between Jamb— Chain Operation** | **4. Face of Wall— Chain Operation** | **5. Face of Wall— Chain Operation from opposite side** | **6. Face of Wall— Crank Operation**



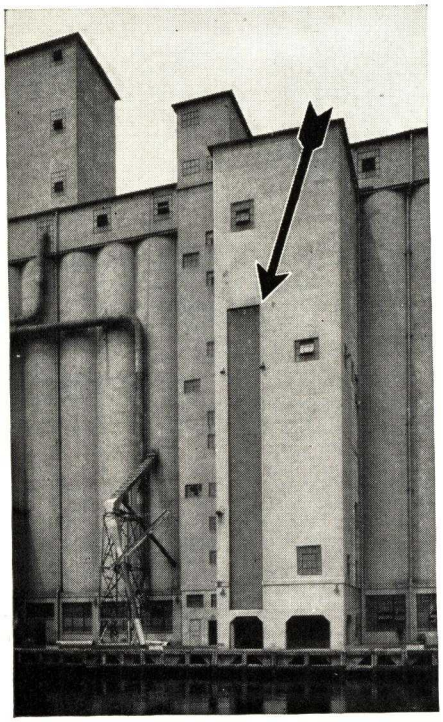
COUNT THE REASONS--FOR THE LOW MAINTENANCE COST & LONG SERVICE OF

Kinnear Steel Rolling Service Doors

A Kinnear Steel Rolling Door is a highly developed piece of mechanical equipment.

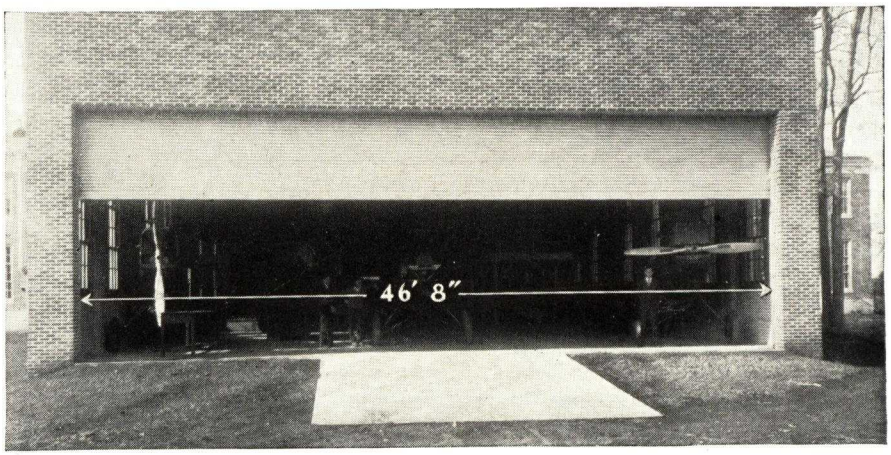
The engineering skill and quality materials used in its fabrication are responsible for exclusive construction features which gives it the lasting efficiency and low cost of maintenance so necessary to a sound investment.

Since so much of the dollar value of a Kinnear Door is hidden under the hood, the discriminating purchaser will find the construction points listed below, which are of interest. The numbers correspond to those on the drawing on the opposite page, permitting a visual appraisal of the superior merits that make a Kinnear Door ultimately the lowest cost door to buy.



Opening the entire side of a building is accomplished with the Kinnear Steel Rolling Door which is installed in the aeronautical laboratory at the University of Alabama (illustrated below).

An engineering feat that speaks well of Kinnear's ability for handling any opening requirement.



KINNEAR F.H. 20—

KINNEAR

1. BRACKETS

Uniformly cast in special moulds, eliminating variations found in sheet steel types. All surfaces are smooth and even. Metal of gray iron of uniform texture with high-test value and suitably proportioned with large factor of safety. Bracket mouth and stops are at an established distance between center and back of bracket, thus providing a throat which permits smooth operation without friction and eliminates the excessive drag of curtain over the stops.
Bearings of large proportions are provided for barrel spindles.

2. HOODS

Neatly formed hot galvanized sheet steel hoods to fit contour of brackets, suitably reinforced with beads or flanges to prevent deflection.

3. CURTAIN

Composed of interlocking slats of hot galvanized copper-bearing steel. For slat details see No. 15.

4. SPRING BARREL

Each door is provided with a heavy steel barrel of sufficient diameter and thickness to avoid deflection in excess of .03 inches per lineal foot of barrel.
This barrel serves a three-fold purpose, viz:

1. Encases the counterbalancing mechanism.
2. Serves as the load carrying beam.
3. Provides an axis around which curtain coils.

5. COUNTERBALANCE

Oil-tempered helical springs wound from especially heat-treated steel and tempered with oil, providing a permanent means of counterbalance. Each one of these springs is tailored and tested for each job.

6. RINGS

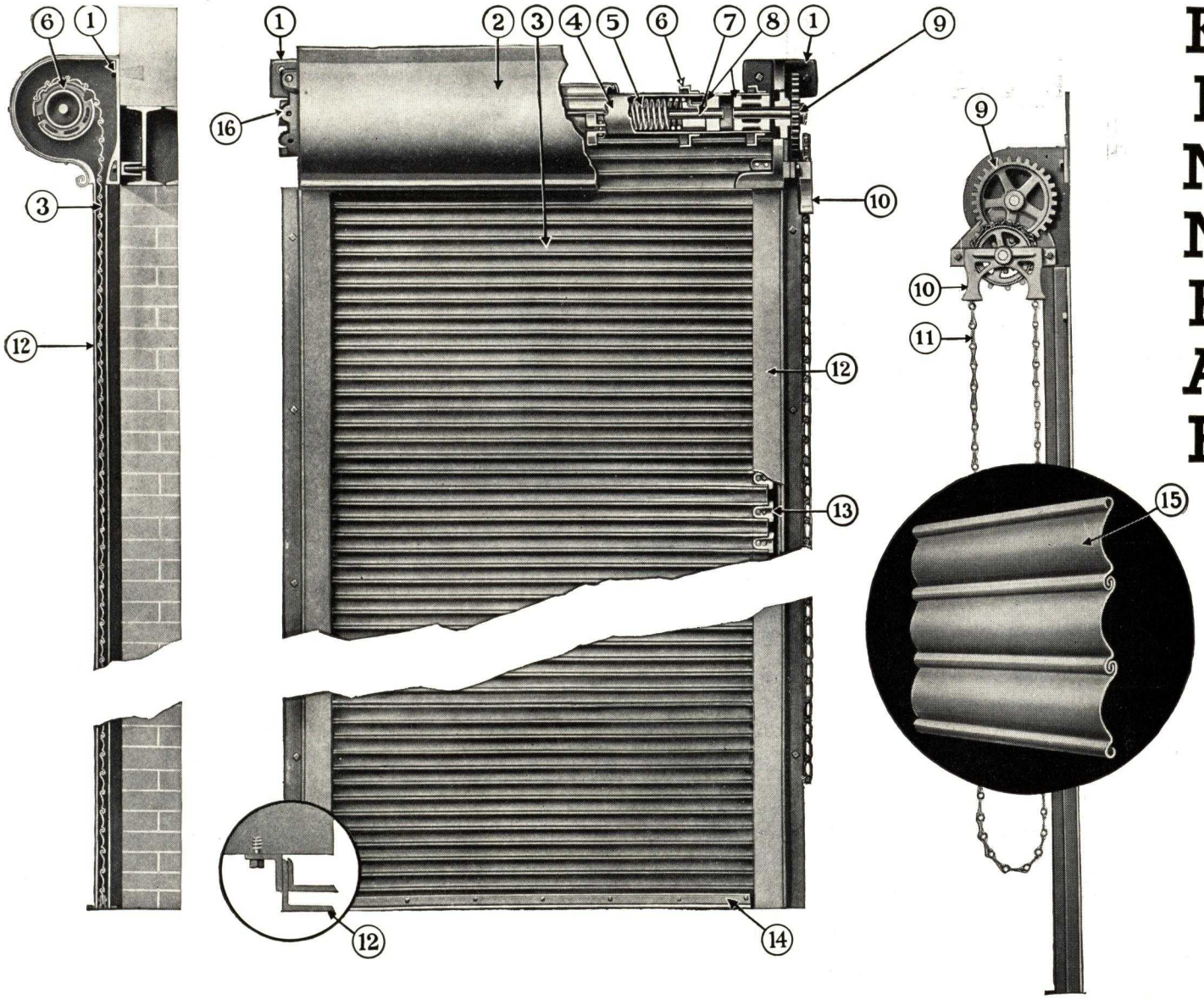
Rings of malleable iron of special involute shape, designed to coil the curtain with a uniformly, increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7. SHAFTING OR TENSION ROD

Of sufficient size to carry the torsional load of the spring counterbalance and to be of cold rolled polished steel in order to eliminate friction in all bearings.

8. BARREL PLUGS

Heavy cast iron plugs machined to fit perfectly into the ends of barrel and having Kinnear special design for holding the ends of the spring and eliminating the usual excessive strain at the spring ends.



—CHAIN HOIST TYPE DOOR—FACE DOOR MOUNTING

9. REDUCTION GEARING

Suitable reduction gearing cast with teeth machine molded from machine finished patterns. Designed with a high factor of safety and reduction ratio individually suited for the door operated.

10. CHAIN GUARD

Sprocket wheel provided with a guard, especially designed to properly guide and prevent hand chain from leaving wheel.

11. OPERATING CHAIN

Heavily galvanized, and of design and strength to prevent stretching and to provide a comfortable hand grip.

12. GUIDES

Fabricated from structural steel angles. The Kinnear Guide is designed with groove depths varying from 2 to 8 inches, depending upon the width of the door. This guide is especially adaptable for doors exposed to heavy wind pressure and is packed out from the face of the wall in order to accommodate the especially designed throat of the bracket.

13. END LOCKS

Made of malleable iron and placed on alternate slats. For retaining slats in place, protecting them against rubbing in the guides and to maintain the curtain in alignment.

14. BOTTOM BAR

Reinforces the curtain against wind pressure and is made with two angles of equal weight in order that they balance and hang freely on the curtain to eliminate binding friction in the guides. Provides contact for the curtain against the sill when the door is closed and against the stops on the bracket when the door is open, retaining the bottom of the curtain in a correct position suitable to the initial movement in operation.

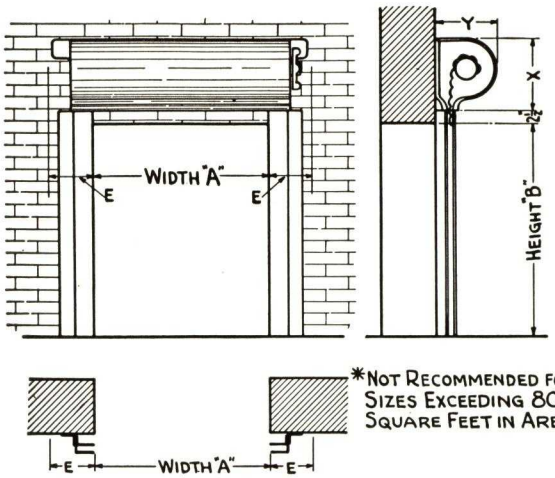
15. SLATS

Made of different sizes to accommodate the width of the door. Slats are designed to have a high crown to provide rigidity. The hinging centers are so arranged to give free action in the curtain and to properly nest when coiled on the barrel. Standard slats are rolled from copper-bearing steel and hot galvanized. The gauge of metal used in the slats depends upon the width of the opening. In every instance the size and gauge of slat is selected to best meet customers' requirements.
Slats can be furnished, when desired, in stainless steel, aluminum, bronze or copper.

16. ADJUSTMENT WHEEL

Mounted on the outside of the bracket. Easily accessible. Kinnear counterbalance is so designed that the initial tension can be increased or decreased by use of this wheel, which is mounted on the tension rod. It is of heavy cast iron construction, and locked to the bracket after adjustments are made.

F.M. 10 HAND LIFT TYPE—FACE MOUNTING

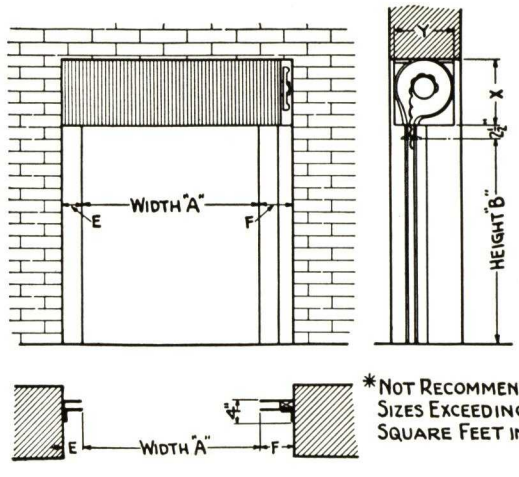


*NOT RECOMMENDED FOR SIZES EXCEEDING 80 SQUARE FEET IN AREA.

F.M. 10. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	6			7			8			9			10			11			12		
	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E
Width A, Feet 3	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
4	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
5	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	19	18	6
6	13	12	6	14	13	6	16	15	6	17	16	6	17	16	6	19	18	6	19	18	6
7	13	12	6	14	13	6	16	15	6	17	16	6	19	18	6	19	18	6	19	18	6
8	13	12	6	14	13	6	16	15	6	19	18	6	19	18	6	19	18	6			
9	13	12	6	16	15	6	18	17	6	19	18	6	19	18	6						
10	13	12	6	16	15	6	18	17	6	19	18	6	19	18	6						
11	13	12	6	16	15	6	18	17	6	19	18	6									
12	13	12	7	16	15	7	18	17	7	19	18	7									

B.M. 10 HAND LIFT TYPE—UNDER LINTEL MOUNTING



*NOT RECOMMENDED FOR SIZES EXCEEDING 80 SQUARE FEET IN AREA.

B.M. 10. CLEARANCE DIMENSIONS, INCHES

Height B, Feet	6				7				8				9				10				11				12			
	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Feet 3	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	18	16	3	4
4	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	18	16	3	4
5	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	20	18	3	4
6	14	11	3	4	15	13	3	4	17	14	3	4	17	15	3	4	18	16	3	4	20	18	3	4	20	18	3	4
7	14	11	3	4	15	13	3	4	17	14	3	4	17	15	3	4	19	17	3	4	20	18	3	4	20	18	3	4
8	14	11	3	5	15	13	3	5	17	14	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
9	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
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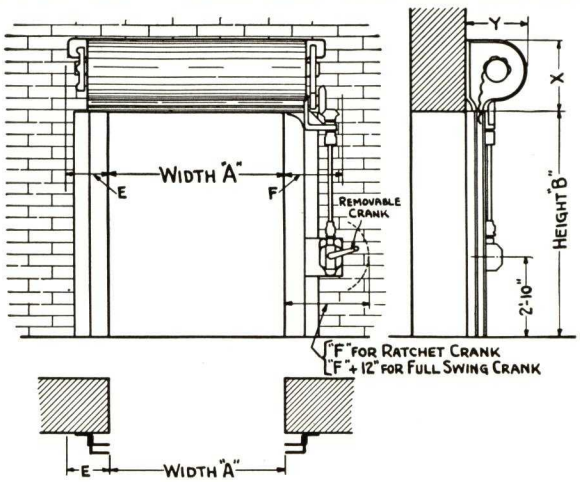
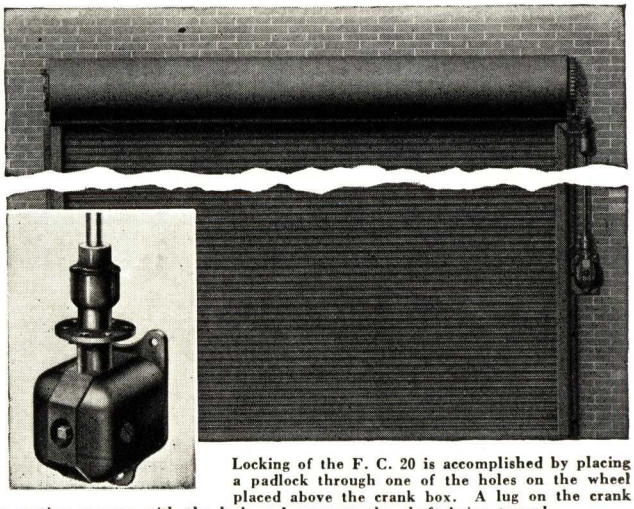
11	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
12	14	11	4	5	17	14	4	5	18	16	4	5	19	17	4	5	19	17	4	5	20	18	4	5	20	18	4	5

Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.

F.C. 20 CRANK SHAFT TYPE—FACE MOUNTING





Locking of the F. C. 20 is accomplished by placing a padlock through one of the holes on the wheel placed above the crank box. A lug on the crank box casting engages with the lock and prevents the shaft being turned.

F.C. 20. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	8				9				10				11				12				13				14				15				16				17				18				19				20				21				22				23				24			
	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Ft. 6	12	11	6	11	13	12	6	11	13	12	6	11	14	12	6	11	15	14	6	11	16	14	6	11	16	14	6	11	16	15	6	11	16	15	6	11																										
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13	14	12	7	12	14	13	7	12	14	14	7	12	15	14	7	12	15	14	7	12	16	15	7	12	16	15	7	12	16	15	7	12	16	15	7	12	17	16	7	12	19	19	7	12	19	19	7	12	21	20	7	12	21	20	8	12	21	20	8	12	21	20	8	12	22	22	21	8	12
14	16	14	6	11	16	14	6	11	17	16	6	11	17	16	6	11	17	16	6	11	19	18	6	11	19	18	6	11	19	18	6	11	19	18	6	11	19	19	6	11	21	19	6	11	21	19	7	12	21	20	7	12	24	22	8	12	24	22	8	12	24	22	8	12	26	24	8	12
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22	16	15	7	13	17	16	7	13	19	18	7	13	21	19	7	13	21	20	7	13	21	20	10	16	24	22	10	16	24	22	10	16	24	22	10	16	24	22	10	16	24	22	10	16	24	22	10	16	24	22	10	16	27	25	10	16	27	25	10	16	27	25	10	16
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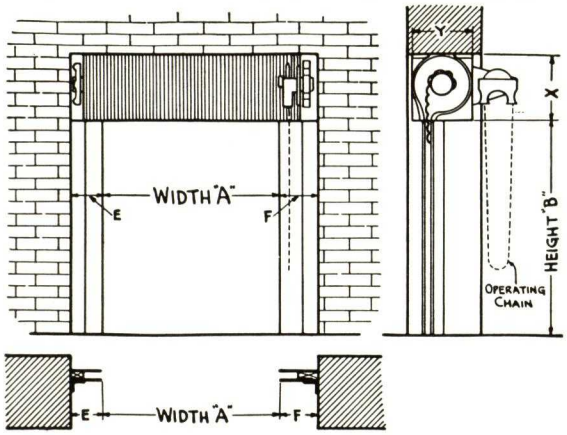
Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.

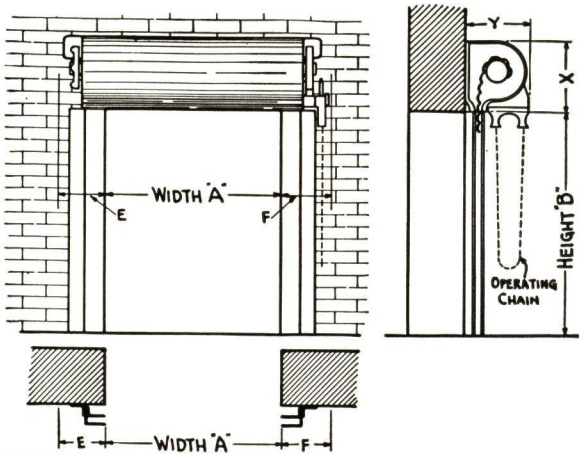
Slat No. 2 used on doors of sizes listed above heavy line. Slats Nos. 4 and 10 used on doors of sizes listed below heavy line.

KINNEAR

B.H. 20 CHAIN HOIST TYPE—UNDER LINTEL MOUNTING



F.H. 20 CHAIN HOIST TYPE—FACE MOUNTING



B.H. 20. CLEARANCE DIMENSIONS, INCHES

Width A, Ft.	Height B, Ft. 8 X	Y	E	F	9 X	Y	E	F	10 X	Y	E	F	11 X	Y	E	F	12 X	Y	E	F	13 X	Y	E	F	14 X	Y	E	F	15 X	Y	E	F	16 X	Y	E	F
6	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	14	4	5	17	15	4	5
7	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	14	4	5	17	15	4	5
8	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
9	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
10	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
11	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
12	14	11	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
13	14	12	5	6	16	12	5	6	16	12	5	6	16	13	5	6	16	13	5	6	17	14	6	8	17	14	6	8	17	15	6	8	18	15	6	8
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17	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	19	16	6	8	19	17	6	8	22	19	6	8	22	19	6	8
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19	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	22	19	6	8	22	19	6	8								
20	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	22	19	6	8	22	19	6	8								
21	17	15	6	8	18	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	23	20	6	8								
22	17	15	6	8	18	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	23	20	6	8								
23	17	15	7	9	18	15	7	9	18	15	7	9	20	18	7	9	22	19	7	9	22	19	7	9	23	20	7	9								

Note: For doors of intermediate sizes, use clearance dimensions listed in either table for next larger width or height.

Slat No. 2 used on doors of sizes listed above heavy line. Slats Nos. 4 and 10 used on doors of sizes listed below heavy line.

F.H. 20. CLEARANCE DIMENSIONS, INCHES

Width A, Ft.	Height B, Ft. 8 X	Y	E	F	9 X	Y	E	F	10 X	Y	E	F	11 X	Y	E	F	12 X	Y	E	F	13 X	Y	E	F	14 X	Y	E	F	15 X	Y	E	F	16 X	Y	E	F	17 X	Y	E	F	18 X	Y	E	F	19 X	Y	E	F	20 X	Y	E	F	21 X	Y	E	F	22 X	Y	E	F	23 X	Y	E	F	24 X	Y	E	F
6	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7																																						
7	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7																																						
8	12	13	6	7	13	13	6	7	13	13	6	7	14	14	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7																																						
9	12	13	6	7	13	13	6	7	13	14	6	7	14	14	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7																																						
10	12	13	6	7	13	13	6	7	13	14	6	7	14	15	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	18	6	7	17	17	6	7	19	19	7	8	19	19	7	8	21	20	7	8	21	20	8	8	21	20	8	8	21	20	8	8	22	21	8	8
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21	16	15	7	8	17	17	7	8	17	17	7	8	19	19	7	8	21	19	7	8	21	19	7	8	21	19	7	8	21	20	7	8	24	21	10	16	24	26	10	16	24	26	10	16	24	26	10	16	24	26	10	16	24	26	10	16	26	27	10	16	26	27	10	16	27	28	10	16
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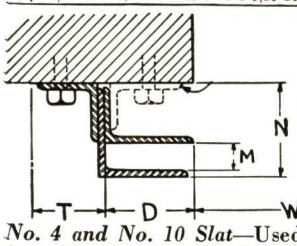


SLATS & CLEARANCES

No. 2 Slat—Used on average size door. Rolled from 22, 20, 18 and 16 U. S. gauge open hearth copper-bearing steel, hot galvanized. 9/16 in. depth of crown.

No. 4 and No. 10 Slat—Used on extremely wide doors. Rolled from 20, 18, and 16 U. S. gauge. ⅞ in. depth of crown.

Note: Schedule below gives guide clearances required and slat required for doors of various widths.

SCHEDULE OF CLEARANCES FOR TYPICAL CURTAIN GUIDE

	Width-A, ft.	D, in.	M, in.	N, in.	T, in.
Slat No. 2	to 7 incl.	2	⅞	3½	2½
	over 7 to 11 incl.	2½	⅞	3½	2½
	over 11 to 14 incl.	3	⅞	3½	2½
Slat Nos. 4 and 10	to 14 incl.	2½	1⅛	5	2½
	over 14 to 17 incl.	3	1⅛	5	2½
	over 17 to 22 incl.	3½	1⅛	5	2½
	over 22 to 24 incl.	4	1⅛	5	3
	over 24 to 32 incl.	6	1⅝	6	4
	over 32 to 40 incl.	8	1⅝	6	4

WINDLOCKS

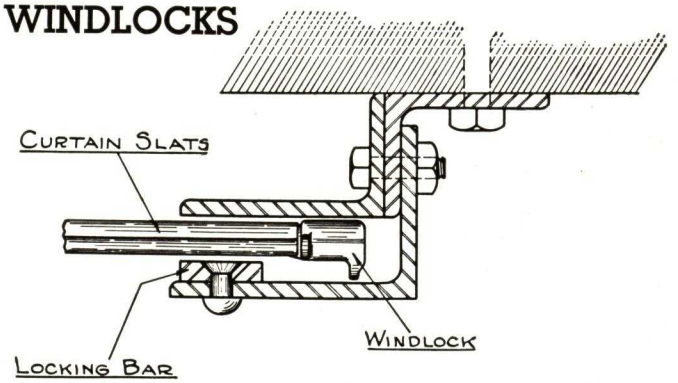


Illustration shows how endlocks are designed with lug, which engages with a locking bar attached to the guide. This prevents curtain from leaving guide because of deflection from tremendous wind pressure or other forces. Provided wherever door is to be subject to extreme wind pressure. Otherwise type of endlock shown on page 7 is used.

THE KINNEAR MANUFACTURING CO.

"Akbar" Fire Doors

THE POSITIVE, AUTOMATIC CLOSING FIRE GUARD

Akbar is a super Fire Door that is distinctly a Kinnear product, and sold only by Kinnear or through authorized representatives. It is designed primarily for fire protection purposes for openings that require Underwriters' labeled equipment and where insurance rates are a consideration. But it is also a service door, available for service purposes at all times, which affords maximum service door economies. Through the incorporation of various special Kinnear features automatic closure of Akbar is both positive and controlled. It is a silent guardian against fire that can be built to fit practically all classes and sizes of openings in either old or new buildings.

Nothing is more inducive to the rapid spread of fire than drafts which carry the flame through passageways and window openings. Kinnear Fire Doors offer an automatic closure for such openings . . . an inexpensive form of insurance against the numerous losses caused by a serious fire. Their effectiveness as a fire guard has been proved in major conflagrations throughout the country . . . Kinnear equipped buildings being the only ones standing in an otherwise completely demolished area.

WHY AKBAR HAS NO EQUAL

In general appearance and principle of operation, the Kinnear Akbar Fire Door is similar to the Steel Rolling Service Door. But, in addition, they are provided with mechanism for positive, automatic closure in case of fire, as well as embodying numerous other construction features which make them a foremost fire protective device. The careful purchaser will find a study of the following points and the illustration on the opposite page, descriptive of an Akbar Manual Automatic Door for interior service (Class A, B, and C), of exceptional interest.

1. BRACKETS

High test gray iron, providing a high factor of safety. Integral cast bracket mouth and stops give smooth operation, eliminating excessive drag of curtain on stops.

2. HOODS

Neatly formed from hot galvanized sheet metal of No. 24 U. S. gauge, fitted to give tight enclosure to coil. Reinforcing beads and flanges prevent deflection.

3. CURTAIN

Composed of interlocking slats of hot galvanized copper-bearing steel and not less than No. 20 U. S. gauge on class A, B, and C doors; and 22 U. S. gauge on class D doors. Slats are designed to have a high crown to provide rigidity. Hinging centers so arranged to give free action to the curtain and to properly nest when coiled on the barrel.

4. SPRING BARREL

To encase counterbalance mechanism. Made from heavy steel tubing or pipe of thickness and diameter particularly designed to carry the curtain load and minimize deflection, thereby preventing binding in barrel bearings. Main bearings in supporting barrel are roller bearings.

5. COUNTERBALANCE

Composed of helical springs wound from especially heat-treated steel and tempered with oil. Counterbalances individually tailored and tested on each job.

6. RINGS

Rings of malleable iron of special involute shape, designed to coil the curtain with a uniformly increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7. SHAFTING OR TENSION ROD

Of sufficient size to carry the torsional load of the spring counterbalance and of cold rolled polished steel, in order to eliminate friction in all bearings.

8 and 9. BARREL LOCKS

The weight of the curtain is balanced by springs, but when the curtain is down in the closed position, it is also supported by the barrel lock, in order to eliminate the danger of the curtain collapsing in case the temper of the spring is lost from the excessive heat of a fire.

10 and 11. AUXILIARY RETAINING WHEELS

These wheels are attached to the tension shaft (16) of the auxiliary spring (15). This spring (15) can, therefore, function only when the wheels (10 and 11) are free to turn after being released from automatic closure.

12. SAFETY GOVERNOR

This governor retains the wheels (10 and 11) and is itself held in place by the release levers (13 and 14). When these levers release the governor, it permits the wheels to revolve only at a safe speed. Therefore, the force of the auxiliary spring (15) is controlled, thus eliminating any danger of personal injury to persons accidentally in the opening, and closing on the floor without impact.

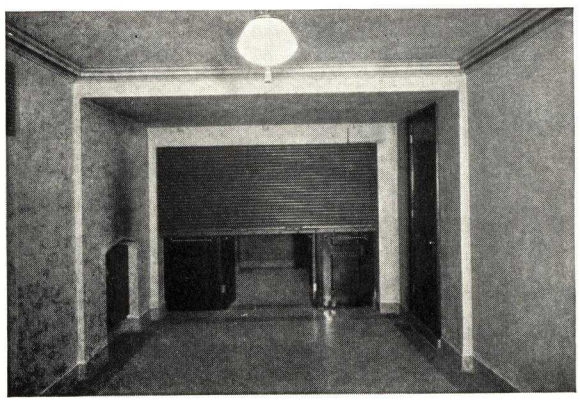
13 and 14. RELEASE LEVERS

The automatic closing mechanism is retained by these levers. All contact points are either covered or made from non-corrodible metals, in order to eliminate any possible freezing together. The lever (14) is held up by fusible links (25) which release at a temperature of 160 degrees F.

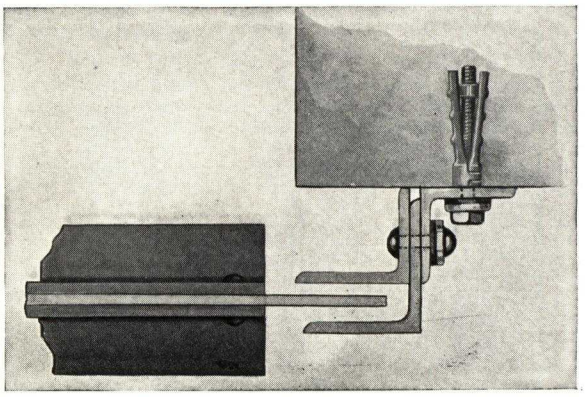
15 and 16. AUXILIARY SPRING AND TENSION ROD

This spring is anchored to the tension rod, which is in turn held in place by the auxiliary wheels (10 and 11). It always carries stored-up energy sufficient for completely and positively closing the door from any position in the opening when automatically released. Independent of the counterbalance spring, the counterbalance is unmolested when door is automatically closed.

KINNEAR



Left:
Closing a fire wall opening in a passage way with a Kinnear Akbar Door.
Though the door is normally kept in the open position, the curtain gives a clean-cut appearance when closed.



Right:
Expansion provisions:
Ample clearance between ends of curtain and back of guide and bolts and rivets in slotted holes with steel and fusible washers.

17. BARREL PLUGS

These close the ends of the barrel, carrying the springs and are of heavy cast-iron, especially designed for holding the ends of the spring and eliminating the usual excessive strain at the spring ends.

18. ADJUSTING WHEEL

This is connected to the tension rod (7), carrying the counterbalance spring and attached to the bracket opposite the one carrying the automatic mechanism. The tension of the counterbalance spring is controlled by this wheel, permitting adjustment of the door's operating balance.

19. DROP HOOD OR BAFFLE

A metal shield of the same gauge as the hood is attached to the main hood by a continuous beaded joint, permitting the shield to hinge over the curtain coil. This shield forms the drop hood and is held up out of the way by a fusible link attachment (20). In case of fire, the link melts and the drop hood drops on the coil and becomes a baffle against passage of smoke and hot gases around through the bracket.

20. HOOD FUSIBLE LINKS

These links hold the drop hood or baffle out of the way during normal operation and are so distributed to provide necessary alignment of the hood. Fusible at 160 degrees F.

21. GUIDES

Fabricated from structural steel of at least 3/16 inch thickness. Slotted holes are provided for the rivets holding angles or plates together and for the bolts securing guide to the wall. Heat destructible washers are placed underneath the heads of the rivets and bolts, thus providing means for expansion and eliminating the danger of buckling in case of fire. The depth of the grooves is increased to accommodate the increase in width of openings.

22. CLEARANCE (See Illustration on Page 10)

Sufficient clearance is provided between ends of curtain and back of guides and between all other operating parts, to accommodate an expansion for temperatures up to and including 1800 degrees F.

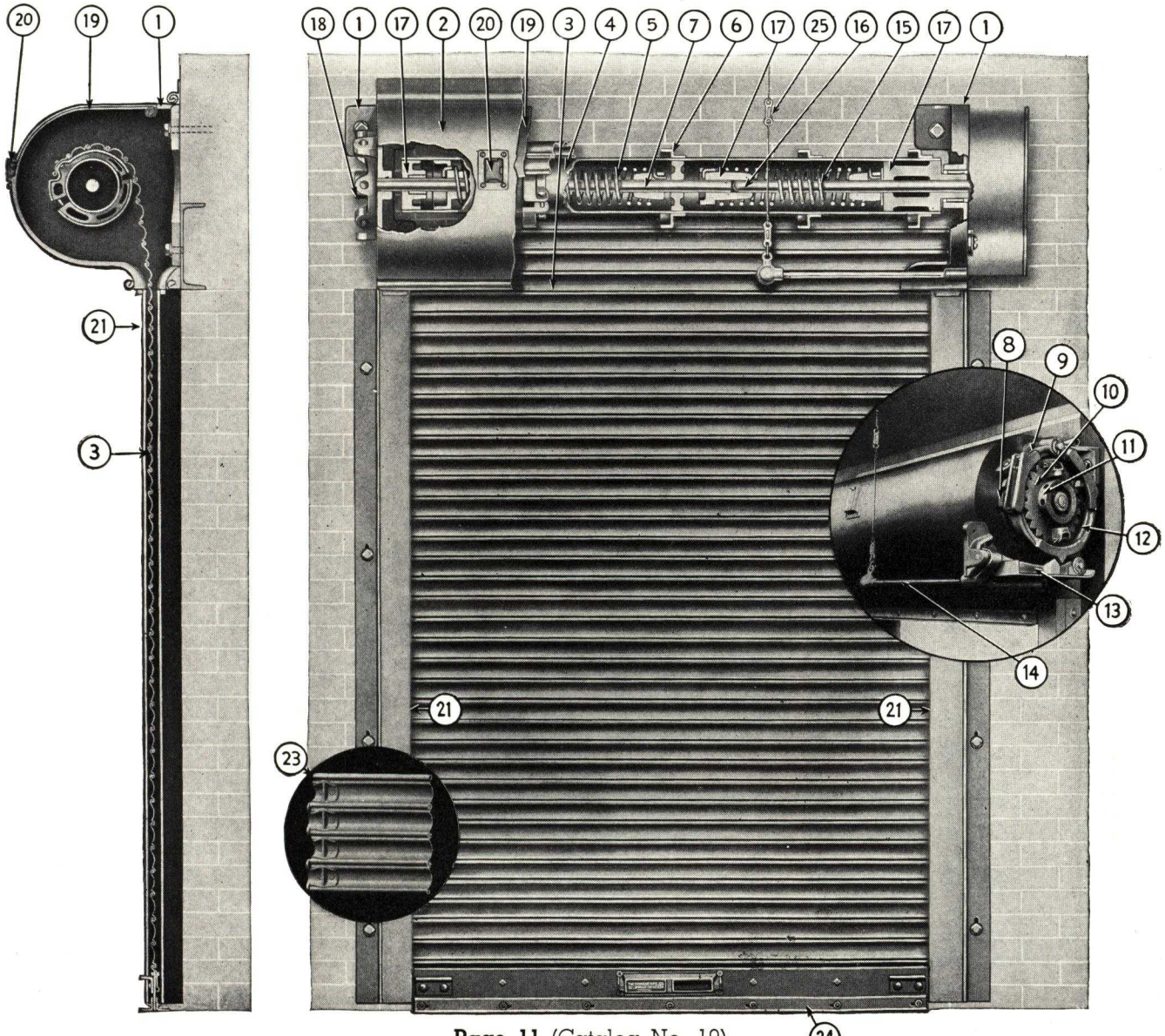
23. END LOCKS

These are placed on every slat and are made of malleable iron, shaped to close the concave ends of slats and to prevent the passage of hot gases and smoke around edge of curtain. These end locks retain slats in place, maintain alignment and protect the slats against abrasion in guides.

24. BOTTOM BAR

Designed to reinforce the bottom of the curtain and made of two angles and a flat plate. Provided with handles for raising the door and with stops for retaining it, when open, in an exact position against the coil bracket and free for a direct start in closing automatically in case of fire. Slide bolt locks, as used on steel rolling service doors, can be furnished on these bottom bars when specified.

NOTE: The bottom bar carries both the Underwriters' label and Kinnear's name plate which bears the number that will identify the door.



UNDERWRITERS' LABELS

Kinnear Fire Doors and Shutters are inspected by the Underwriters' Laboratories, Inc., and when built within size limits, listed below, bear the required label. While the Underwriters' label is the assurance of an acceptable and rated fire guard, it is not an indication of maximum quality, as set forth in the following quotation taken from their code book: PRODUCTS OF THE MANUFACTURERS LABELED AND LISTED AS MENTIONED HEREIN ARE NOT NECESSARILY EQUIVALENT IN QUALITY OR MERIT; THE LABELING AND LISTING INDICATING ONLY COMPLIANCE WITH UNDERWRITERS' STANDARDS.

In making comparisons, this point should be considered, as Kinnear Doors embody refinements that are unique and which increase their value and utility.

METHODS OF OPERATION

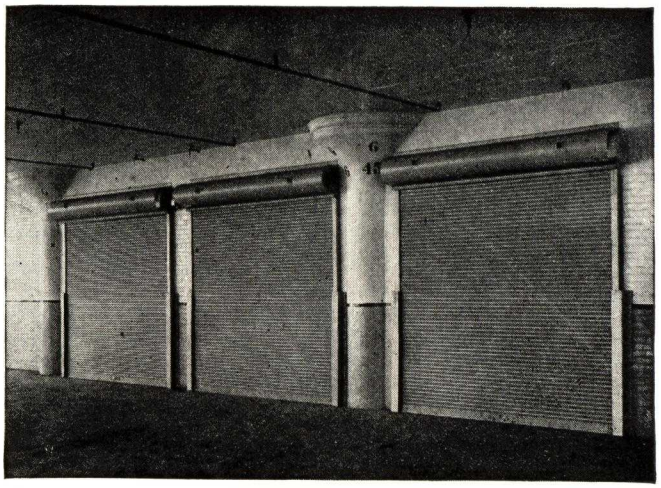
While provided with mechanism for automatic closure, Kinnear Fire Doors may be arranged for various methods of operation, when also being used for service purposes. They are, namely: manual push-up, chain hoist, crank hoist or motor. Illustrations below show how the automatic closing mechanism is incorporated in the case of chain and crank hoist.

INSTALLATION

As illustrations show, Kinnear Fire Doors can be mounted on the face of the wall with brackets and coil entirely above the bottom of the lintel; or in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

Where an opening requires a door on both sides of the wall and it is desirable to mount the mechanism between the jambs, the coils are placed either opposite each other or one above the other, depending upon the thickness of the wall.

If Kinnear Engineers are given the opportunity to work with the Architect and Contractor during the designing of the building, it is frequently possible to completely conceal all working parts of the door and through the use of marble, bronze or other materials, make a very attractive installation.



Showing how the interlocking steel slat curtain of an Akbar Door completely seals the opening with a positive fire stop. While provided with an automatic closing device, they are also arranged for easy opening or closing when ordinary door service is required.

TYPES OF LABELS

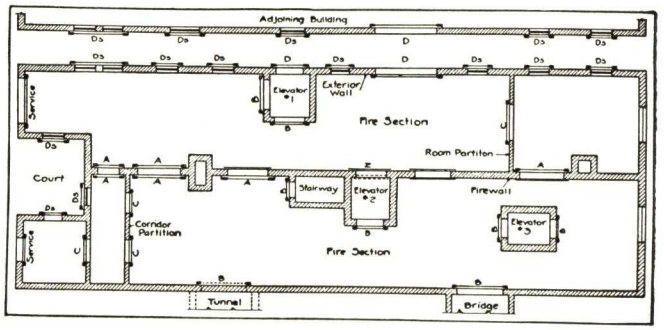
The drawing below illustrates the four classifications under which Kinnear Doors are labeled. The size limitations established by the Underwriters for each classification is as follows:

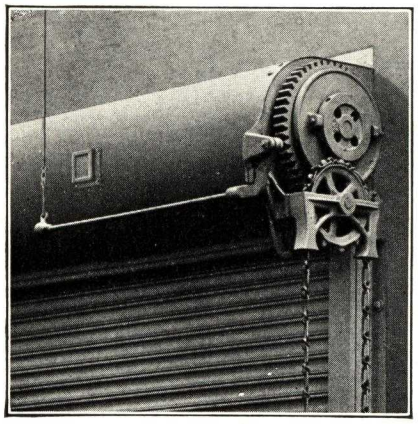
Class A—Openings in fire walls not exceeding 80 sq. ft.; the width or height not to exceed 12 ft.

Class B—Openings in vertical shafts, such as elevator shafts, the size limits being the same as in Class A.

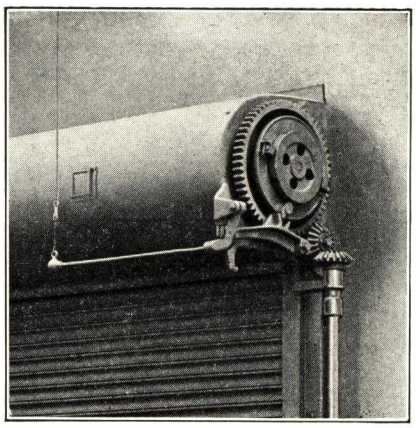
Class C—Openings in corridors and room partitions, the size limits being the same as in Class A.

Class D—Openings in exterior walls not exceeding 100 sq. ft.; where width or height does not exceed 12 ft.





Chain Operated Akbar—Face of Wall Mounting



Crank Operated Akbar—Face of Wall Mounting

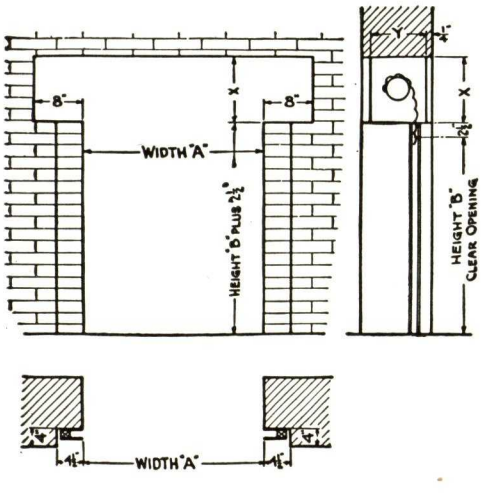
As Kinnear Fire Doors of large size are built according to the same standards, the Underwriters will inspect and issue an oversize label on construction (with exceptions) for doors not exceeding 24 ft. in width or height.

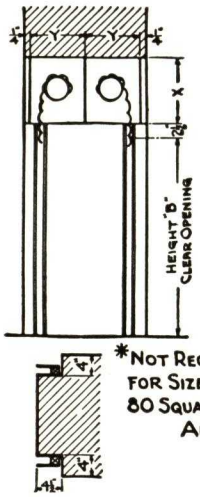
As requirements vary in different localities, the local Inspection Bureau should be consulted. Kinnear Engineers will, of course, work closely with you and the Inspection Bureau and gladly submit detailed recommendations. This engineering assistance is only part of the complete service at your disposal when you carry "Kinnear" in your specifications.

KINNEAR

UNDERWRITERS' LABELED—AKBAR FIRE DOORS—AUTOMATIC CLOSING

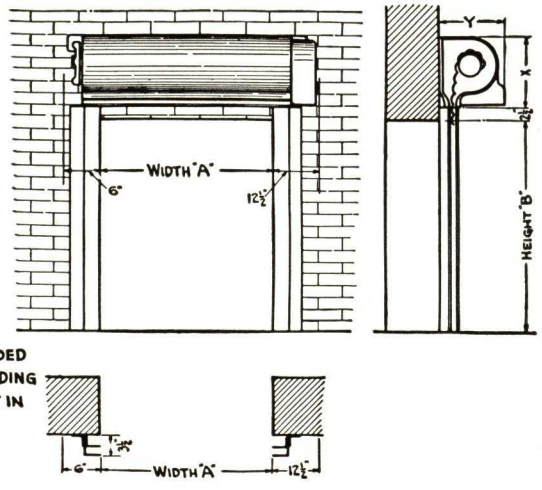
HAND LIFT TYPE, UNDER LINTEL MOUNTING





*NOT RECOMMENDED FOR SIZES EXCEEDING 80 SQUARE FEET IN AREA.

HAND LIFT TYPE, FACE MOUNTING



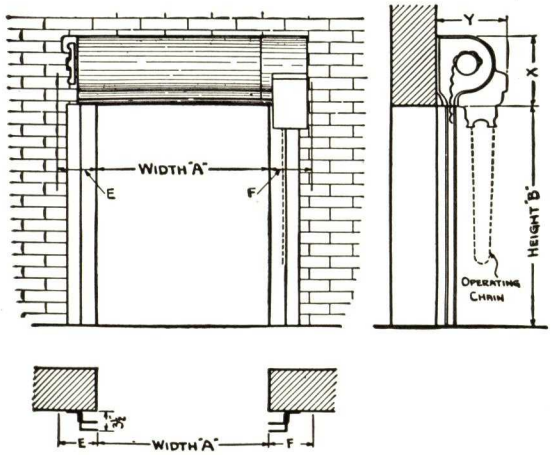
CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	6		7		8		9		10		11		12	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Width A, Feet 3	17	13	17	13	17	13	17	14	18	15	18	15	20	17
4	17	13	17	13	17	13	17	14	18	15	18	15	20	17
5	17	13	17	13	17	14	17	14	18	15	20	17	20	17
6	17	13	17	13	17	14	17	14	19	16	20	17	20	17
7	17	13	17	14	17	14	19	16	19	16	20	17	20	17
8	17	13	17	14	19	16	19	16	19	16	20	17	20	17
9	17	13	17	14	19	16	19	16	19	16	20	17	20	17
10	17	13	19	16	19	16	19	16	19	16	20	17	20	17

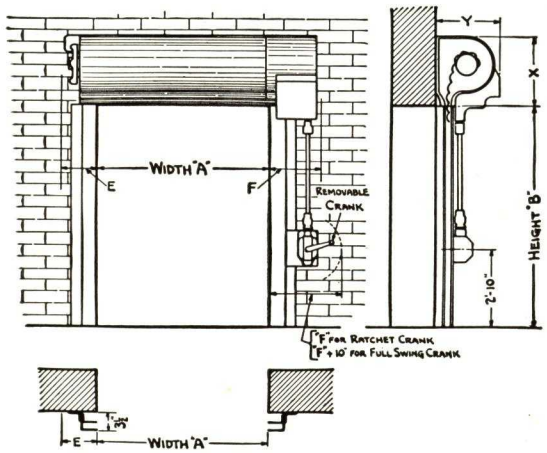
CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	6		7		8		9		10		11		12	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Width A, Feet 3	15	16	15	16	15	16	17	18	17	18	18	18	18	18
4	15	16	15	16	15	16	17	18	17	18	18	18	19	19
5	15	16	15	16	16	16	17	18	17	18	19	19	19	19
6	15	16	15	16	16	16	17	18	19	19	19	19	19	19
7	15	16	16	16	16	16	18	18	19	19	19	19	19	19
8	15	16	16	16	18	18	18	18	19	19	19	19	19	19
9	15	16	16	16	18	18	18	18	19	19	19	19	19	19
10	15	16	18	18	18	18	18	18	19	19	19	19	19	19

CHAIN HOIST TYPE, FACE MOUNTING



CRANK SHAFT TYPE, FACE MOUNTING



CLEARANCE DIMENSIONS, INCHES

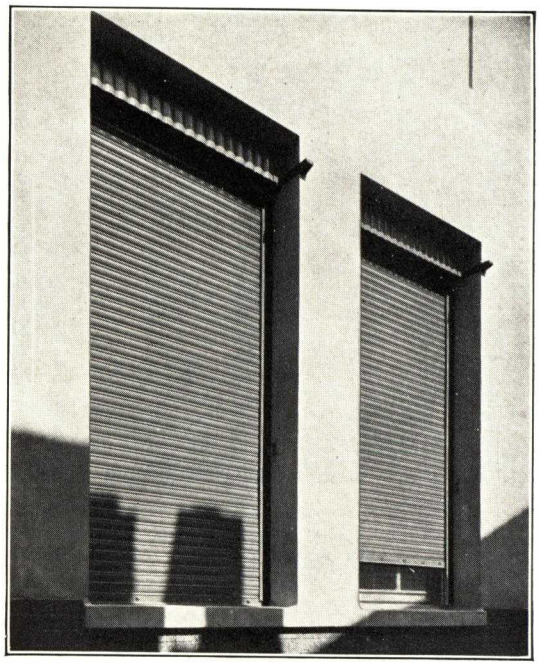
Hgt. B, Ft.	6				7				8				9				10				11				12			
	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Feet 5	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
6	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
7	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
8	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10
9	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	18	21	7	11
10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	18	21	9	11	18	21	7	11	18	21	7	11
11	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	18	21	7	11	18	21	7	11	18	21	7	11
12	17	20	10	10	17	20	10	10	17	20	10	10	17	20	7	10	18	21	7	12	18	21	7	12	18	21	7	12

CLEARANCE DIMENSIONS, INCHES

Hgt. B, Ft.	6				7				8				9				10				11				12			
	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Feet 5	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
6	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
7	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
8	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
9	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	18	18	7	12
10	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	18	18	7	12
11	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	7	12	18	18	7	12	18	18	7	12
12	17	17	10	13	17	17	10	13	17	17	10	13	17	17	7	13	17	17	7	13	18	18	7	13	18	18	7	13

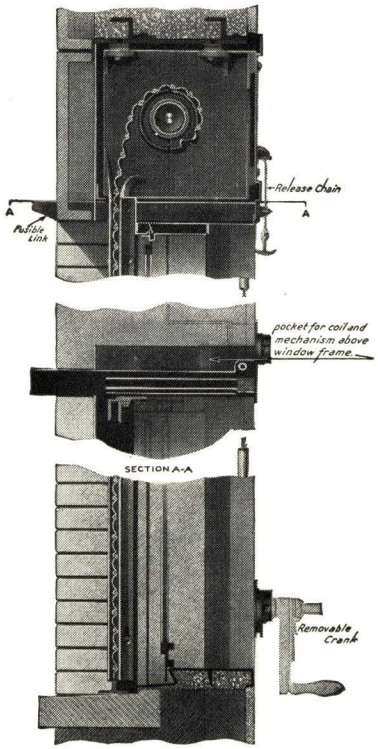
Note: For doors of intermediate size, use clearance dimensions listed for next larger width or height.
Slat No. 2 used on all door sizes listed on this page.

"Superior" Fire Window Shutters



APTOMATIC AND DESIGNED FOR PERIODIC TESTING

Superior Fire Shutters are substantially the same in design as the Kinnear Akbar Fire Doors, except that they are not constructed for service raising and closing. They are provided with the safety governor regulating the closing speed so as to eliminate all personal danger hazards and destructive impacts on the window sill. Provision is made for periodic testing. By the tripping of a release chain accessible from the inside wall, the shutter is closed the same as if it were automatically closed in case of fire. It can then be raised to the open position by a gearless rewind mechanism and a hand crank easily accessible from the floor. Crank to be removed when not in use.

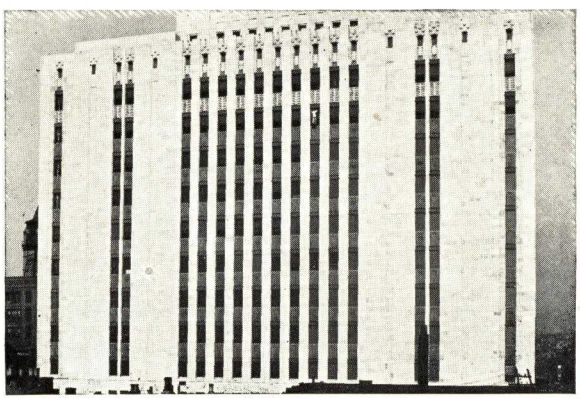


To insure positive starting, a powerful push-down spring gives the curtain a hammer starting blow of approximately 200 inch-pounds simultaneously with fusing of the releasing link.

Superior Fire Shutters are constructed to the standards of the Underwriters' and labeled for exterior window openings not exceeding 100 sq. ft. in area; or more than 12 ft. in width or height. True to its name this is a superior device embodying the same skilled workmanship and high quality materials as found in other Kinnear Equipment.

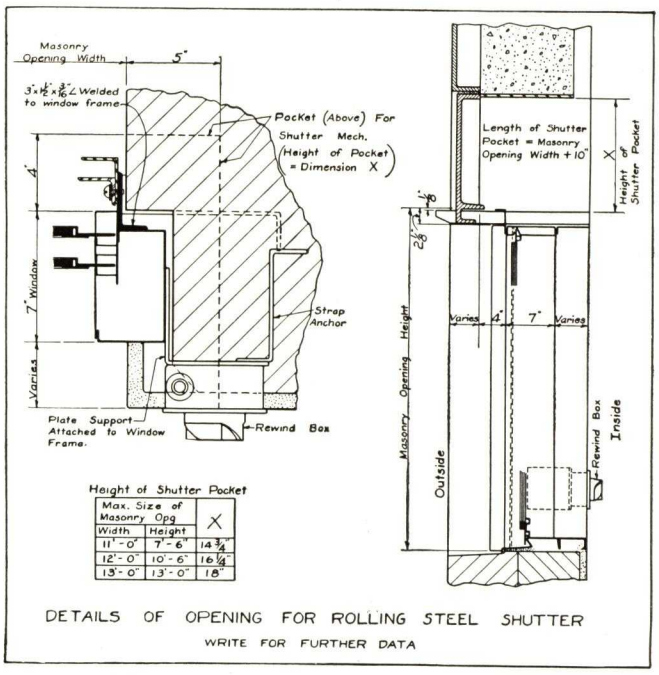
As can be seen from the illustrations the Superior Fire Shutter can be almost completely concealed, particularly when they are installed at the time the building is constructed. For application on old buildings, the coil and brackets are mounted on the outside face of the wall, above the lintel.

NOTE: The Superior Fire Shutters are ideal also for dark rooms, such as x-ray rooms in hospitals, etc. Many of them are at this time being used for that purpose. Special recommendations will be submitted upon request.



The Superior Fire Shutters installed in the Cincinnati Suburban Telephone Building, Cincinnati, Ohio.

Equivalent to a man standing ready at all times to close the window openings in the event of fire.



KINNEAR

Architects' Specifications

FOR KINNEAR STEEL ROLLING DOORS AND OPERATORS

STEEL ROLLING SERVICE DOORS

Openings—Shall be equipped with Kinnear Steel Rolling Doors.

Curtain—Shall be of interlocking slats, rolled not drawn, formed in easy curves without sharp bends, from open hearth steel gauge *(see note below)*. Slats to be of section sufficiently large to give curtain strength to safely resist a wind load of 20 lbs. per sq. ft., but for doors exceeding 25 ft. in clear width curtain shall be provided with lugs as windlocks to engage bars in guides and to lock the curtain against wind pressure. Each alternate slat shall be fitted with malleable endlocks ⅜ in. thick. Bottom bar to be two angles placed back to back.

NOTE: The gauge of the slats to be specified according to the following chart:

Height		8′ 0″	12′ 0″	28′ 0″
Width	33′ 25′ 20′ 13′6″	22 U. S. Gauge.		25′ 18′ 12′6″
			20 U. S. Gauge	
			18 U. S. Gauge	
			18 U. S. Gauge (with windlocks)	

Galvanizing—To be hot process, free from blisters and other imperfections, with a high grade pure zinc coating.

Counterbalance—Curtain to be coiled on a pipe of size sufficient to carry the door load with a deflection not to exceed .03 in. per ft. of opening width, and to be evenly balanced by helical springs contained in pipe.

Coil Brackets—To be of high grade gray iron designed to house ends of the coil.

Hood—The coil to be housed with a sheet metal hood No. 22 U. S. gauge for doors over 20 ft. wide and No. 24 U. S. gauge for narrower sizes.

Guides—Built of structural steel to form a slot of sufficient depth to retain curtain for doors under 25 ft. in width in guides against heavy wind pressure without using the windlocks, but for doors exceeding this width guides must be provided with anchors for windlocks.

ALTERNATES FOR STANDARD SERVICE AND MOTOR OPERATION

Standard Service

Operation—To be—

(A) Manually by means of handles on bottom bar.

(B) Hand chain, sprocket and gear; maximum allowed pull 35 lbs.

(C) Crank, shafting and gear; maximum exertion on crank 20 lbs.

Gear—To be of best grade gray iron, cast teeth machine moulded from machine cut patterns, except machine cut teeth on motor operated doors.

Motor Operation

Operation—Doors to be operated by means of an electric motor. The control circuit shall be closed by means of push buttons, and automatic limit switches will break circuit at termination of travel. Door to be stopped at intermediate points by stop button from where it can then be operated in either direction.

Motor—To be high starting torque elevator or hoist motor, raising or lowering curtain at approximately .67 ft. per second.

Reduction Gear—Of the power unit shall be machine cut gear completely housed and running in oil bath.

Emergency Operation—A control for automatically engaging a sprocket and chain and releasing the brake, shall be operable from the floor. A device which shall automatically prevent the motor from operating until emergency sprocket is disengaged shall be provided. Emergency operation shall not affect timing of limit switch.

Control Switches—Shall consist of 3 push button switch "open," "close" and "stop"; remote control magnetic enclosed switch panel for reversing motors, and automatic limit switch.

Erection—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed against defective material and workmanship for a period of one year from the date of completion of erection.

Wiring—Wires, wiring, conduit and fuses are not furnished or erected by Rolling Door Contractor, but are to be installed with the control switches by others, according to diagrams furnished by door contractor.

STEEL ROLLING DOORS LABELED BY NATIONAL BOARD OF FIRE UNDERWRITERS

Openings—Shall be equipped with Kinnear Steel Rolling Automatic Fire Doors of the Akbar Construction.

Label—All doors to bear the label of the National Board of Fire Underwriters.

NOTE: The National Board of Fire Underwriters label and classify the Akbar doors, as Class "A" for fire walls, "B" for vertical shafts, "C" for corridor and room partitions and "D" for exterior walls, where the opening does not exceed in area 80 sq. ft. for Class "A," "B" and "C" doors and 100 sq. ft. for Class "D" doors, or 12 ft. in width or height. Openings exceeding these dimensions in size and not exceeding 24 ft. 0 in. in either dimension are furnished with Underwriters' Oversize Label.

Operation—All doors to be automatic closing in the event of fire. Doors not exceeding 8 ft. high or 80 sq. ft. in area can be operated by means of handles on the bottom bar; but larger sizes shall be operated through reduction gear by hand chain (or crank).

Automatic Closing Device—To be thermally controlled by means of a fusible link. The door shall be forced to a closed position by an auxiliary spring in spring barrel which is inoperative during normal operation and released by thermal control without affecting the permanent adjustment of the counterbalance spring.

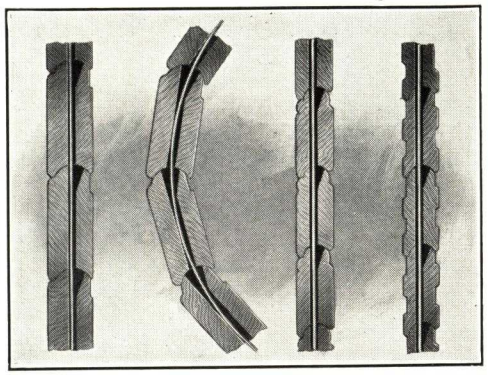
Counterbalance—Curtain to be evenly balanced by helical springs contained within spring barrel. Counterbalance to be permanently maintained and doors shall operate easily both normally and after automatic closure.

Safety Device—To be an automatic governor of escapement type inoperative during normal operation but which shall so control the speed of the curtain during automatic operations as to prevent injury to persons accidentally under the door.

Curtain—To be of Kinnear interlocking slats rolled from copper bearing steel with no sharp bends and hot galvanized. The ends of the slats to be fitted with endlocks ⅜ in. thick. Gauge of metal and type of endlocks as established by National Board of Fire Underwriters for the specified class risk.

Gauge of metal to be No. 20 U. S. gauge for Class "A," "B" and "C" doors and No. 22 U. S. Gauge for Class "D" doors.

WOOD ROLLING PARTITIONS



Kinnear Wood Rolling Doors and Partitions are the same in principle of operation as the Steel Rolling Door. Slats of long leaf pine, cypress, quarter-sawed oak or birch are assembled on phosphor bronze tapes in the manner illustrated. Upon request Kinnear Engineers will gladly submit detailed recommendations.

Brackets—To be high grade iron with roller or ball bearings in bracket for revolving end of barrel.

Guides—To be of structural steel $\frac{3}{16}$ in. thick arranged for expansion at all rivet and bolt connections.

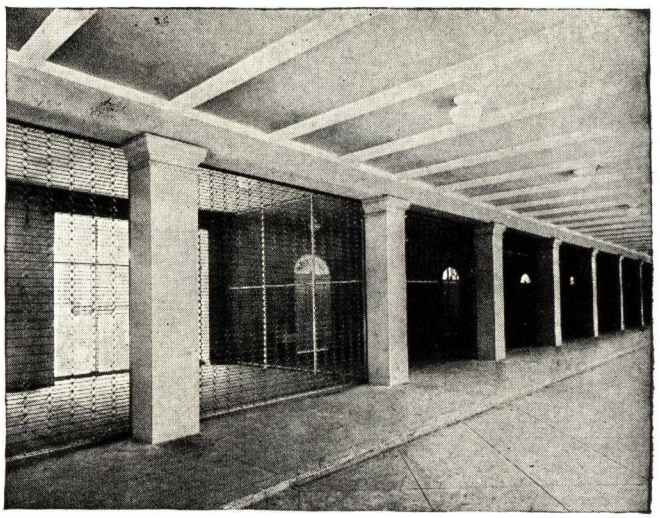
Hoods—The coils to be enclosed with sheet metal housing of No. 24 U. S. gauge. For interior wall doors hoods to be furnished with a drop hood thermally controlled, closing against the coil when automatically released, but not interfering with coil during normal operation.

Paint—All parts of the door except mechanism to be given one shop coat of red oxide; the mechanism to be dipped in flat black.

Erection—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed against defective material and workmanship for a period of one year from the date of completion of erection.

Rolling Grille

STEEL
STAINLESS STEEL
BRONZE
ALUMINUM



A battery of Kinnear Grilles installed in a New Orleans Market House for closing off the stalls.

Ideal because air circulation is essential particularly where there is perishable goods.

ADVANTAGES

The Rolling Grille is another Kinnear development. Embodying the same principle of construction and built by the same competent and skilled mechanics as the Kinnear Rolling Doors, the Rolling Grille is a product of proven merit ideally suited for many new and modern uses. It offers a permanent installation that can be quickly opened and closed, providing a safeguard against trespassing, burglary and kidnapping—without sacrifice of the passage of air and light or obstruction of vision. Coiling in a small space above the lintel it occupies no useful space. Accurately counterbalanced it is easily opened or closed and can be locked closed. Attractive in design and built in various metals, it harmonizes with any architecture. Its practicability for numerous purposes is shown by its rapidly increasing popularity.

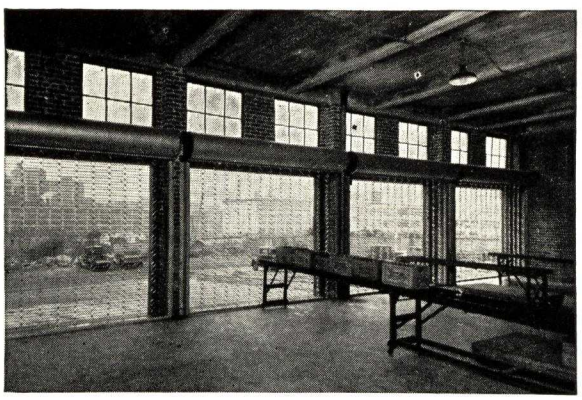
As illustrated, the grille is composed of round steel bars joined by strong pressed steel links, affording an artistic design that is strong and durable.

The spaces between the component parts are small enough to prevent a man's hand being inserted through the grille work.

USES

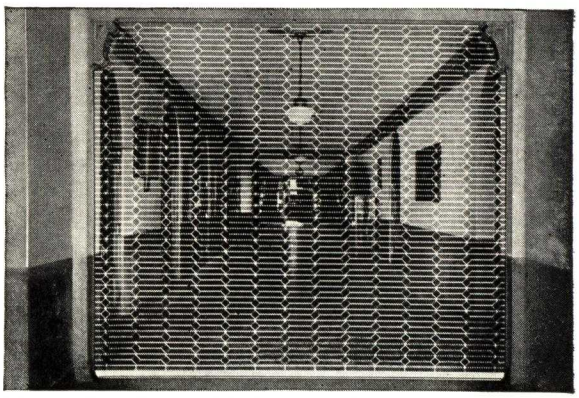
While the Rolling Grille readily suggests itself for a multiplicity of uses, a few of the more common uses are listed as follows: Exterior and interior commercial openings; school buildings, store fronts, concessions, show windows and display rooms containing valuable merchandise; day time protection of vaults, bank tellers; industrial openings; elevator shafts; commission houses containing perishable merchandise; piers and platforms. Private and public homes; residences; and so forth.

KINNEAR



A special center opening in these Grilles permits a truck being loaded from the conveyor without admitting anyone to the shipping room.

Outside face of the openings are equipped with Steel Rolling Doors, for closure at night.



Illustrating the suitability of the Kinnear Rolling Grille for closing off corridors.

With mechanism completely concealed it is out of sight when open, but when closed an impassable barricade against trespassing.

GENERAL CONSTRUCTION

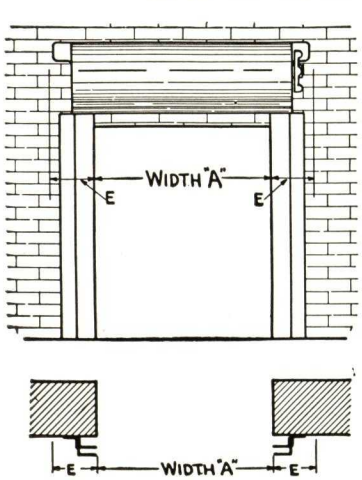
The Grille proper is made of round steel bars carrying or connected by strong pressed steel links (also other metals). It coils in a barrel journaled in heavy cast iron brackets, and is locked in and travels in steel guides mounted at the side of the opening. Helical springs enclosed in the barrel provide perfect counterbalance. A hood of suitable design and metal is furnished for covering the barrel and coil. Customary to Kinnear practice, each grille is individually built to meet the particular requirement. Similar to the steel rolling door, the grille can be mounted on the face of the wall, with coil above the bottom of the lintel, or in the opening with coil between jambs or in reveals provided. The building can be designed to house and conceal all working parts.

The Grille can be arranged for operation by means of handle in bottom bar; chain and reduction gearing; crank and reduction gearing; or electric power equipment. The method employed usually being determined by the size of the grille.

For positive protection a secure locking arrangement is provided, the type depending upon the method of operation employed.

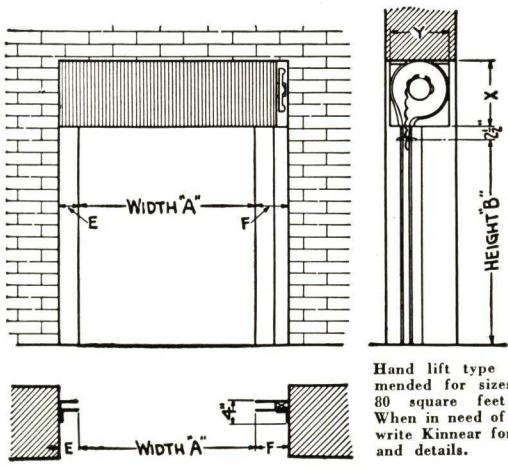
Whenever you have need for a guard of the grille type, write Kinnear Engineers for special recommendations on this new and modern equipment.

FACE OF WALL MOUNTING



Hand lift type not recommended for sizes exceeding 80 square feet in area. When in need of larger sizes write Kinnear for clearances and details.

BETWEEN JAMB MOUNTING



Hand lift type not recommended for sizes exceeding 80 square feet in area. When in need of larger sizes write Kinnear for clearances and details.

FACE OF WALL—CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	6			7			8			9			10			11			12		
	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E
3	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6	19	18	6	21	19	6
4	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6	19	18	6	21	19	6
5	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6	19	18	6	21	19	6
6	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6	19	18	6	21	19	6
7	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6	19	18	6	21	19	6
8	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6	19	18	6			
9	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6						
10	16	15	4	16	15	4	18	17	5	18	17	5	19	18	6						
11	16	15	4	16	15	4	18	17	5	18	17	5									
12	16	15	4	16	15	4	18	17	5	18	17	5									

Width, A Feet

BETWEEN JAMBS—CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	6				7				8				9				10				11				12			
	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
3	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5	19	18	3	5	21	19	3	5
4	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5	19	18	3	5	21	19	3	5
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6	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5	19	18	3	5	21	19	3	5
7	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5	19	18	3	5	21	19	3	5
8	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5	19	18	3	5				
9	16	15	3	5	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5								
10	16	15	3	4	17	15	3	4	18	16	3	5	18	17	3	5	19	18	3									
11	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5												
12	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5												

Width, A Feet

Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.

SPECIFICATIONS, KINNEAR ROLLING GRILLES

Grilles—Composed of round steel bars joined by pressed steel links of octagonal shape. Alternate bars welded to links. Remaining bars hinged so as to provide smooth operating, flexible grille. Bars $\frac{3}{16}$ in. diameter and links formed from $\frac{5}{8}$ x $\frac{1}{8}$ in. steel bars.

Counterbalance—Oil-tempered, helical springs wound from especially heat-treated steel and tempered with oil, mounted on cold, rolled polished steel shafting. Spring and shafting carried in heavy steel barrel, which has a three-fold purpose; viz: encases counterbalance mechanism, is load carrying beam, and provides axis around which grille coils. Barrel is of sufficient diameter to avoid deflection in excess of .03 in. per lineal foot barrel.

Barrel Rings—Barrel is provided with malleable iron rings of special involute shape, designed to coil the grille with a uniformly increasing diameter, thereby insuring uniform counterbalance.

Barrel Plugs—Cast iron plugs of special Kinnear design to eliminate excessive strain at spring ends.

Lock Links—Side edges of grille are provided with end links of special Kinnear design, which engage in guides providing a bearing surface and also locking the grille in guides against excessive deflection.

Bottom Bar—Structural steel. Increases grille's strength and facilitates operation.

Guides—Structural steel, designed and arranged to engage lock links and prevent grille from leaving guides under abnormal strain.

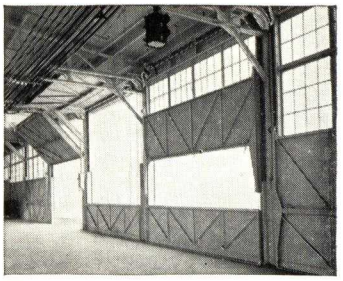
Brackets—Heavy gray iron castings with mouth and stops cast integral and with high factor of safety. Bearings of large proportions for barrel spindles.

Adjustment Wheel—Mounted at end of bracket for increasing or decreasing tension on counterbalance spring.

Hood—Neatly formed of hot galvanized sheet steel reinforced with beads and flanges.

Kinnear Grilles meet a need in modern school design, not only for corridors but also for the combination gym and auditorium . . . and here is a 27-ft. wide installation in a Cambridge, Maryland, school.

Bifolding Doors



Illustrating how the Kinnear Steel Bifolding Doors installed on Pier 88, New York Harbor are arranged to provide a barrier on the upper decks.

Lower section is disconnected and remains in place, allowing the upper section to be opened.

No. 3, WEIGHT COUNTERBALANCED

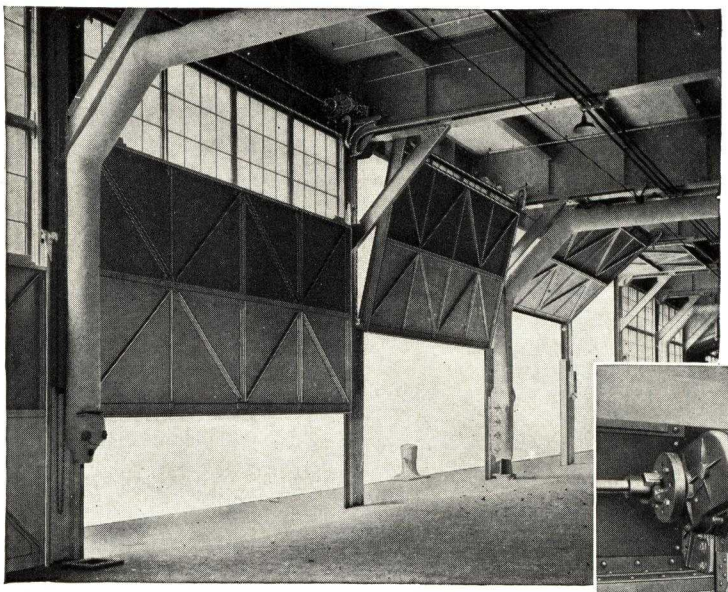
This door is particularly suited for openings 12 ft. or higher, where heavy construction is desirable. Permitting the use of sash sections, it provides heavy duty service as well as admittance of light. Though built in both wood or steel, they are generally used for freight sheds and piers, thereby making steel preferable. Constructed of two sections made up of heavy galvanized steel sheets applied with closely butted joints to an angle frame made of members 4 in. or larger. The lower section telescopes with the upper and then the two sections, as a unit, slide to the overhead position on heavy steel horizontal tracks. The door is counterbalanced by cast iron weights encased in the columns. Operation is usually by chain and reduction gearing. Through the use of high quality bearings in all bearing points, only a small amount of energy is required to start the door in motion.

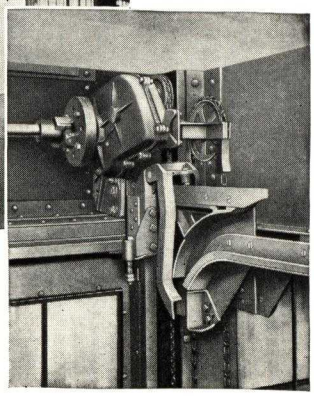
Counterweights are connected to the door by block chain of high safety ratio, built of die formed links, producing not only a strong but also accurately running chain over the sprockets. To prevent the accidental drop of the door, in case of lifting chain breakage, when operating such tremendous weight, an automatic safety lock is provided. A cam grip, which operates on an angle guide and is held open by the weight of the door, is closed by a heavy spring force. Should the lifting chain accidentally break, the cams will grip the angle guide and support the door in place. The action of this lock is similar to an elevator safety lock and prevents the door from dropping should either or both of the lifting chains fail.

When the door is used on the upper decks of a pier it may be arranged to provide a barrier. The lower section of the door can be subdivided into two parts, the lower part being about 4 ft. high and detachable from the upper part of the section. The door can be raised with the two parts operating as one section or the lower part can be detached and allowed to remain in the opening as a barrier or guard to prevent pedestrians from passing through the opening.

The chain sprockets are driven by the hand chain through spur gear reduction. These reduction gears are of steel, having machine cut teeth and are enclosed in an oil-tight housing. All bearings supporting the counterweights or doors, are supplied with grease tight roller or ball bearings.

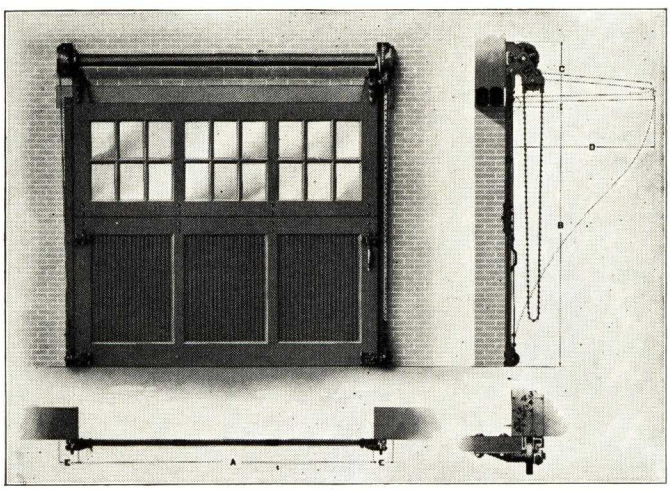
As this door is engineered for the individual job, write for special recommendations.





Above:
Illustrating how the two sections of a Bifold No. 3 telescope and then raise to an overhead position . . . out of the way.

Right:
A look at this mechanism is evidence of the excellent design and precision workmanship in a Kinnear Door.



No. 5 BIFOLD, SPRING COUNTERBALANCED

The Bifold No. 5 combines the qualities necessary for a heavy-duty, quick-acting, space-saving wood door with the advantages of minimum clearance requirements and a large sash area. When desired it can also be constructed of steel. It is composed of two leaves, or sections, hinged and pivoting from brackets at the top corners of the opening.

Attached to a torsion spring counterbalance shaft placed above the lintel by means of steel cable and traveling in steel jamb guides, it folds to a position above the opening. Because of its simplicity, it reduces maintenance to a negligible factor.

When you are considering the installation of Bifolding Doors, Kinnear Engineers will gladly submit recommendations for your particular needs.

KINNEAR

Power Units

In keeping with today's demand for greater speed and convenience, Kinnear Motor Operated Doors are rapidly becoming one of the most popular Kinnear installations. For rolling doors are especially adapted to electric operation, and the Kinnear Power Unit provides a rugged, compact and dependable operator which is available for any size new or old door. With control stations placed at any convenient point, the door can be remotely controlled with a press of a button . . . magically opening and closing it with speed, smoothness and dependency. The saving in time alone, which Kinnear Motor Doors effect, quickly pays for their moderate cost.

METHOD OF OPERATION

The door is driven by electric motor through reduction gearing, the operation being accomplished as follows:

By momentary contact of the "Open" or "Close" button on the operating switch the pilot circuit magnetically closes the main line reversing switch and starts the motor. The limit switch will, at the termination of the door travel, open the pilot circuit, thereby breaking the main circuit and simultaneously the magnetic brake will close, stopping the motor. The door can be stopped at any intermediate position by pushing the stop button, from which position it can either be opened or closed.

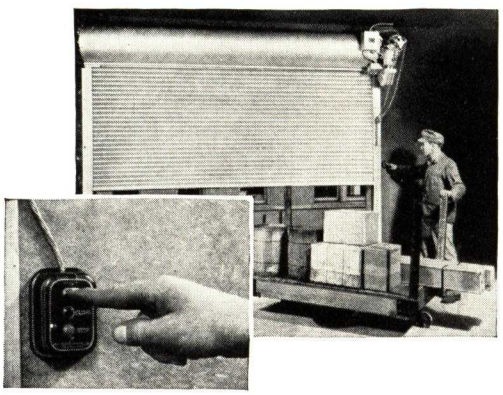
EMERGENCY OPERATION

A distinctive feature that has created a general preference for the Kinnear Power Unit is the provision for emergency manual operation by hand chain in the event of interrupted power service. This is accomplished by pulling down on a hand chain which instantly engages emergency operator, releases the motor brake and opens the motor control circuit which prevents the motor being inadvertently started until the emergency operator is detached.

After the emergency operator is engaged as above described, the door is operable by hand chain. When not in use the emergency operating and control chains are held out of the way by a keeper on the wall.

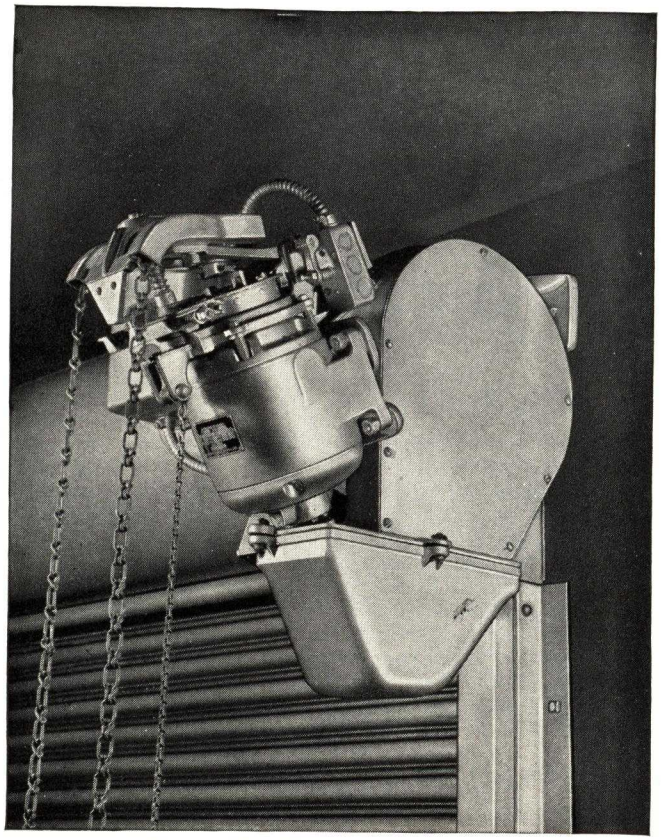
GENERAL SPECIFICATIONS

Each Kinnear Power Unit comprises the following: Power unit supports, motor reduction gears, magnetic brake, limit switch, emergency manual operation with interlocking limit switch, reversing panel and single station push button control. Motor is of series wound type for direct current and of high starting torque, elevator type, for alternating current. Available for 110-220-440-550 volts . . . A.-C.—1, 2, or 3 phase . . . D.-C. Push button control is three button type, labeled "Open," "Close" and "Stop."



With motor operation "finger tip" door control is an actuality.

One can quickly appreciate the economies and convenience, whether the control is close to the door or at some remote point, when Kinnear Motor Operated Doors are visualized as they are in the illustrations.



Power Unit Mounted on Bracket

Magnetic reversing panel for remote control is fully enclosed and mechanically interlocked.

WIRING

The wire, conduit and fuses are not furnished or installed by THE KINNEAR MANUFACTURING COMPANY, but are to be provided by others in accordance with wiring diagrams supplied by Kinnear.

GENERAL

Kinnear Power Units are built by Engineers who have not only spent years of painstaking effort in designing a highly perfected operator but who are also familiar with the doors upon which they are used. As a result, the operator and door is a perfectly matched, efficient combination. More complete details and quotations on equipment exactly suited to your needs will be gladly furnished upon request. Complete current characteristics should accompany all requests for quotations.

For other Kinnear Electric Door operating equipment, see page 23. As it is impossible for us to list all Kinnear equipment in this catalog, should the type of equipment you require not be shown, write Kinnear for special recommendations.

CONTROL STATIONS

While the stand control equipment is the three-button control described above, Kinnear is in a position to supply a wide range of control devices. For operation from the outside of the building a key operated switch, in which the "Open" and "Close" buttons are controlled by key only, is frequently desirable. Another popular arrangment for truck opening is a pull type control which permits the driver to operate the door by a pull cord. However, to obtain the most practical arrangement, ask Kinnear to study the problem and make recommendations.

Rol-Top Doors

FOR COMMERCIAL, INDUSTRIAL OR RESIDENTIAL GARAGE USE

Like other Kinnear Doors, the RoL-TOP Door opens upward affording maximum convenience, efficiency and permanence of service, combined with the advantage of the admittance of light. It is ideally suited for old or new residence garages, service stations, warehouses, factories, boat houses and other buildings.

CONSTRUCTION

Attractively panel wood sections are hinged together with malleable iron hinges and fitted at both ends with heavy duty ball-bearing rollers. By means of these rollers, which operate in steel tracks or guides mounted on the jamb and extending horizontally back from the lintel, the door rolls to the overhead position. One or more springs, (see Deluxe and Standard Models) connected to the door by Trulay plow steel cable accurately counterbalances the door. A special sealing device and heavy cylinder lock makes the door weather-tight and burglar-proof. It can be arranged for operating manually, mechanically or electrically. Sections can be either solid or arranged for glass. The door throughout is built to the highest standards of workmanship and materials.

ADVANTAGES

The advantages of RoL-TOP are numerous. It raises over snow, ice and swollen ground. Never sags, sticks or binds. Out of the way of wind or car, staying where it's PUT. Lends itself to all styles of panel designs. Saves wall and floor space, permitting cars and other objects to be placed within a fraction of an inch of the door. It opens easily, rapidly and smoothly. Strong, rugged construction insures permanence and insignificant maintenance.

DISTINCTIVE FEATURES

RoL-TOP embodies a number of special features that enhance its smooth, easy operation and adds to its permanence and dependability. They are:

Safety Counterbalance—On the DeLuxe Model RoL-TOP is a torsion spring with a high factor, mounted on a solid steel shaft, in a fixed harnessed position. In case of accidental breakage, it can not damage life or property. It is neat . . . nothing to jangle or flop around. Pulling uniformly on both sides of the door, it insures smoother, easier and more quiet operation. It is the same counterbalance principle that has made Kinnear Steel Rolling Doors FAMOUS.

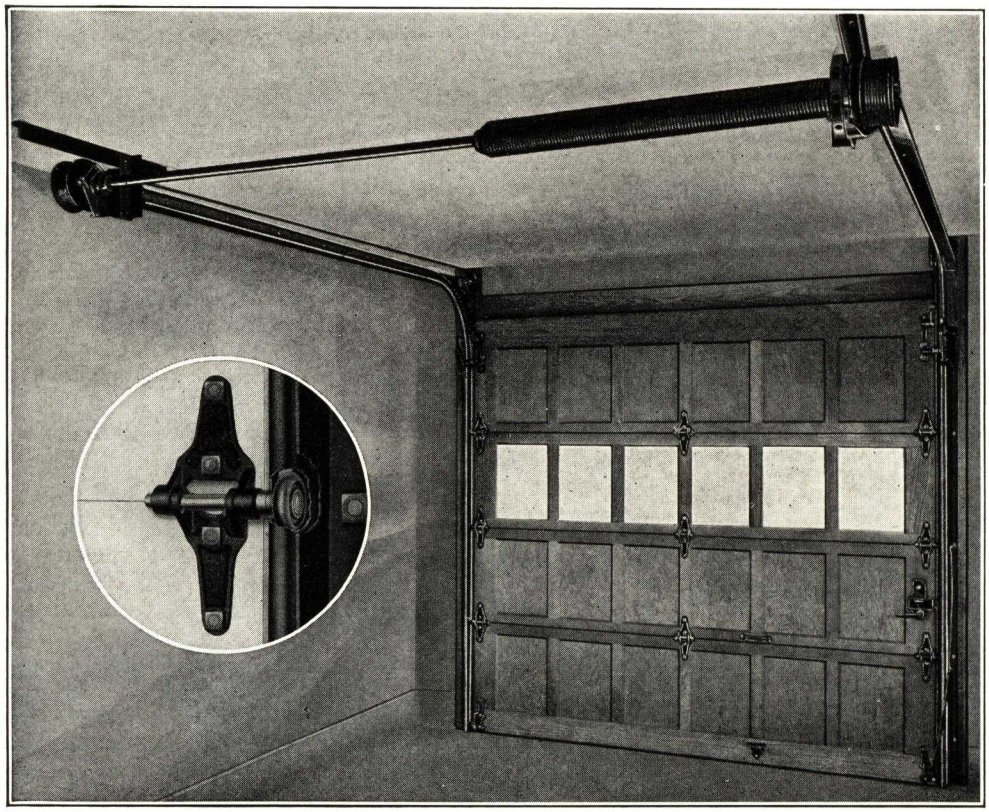
Continuous Angle Mounted Tracks—RoL-TOP tracks are mounted on the jamb with continuous angles, providing a rigid, strong mounting that will stand abuse, reduce vibration and noise and insures permanent alignment.

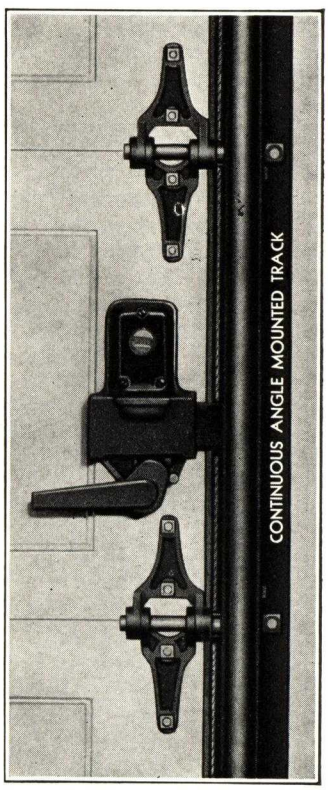
Heavy Hardware—Massive malleable iron hardware applied with through carriage bolts adds increased durability to RoL-TOP.

Closing Bracket—The roller arm at the top of the door automatically forces the top section of the door snug against the jamb and lintel, adding an extra precaution toward the elements.

Ball Bearing Rollers—Especially designed heavy duty rollers are used. They have a one-piece, solid steel tread operating around hardened steel race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge, it is FREE FLOATING and yet locks the door securely in the tracks.

Cylinder Lock—A rugged spring-release slide bolt type of lock fitted with a standard make of cylinder is furnished. It is operated by key outside and knob inside.





De Luxe Model

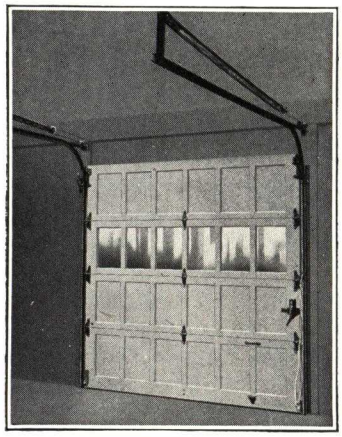
KINNEAR

Quality Sections—Stiles and rails are of finest quality kiln-dried lumber fabricated to the highest mill-work standards. Panels are of three-ply fir veneer and are furnished with Ogee moulding. The sections are shiplapped and have end graduated rabbets to conform to Kinnear's special "Keystone" sealing device.

Keystone Sealing—RoL-TOP is made weathertight by a snug-fitting triple-contact between the door and the jamb. The door seals and binds itself tightly between seal strips in exactly the same manner that a Keystone seats in an arch.

STANDARD MODEL

Where original low price is more important than added years of unusual service, the standard Model RoL-TOP is offered. It operates in the same manner as the DeLuxe Model described on page 20. The door construction is also similar but counterbalance is accomplished by the old conventional arrangement of two stretch springs placed parallel to the tracks. One spring is connected to each side of the door by means of pliable plow-steel cable running through ball-bearing sheaves.



Standard Model

The Standard Model is built in any size from 8 ft x 7 ft to 12 ft x 10 ft. and also in widths up to 16 ft. when height does not exceed 8 ft. While it offers a good value it should be carefully compared with the advantages of the DeLuxe Model before a decision is made.

ANY SIZE

While RoL-TOP is built in the three standard sizes listed, it is built on special order in any practical size and of a great variety of woods and panel designs. In conjunction with a wide range of auxiliary equipment, RoL-TOP can be adapted to most any individual opening condition.

STANDARD SIZES

8 ft. x 7 ft; 8 ft. x 7 ft. 6 in.; 8 ft. x 8 ft.

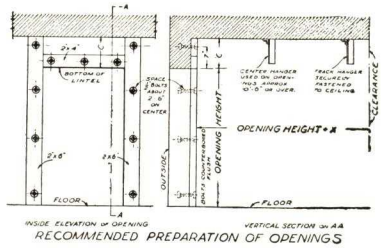
The standard for the three above sizes is one light section (without glass) to be located the third section from the bottom on the 8 ft. x 8 ft. and the 8 ft. x 7 ft. 6 in., and the third or fourth section from the bottom (specify) on the 8 ft. x 7 ft. Counterbalance is like that described for the Standard Model. Master keying of locks and other variations from standard can be supplied at small additional charge.

INSTALLATION

The installation of RoL-TOP is a simple, economical task . . . the average door—requiring only 3 to 4 hours to install. The door is complete with erection instructions and all other materials, except glass, horizontal track hangers and materials that may be required to properly prepare the opening.

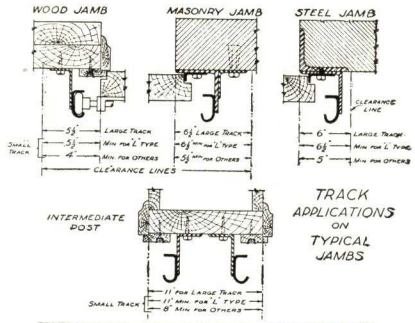
Note in the schedule at right, the required clearances and the way RoL-TOP is applied to various types of jamb construction. Unless the door is applied to steel it is recommended that the opening be framed on the inside with 2 x 6 in. timbers.

To insure against error, it is recommended that a sketch of the opening conditions showing all clearances, be furnished at the time of ordering.



RECOMMENDED PREPARATION OF OPENINGS

DOOR TYPE	C	X
T- TORQUE SPRING-STANDARD	12"	33"
TU- TORQUE- LIMITED HEADROOM	8"	44"
L- HIGH LIFT	24" MIN 84" MAX	VARIES
S- STRETCH SPRING	13"	28"
T-CHAIN- CHAIN HOIST	24" MIN 27" MIN	20"



WIDTHS	HEIGHTS: UP TO 8'-2" High	8'-3" to 10'-2"	10'-3" to 11'-2"	11'-3" to 12'-2"	12'-3" to 13'-2"	13'-3" to 16'-2"
UP TO 12'-2" WIDE	A	12" HEADROOM 4½" SIDE ROOM PUSH UP TYPE				
12'-3" to 14'-2"	B	12" HEADROOM 4½" SIDE ROOM PUSH UP TYPE				D
14'-3" to 16'-2"						CHAIN OPERATED
16'-3" to 18'-2"	C	15" HEADROOM 5 3/16" RUSH PUSH UP TYPE	HEADROOM - 24" ON DOORS UP TO 16'-0" HIGH 27" ON DOORS OVER 16'-0" HIGH			
18'-3" to 20'-2"		8½" SIDE ROOM ON OPERATOR SIDE, 3½" ON OPPOSITE SIDE.				

SPECIFICATION DATA—RoL-TOP DOORS

DOOR SECTIONS

Construction—Sections are approximately 2 ft. high and panels approximately 12 in. wide except on special orders. Sections ship-lapped and have graduated rabbets to fit RoL-TOP special "Keystone" type weatherproof sealing device.

Thickness—Standard and special sizes not exceeding 8 ft. wide and 8 ft. high will be furnished with stiles and rails either 1⅜ in. or 1¾ in. Sizes 15 ft. and 16 ft. wide by 7 ft. to 8 ft. in height are 1⅜ in. thick, reinforced with Kinnear's special trussing members. Other special sizes exceeding 8 ft. by 8 ft. are 1¾ in. thick with doors over 12 ft. 2 in. wide reinforced with steel truss members.

Reinforcing—All doors over 12 ft. 2 in. in width are reinforced with Kinnear's special steel trussing bar which minimizes the natural tendencies of wood to warp and deflect, increasing door's life of service. Doors under 12 ft. 2 in. in width can be reinforced, if specified at extra cost.

Wood—Stiles and rails of doors of standard design of finest quality kiln-dried lumber with panels of 3/8 in. three-ply fir. Frame and panels of special woods obtainable from mill stocks can be furnished if specified.

Glass Section—Sections can be arranged for glass as specified. Weight of glass affects counterbalance; therefore, type of glass to be used should be specified. For uniform balance glass of double strength or lighter is preferred. Panels are framed with Ogee 5/16 in moulding.

Special Designs—Special woods (if obtainable) and special paneling effects can be furnished to meet individual requirements. When such is desired, send specifications to Kinnear and special recommendations will be furnished.

COUNTERBALANCE

As described in general description.

HARDWARE

Tracks—Moderate size doors equipped with 2 in. steel tracks. Large doors equipped with 3 in. steel tracks. All vertical tracks are mounted on a continuous angle iron, providing a rigid, solid, heavy duty member.

Rollers—Ball-bearing rollers, which travel in the tracks are built with a one-piece solid steel case, which operates around a hardened steel ball-bearing race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge, it is free-floating and yet locks the door securely in the tracks. Roller of 2 in. diameter with 12 1/4 in. balls on small doors. For large size doors roller is of 3 in. diameter with 10 5/16 in. balls.

NOTE: Other hardware as described in previous description.

SHIPPING DATA

Crated for shipment in sections and with all necessary materials except glass and the materials necessary for properly preparing the opening for application of the door. Shipped under the 3d freight classification in L. C. L.

AUXILIARY EQUIPMENT

In addition to the Motor Operators described on page 23, Kinnear has especially designed numerous other auxiliary units for use with RoL-TOP Doors. Briefly, a few of them are:

Chain Hoist—For operation of large doors by means of endless chain and reduction gearing. Standard on doors exceeding 16′ 2″ in width or height or 160 sq. ft. in area.

Wicket Door—A small pass or entrance door built in a large size RoL-TOP. For convenient pedestrian access.

Automatic Opener—For raising a door automatically by a pull cord. Especially suited for fire stations.

Lubritorium Design—Special counterbalance and track arrangement for carrying door sufficiently high to permit use of hydraulic lifts.

Sliding Center Posts—For closing one large opening with two or more doors. When all doors are open the center post is pushed to the side of the opening.

Since the application of RoL-TOP Doors is made highly flexible through the use of these, as well as other auxiliary units, it is recommended that the door problem be presented to Kinnear for their detailed recommendation.

All Steel Rol-Top Doors

A NEW STANDARD IN DOOR DESIGN

COMPLETELY GALVANIZED—ADDING YEARS OF DURABILITY

GENERAL

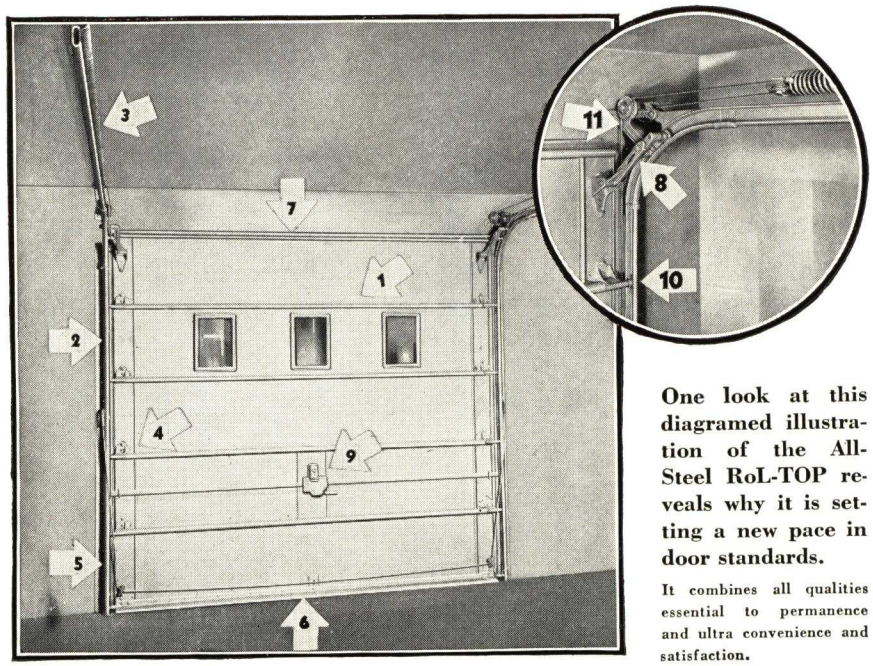
The All-Steel RoL-TOP Door combines the lasting durability of a steel door with the convenience and facilities for light of the sectional upward-acting RoL-TOP Door. Through its refreshing modern clean cut appearance it is unusually suited to today's modern home design as well as a highly serviceable door for all commercial and industrial uses. In principle of operation, adaptation and installation it is similar to the Wood RoL-TOP which is described on pages 20 and 21. It is also built in any size in various metals and with any number of sash sections.

ADVANTAGES

The All-Steel RoL-TOP Door has a number of advantages in addition to those offered in the wood door. Of all metal it is practically indestructible. Resists all kinds of weather. Fireproof, verminproof. A real barrier against intrusion. Can't sag, bind, warp, come apart or split. With simply designed, but heavy duty, operating mechanism it has exceptional durability and will require the absolute minimum of service. The All-Steel RoL-TOP Door is made truly weathertight by Kinnear's ingenious "Keystone" sealing.

CONSTRUCTION

Sections (1) approximately 18 in. deep are rolled from heavy gauge steel and galvanized by the hot process. Ball bearing rollers of the special Kinnear design (10) are bolted with through bolts to the ends of the sections. An additional reinforcing member is welded at these points. The lock (9) is of the cylinder type, working in conjunction with locking bars that engage in the vertical tracks. It is made weathertight all around by a weatherstrip at the top (7) and bottom (6) of the Door and Kinnear's (5) Keystone Sealing Device for jamb sealing. This latter is accomplished by the ends of the door sections being tapered slightly so as to fit snug between the adjustable metal strip that is placed in a sloped position on each jamb. Tracks (2) are of the heavy type mounted on the jamb with continuous angles. Hardware (4) on the exterior side is galvanized. Counterbalance is of either the conventional stretch spring (3) type or the single shaft torsion spring type, depending upon individual preference and size of door. For other details see Wood RoL-TOP.

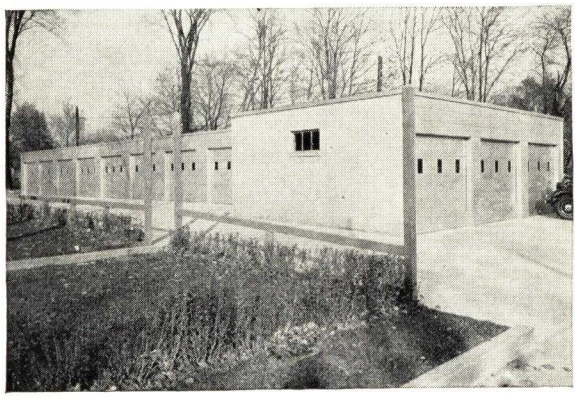


One look at this diagramed illustration of the All-Steel RoL-TOP reveals why it is setting a new pace in door standards.

It combines all qualities essential to permanence and ultra convenience and satisfaction.

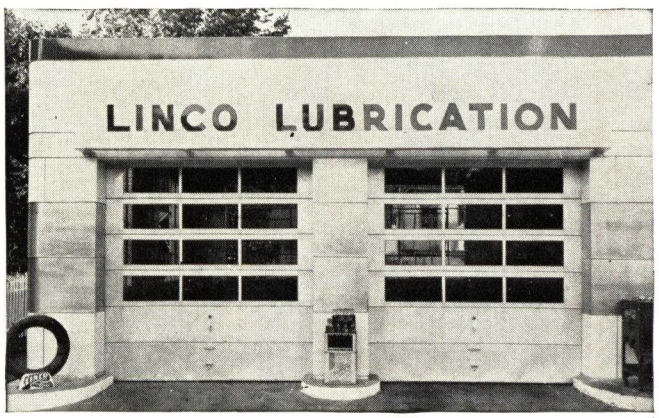
The All-Steel RoL-TOP Door is built in the lubritorium type with special hi-lift tracks.

The installation below illustrates the suitability of the design and construction of this door for modern service station requirements.



The clean-cut, tailored appearance of the All-Steel RoL-TOP not only harmonizes with all styles of architecture, but also lends itself particularly well to the ultra modern designs.

Equally attractive without glass lights.



KINNEAR

STANDARD SIZES

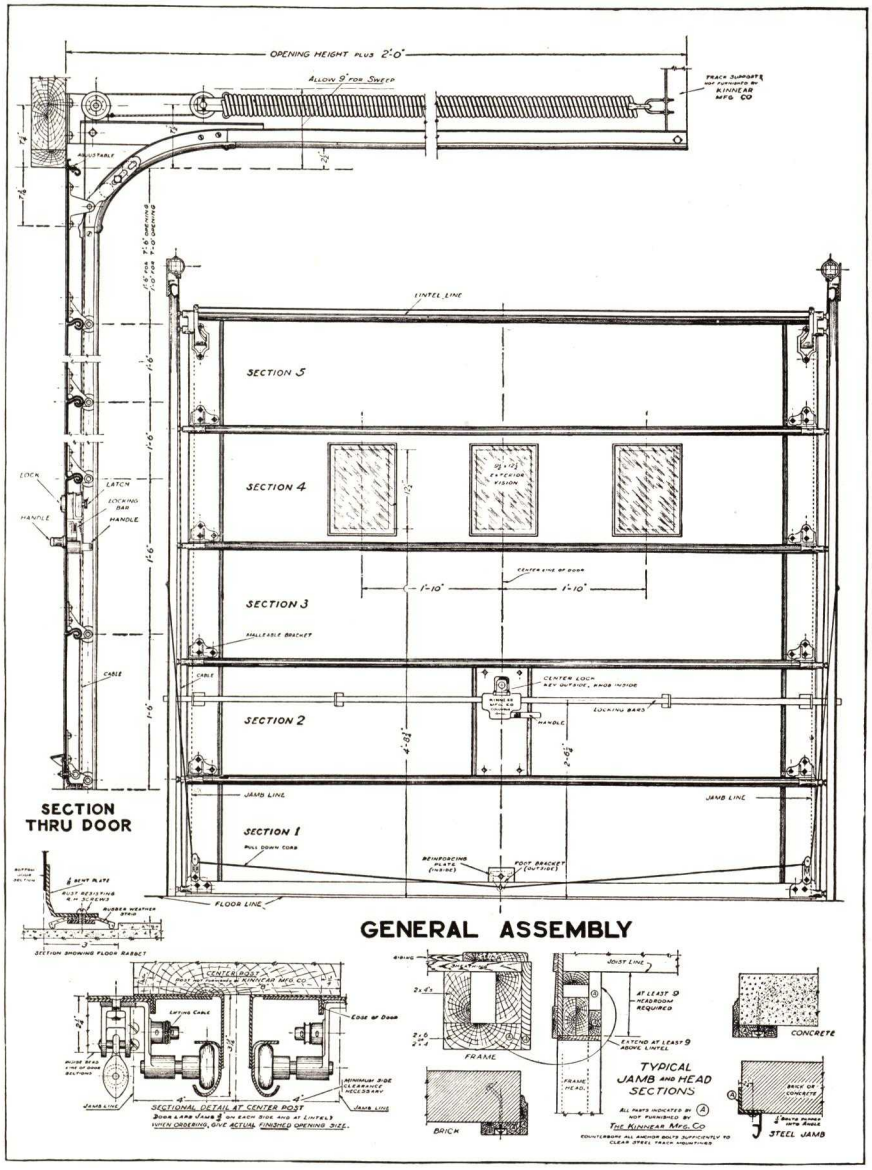
Though built on special order in any size, the All-Steel RoL-TOP is offered in several of the more commonly required sizes, viz:

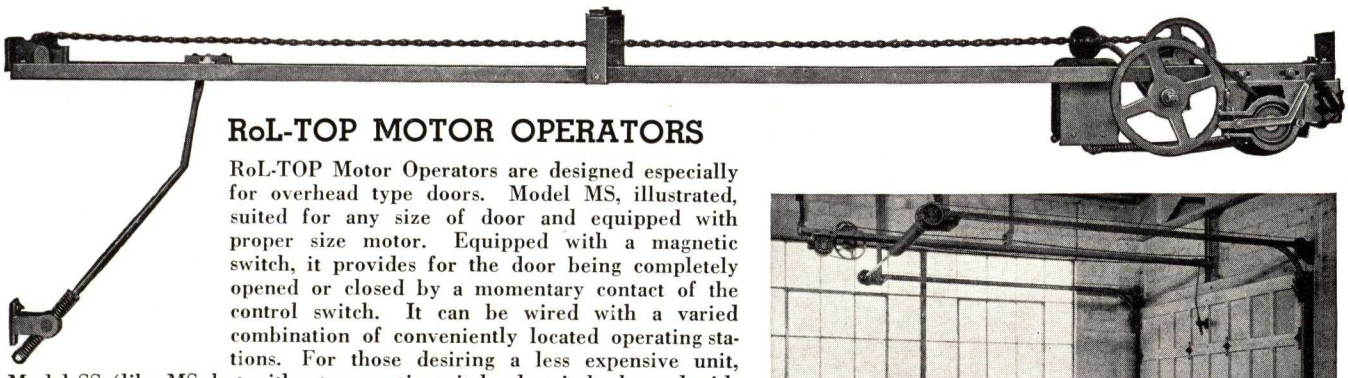
8 ft. x 7 ft.	14 ft. x 7 ft.
8 ft. x 7 ft. 6 in.	14 ft. x 7 ft. 6 in.

These standard sizes can be had with either solid panels or with the third section from the bottom with the standard 3-light sash as illustrated. Counterbalance on the standard sizes of the stretch spring type.

For clearances, opening preparation and track mounting of standard doors, see schedule at right. Doors are shipped complete with full erection instructions, with exception of glass and materials necessary for preparing the opening.

Besides being built in any size, of various metals, the All-Steel RoL-TOP is suited for hand, manual by hand chain and reduction gearing, or electric motor operation. It is also built in hi-lift construction for lubritorium use and arranged for use with such auxiliary equipment as sliding center mullions, automatic opener, etc. As clearances and details depend on all these varying factors, write Kinnear for special bulletin and recommendations.

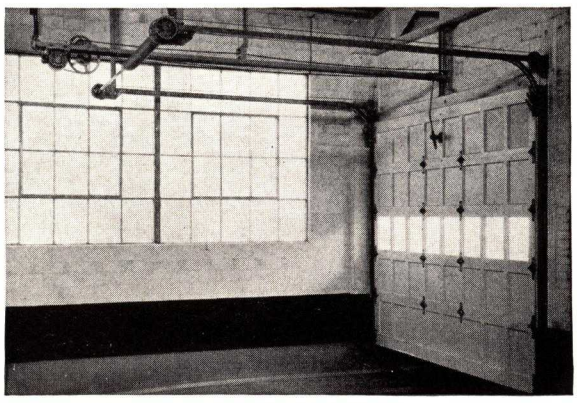




RoL-TOP MOTOR OPERATORS

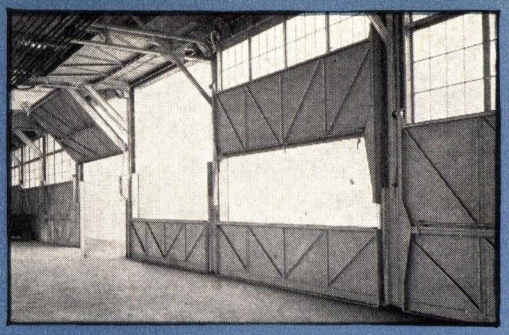
RoL-TOP Motor Operators are designed especially for overhead type doors. Model MS, illustrated, suited for any size of door and equipped with proper size motor. Equipped with a magnetic switch, it provides for the door being completely opened or closed by a momentary contact of the control switch. It can be wired with a varied combination of conveniently located operating stations. For those desiring a less expensive unit, Model SS (like MS, but without magnetic switch, electric brake and with friction clutch) can be furnished for stock doors up to 150 sq. ft. in area but not exceeding 12 ft. in height. With the Model SS, it is necessary to make constant contact of the control switch—hold the button depressed until opening or closing of the door is completed. Motors on both models are of standard make and range from ¼ h.p. up, depending on size of door to be operated. Requires a head clearance of only 6 inches more than required for manually operated RoL-TOP doors.

Write for special pamphlet giving more complete details. Where conditions do not permit use of the RoL-TOP operator, one of Kinnear's other type power units may be applicable, in which case recommendations will be made.



The Standard RoL-TOP Operator

The traveler on the continuous chain gives a direct center pull on the door, necessitating only a small motor. A convenient, neat and economical arrangement for the majority of needs.



KINNEAR BIFOLDING DOOR

KINNEAR WOOD ROL-TOP DOOR

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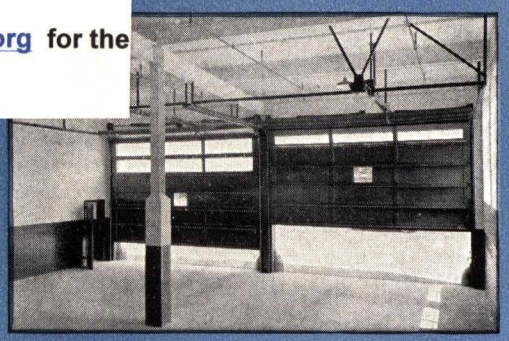
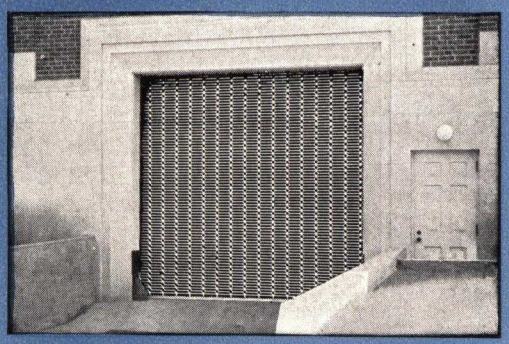
BUILDING TECHNOLOGY HERITAGE LIBRARY
https://archive.org/details/buildingtechnologyheritagelibrary



KINNEAR MOTOR OPERATED DOOR



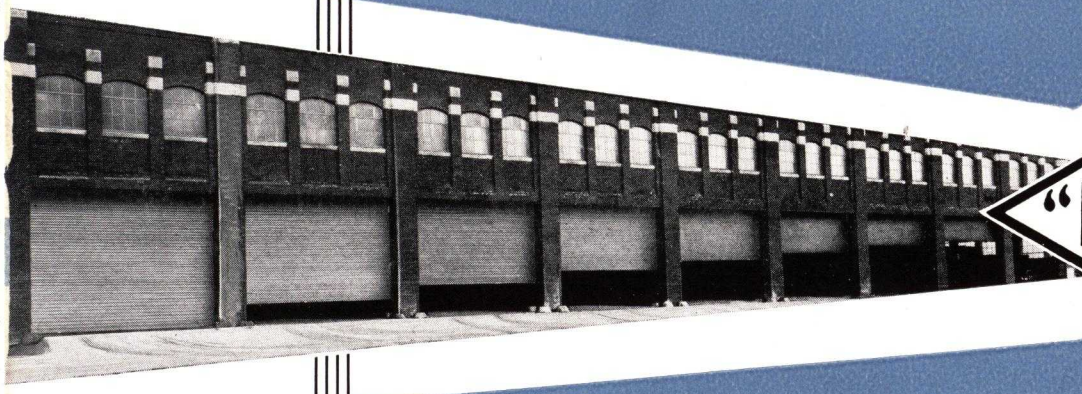
KINNEAR METAL ROLLING GRILLE

KINNEAR ALL-STEEL ROL-TOP DOOR

The Kinnear Organization is International. With an Office or Agent located in all principal cities, there is always a trained Kinnear Engineer Representative close at hand. Call for his specialized door services. There's no obligation, and if he is unable to answer your questions he will gladly come to "Door Headquarters" and get the information you need. No problem is too difficult for Kinnear's experienced door engineers and they will design and build any kind of Upward-Acting Door for any kind of an opening . . . offering the efficient solution to your individual door problem.

The KINNEAR
Manufacturing Company

820-870 FIELDS AVENUE, COLUMBUS, OHIO



"MECCO"

STEEL ROLLING DOORS

THE MOESCHL-EDWARDS CORRUGATING CO.
CINCINNATI · · · · P. O. BOX 709 · · · · OHIO

MECCO ROLLING DOORS

DESIGN Mecco rolling doors and shutters are the product of many years of practical experience manufacturing doors of various types. Incorporated in the design of Mecco doors are several exclusive features and ingenious design that add not only to the ease of erection, but also result in operating economy, efficiency and reliability of these doors and extremely low cost of maintenance.

MANUFACTURE Mecco rolling steel doors are manufactured in a modern factory, equipped with the most modern machinery and an unusually large number of special jigs and dies, which make for uniformity of the manufactured product. Rolling doors also supplied of Bronze, Aluminum and Stainless Steel. Large or small orders receive the same careful attention to detail as is required to produce a product first in quality and workmanship.

INSTALLATION Mecco rolling steel doors may be installed using such local labor as is available. In the design several features have been included which makes the installation of these doors not only relatively simple, but in fact makes it difficult to get the curtains out of alignment, a most common fault heretofore found in rolling steel doors (see page 9).

MAINTENANCE The upkeep on Mecco rolling steel doors is extremely low. This is primarily due to the superior quality of material used in their construction, and the care exercised in the assembly of various units. Each door is built to meet individual requirements, and many are still in excellent operating condition after fifteen to eighteen years. In case of accidental damage replacement parts are available at reasonable prices.

TWO TYPES OF DOORS

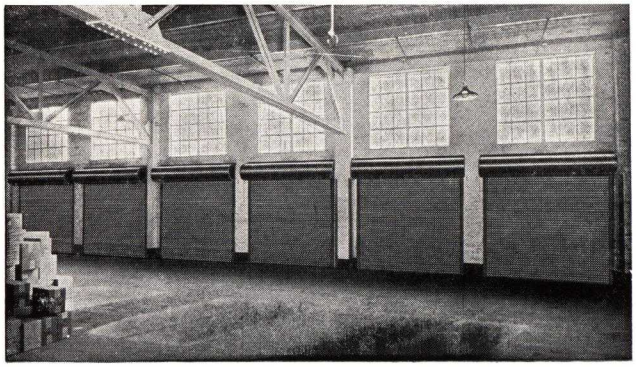
ADAPTABLE TO EVERY REQUIREMENT

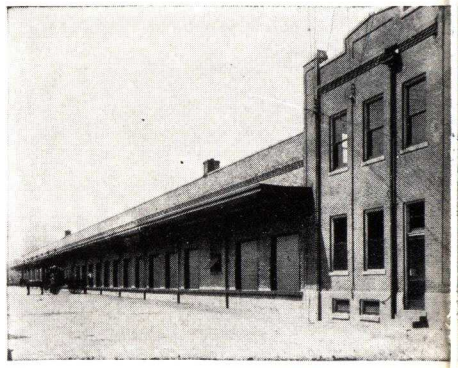
Service or Commercial Doors

(Non-labeled) Mecco Rolling Steel Doors and Shutters are manufactured and sold under two distinct classifications. Service or Commercial Doors are designed primarily for the closure of opening. This type of door is manufactured without the limitations surrounding an Underwriters' Labeled Door and can be adapted to almost any type opening. Because of the various types of operation, these doors are adaptable for openings in every conceivable kind of a building and will render dependable, permanent, economic and long lasting service. If your door problem cannot be solved from the following pages, write us, sending us your data. We will be glad to assist you.

Underwriters' Labeled Doors

(Fire Doors) Doors bearing the National Board of Underwriters' labels, are manufactured and installed primarily for fire protection. However, they have all of the desirable features of the Service or Non-Labeled types, serving as a closure for openings, and automatic doors are operated independent of the automatic closing devices that are thermally controlled. With certain limitations that are given in detail on page 6, these doors are manufactured for various types of operation and labeled for all classes of openings. The cost of an installation of Mecco Underwriters' Labeled Doors is often paid for in a year or two by the saving on insurance alone, and, in addition, when once installed serve as a permanent, ever vigilant fire stop.





SERVICE DOORS

COMMERCIAL NON-LABELED DOORS

Type No.	Mounting	Operated by	Type No.	Mounting	Operated by
2	Face of wall	Manual	8	Between jambs	Chain
4	Between jambs	Manual	10	Face of wall	Crank
6	Face of wall	Chain	14	Face of wall (large size openings)	Chain
*7	Face of wall	Chain	*15	Face of wall (large size openings)	Chain

*Mounted face of wall and operated from opposite side of wall.

SPECIFICATIONS

TYPES NO. 2 AND 4

Curtain—To be formed of interlocking slats of No. 22, 20, or 18 U. S. Gauge Copper Bearing Steel, galvanized by the hot process, approximately 1⅞ in. center to center with $\frac{9}{16}$-in. depth of crown. The ends of each alternate slat to be fitted with a malleable reinforcement to prevent lateral movement and to serve as wearing surfaces in the guides. The upper edge of curtain to be attached to the spiral rings on shaft by bolts and the lower edge to bottom bar by rivets or welding.

Operation—By handle on bottom bar.

Bottom Bar—To consist of one steel angle 2x2x$\frac{3}{16}$ in.

Barrel—Steel pipe or tube with ends enclosed by cast iron collars with ball bearings and journaled on steel spindles of suitable diameter. Barrel shall be equipped with cast iron wheels of proper diameter to maintain a correct counterbalance.

TYPES NO. 6, 7, 8, 10, 14, 15

Curtain—To be formed of interlocking slats of No. 22, 20, or 18 U. S. Gauge Copper Bearing Steel, galvanized by the hot or electro process, approximately 1⅞ in. center to center with $\frac{9}{16}$-in. depth of crown, for doors not wider than 13 ft.—with slats of No. 20, 18 or 16 gauge copper bearing steel, approximately 2¾ in. center to center with ⅞-in. depth of crown for doors wider than 13 ft. The ends of each alternate slat to be fitted with malleable reinforcement to prevent lateral movement and to serve as wearing surface in the guides. The upper edge of curtain to be attached to the spiral rings on shaft by bolts and the lower edge to bottom bar by rivets or welding.

Operation—By endless galvanized chain, sprocket and gear, or crank and gear.

Bottom Bar—To consist of one steel angle 2x2x$\frac{3}{16}$ in. with reinforcing angle 2x1½x$\frac{3}{16}$ in. on openings wider than 15 ft. 0 in.

Barrel—Steel pipe or tube with ends enclosed by cast iron collars with Hyatt roller or ball bearings journaled on steel spindles at each end and supported by bosses cast on brackets. Barrel shall be equipped with cast iron wheels of proper diameter to maintain a correct counterbalance.

SPECIFICATIONS APPLYING TO ALL TYPES

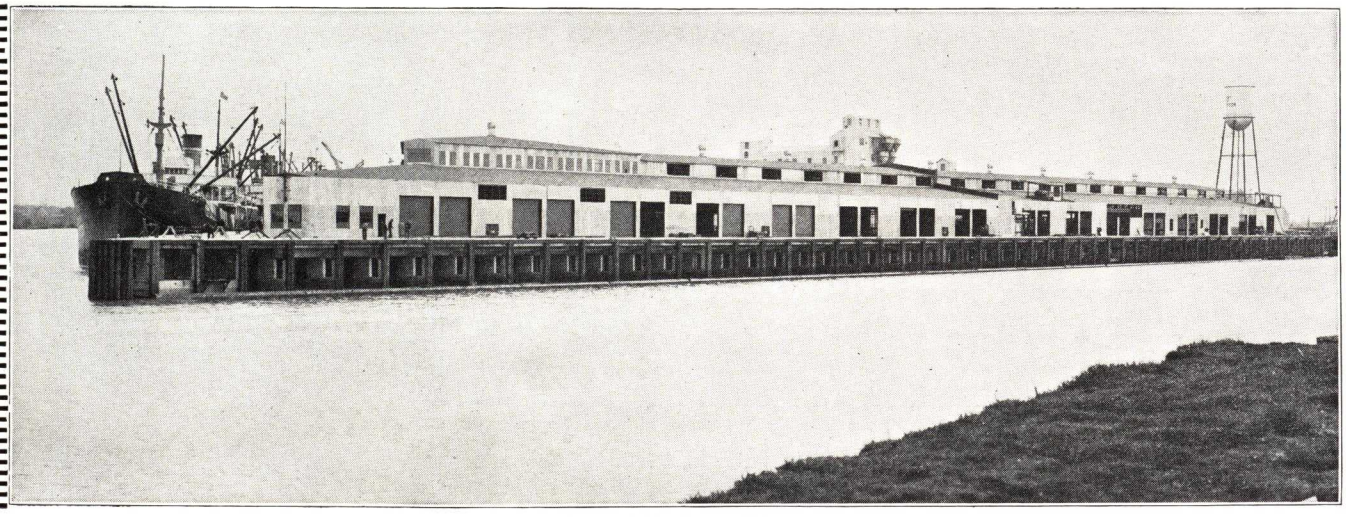
Counterbalance—To consist of helical oil tempered steel springs, enclosed within a barrel and anchored to spindle. A charging ratchet for adjusting spring shall be attached to spindle.

Brackets—High grade gray iron, web not less than ⅜ in. and attached direct to guides.

Guides—To be composed of three angles of $\frac{3}{16}$-in. steel securely riveted together to form a channel groove not less than 1½ in. deep.

Painting—All parts to receive one shop coat metallic paint.

All doors shall be as manufactured by the MOESCHL-EDWARDS CORRUGATING CO. *of Cincinnati, Ohio.*



Port of Stockton, Calif.

UNDERWRITERS LABELED DOORS

UNDERWRITERS CLASSIFICATION

Openings in Interior Walls—Class A—Fire Wall

For full protection openings should have curtains both sides of wall. Underwriters will give limited credit for one door. They may be hung on the face of the wall or in opening. All Class A doors are automatic closing. Operation may be either manual or mechanical. See list for numbers to specify.

Vertical Shafts, Corridors and Room Partitions—Class B and C

They may be hung on the face of the wall or in opening. Operation may be either manual or mechanical. Doors are made automatic closing when required. See list for numbers to specify.

Openings in Exterior Walls—Class D

Operation may be either manual or mechanical. Doors may be mounted on face of wall or in opening. Doors are supplied with automatic closing device when required. See list for numbers to specify.

Size Limit

Size limit for label is 24 ft. 0 in. x 24 ft. 0 in. on all openings except exterior window shutters on which it is 15 ft. 0 in. x 15 ft. 0 in. Regular labels will be used on sizes within limit of 80 sq. ft. on interior openings or 100 sq. ft. on exterior openings. A label designated as "Label for oversize openings" used on larger openings within extreme limits.

APPROVED TYPES

Type No.	Operation	Location	Operated by
Fire Wall Doors—Class A			
100	Automatic	Face of wall	Handles
102	Automatic	Face of wall	Crank
103	Automatic	Face of wall	Chain
104	Automatic	In opening*	Handles
106	Automatic	In opening*	Crank
107	Automatic	In opening*	Chain
Doors for Vertical Shaft, Corridor and Room Partitions—Class B-C			
200	Automatic	Face of wall	Handles
202	Non-automatic	Face of wall	Handles
204	Non-automatic	Face of wall	Chain
205	Automatic	Face of wall	Chain
206	Automatic	Face of wall	Crank
208	Non-automatic	Face of wall	Crank
210	Automatic	In opening*	Handles
212	Non-automatic	In opening*	Handles
214	Non-automatic	In opening*	Chain
215	Automatic	In opening*	Chain
216	Automatic	In opening*	Crank
218	Non-automatic	In opening*	Crank
Doors and Shutters for Exterior Openings—Class D			
300	Automatic	Face of wall	Handles
302	Non-automatic	Face of wall	Handles
304	Non-automatic	Face of wall	Chain
305	Automatic	Face of wall	Chain
306	Automatic	Face of wall	Crank
308	Non-automatic	Face of wall	Crank
310	Automatic	In opening*	Handles
312	Non-automatic	In opening*	Handles
314	Non-automatic	In opening*	Chain
315	Automatic	In opening*	Chain
316	Automatic	In opening*	Crank
318	Non-automatic	In opening*	Crank

*"In opening" refers to doors with coil under lintel.

SPECIFICATIONS

Openings shall be equipped with steel rolling doors of interlocking slat type as manufactured by the MOESCHL-EDWARDS COMPANY, INC., of Cincinnati, Ohio. Doors to be constructed in accordance with the following specifications:

Curtain—To be formed of interlocking slats of galvanized copper bearing steel of gauge required by Underwriters' Laboratories, Inc., the ends of each slat to be fitted with a malleable reinforcement to prevent lateral movement and to serve as wearing surfaces in the guides. The upper edge of curtain to be attached to the spiral rings on shaft by stove bolts and the lower edge to bottom bar by rivets.

Hood—To be formed from 24-gauge hot galvanized sheet steel, with automatic flame stop attached when required.

Counterbaance—To consist of helical oil tempered steel spring enclosed within a barrel and anchored to spindle.

Operation—Handles on bottom bar, chain and gear or crank and shaft.

Brackets—High grade gray iron, web not less than ⅜ in. and attached direct to guides.

Bottom Bar—To consist of steel angle of proper dimensions for reinforcing bottom of curtain.

Barrel—Steel tube with ends enclosed by cast collars fitted with ball or roller bearings, and journaled on steel shafting of suitable diameter and supported by flanges cast on or applied to brackets. Barrel shall be equipped with cast iron rings of proper diameter to maintain a correct counterbalance.

Guides—To be composed of three angles or two $\frac{3}{16}$-in. steel plates securely riveted together to form a channel groove not less than 2 in. deep, proper depth to be determined by width of opening, arranged for expansion at all rivet and bolt connections.

Paintings—All parts to receive one shop coat of paint.

To the specifications add the following paragraphs to cover type required:

Type No. 100

Location—Doors to be hung on face of wall; brackets and guides so placed that clear height and width of openings will be maintained, except where structural conditions of the building prevent.
Operation—By handle on bottom bar.
Label—For fire wall opening.

Types Nos. 200 and 202

Location—Same as No. 100
Operation—Same as No. 100.
Label—For vertical shaft, corridor or room partition as required.

Types Nos. 300 and 302

Location—Same as No. 100
Operation—Same as No. 100.
Label—For exterior opening.

Type No. 103

Location—Doors to be mounted face of wall; brackets and guides so placed as to provide a clear unobstructed opening.
Operation—Chain and gear.
Label—For fire wall opening.

Types Nos. 204 and 205

Location—Same as No. 103.
Operation—Same as No. 103.
Label—For vertical shaft, corridor or room partition.

Types Nos. 304 and 305

Location—Same as No. 103.
Operation—Same as No. 103.
Label—For exterior opening.

Type No. 102

Location—Doors to be hung on face of wall; brackets at guides so placed that clear height and width of openings will be maintained, except where structural conditions of the buildings prevent.
Operation—By crank and gear.
Label—For fire wall opening.

Types Nos. 206 and 208

Location—Same as No. 102.
Operation—Same as No. 102.
Label—For vertical shaft, corridor or room partition as required.

Types Nos. 306 and 308

Location—Same as No. 102.
Operation—Same as No. 102.
Label—For exterior opening.

Type No. 104

Location—Doors to be hung under lintel, brackets also to be placed under lintel. Guides to attached to the face of the wall. All as indicated by detail.
Operation—To be by handle on bottom bar.
Label—For fire wall opening.

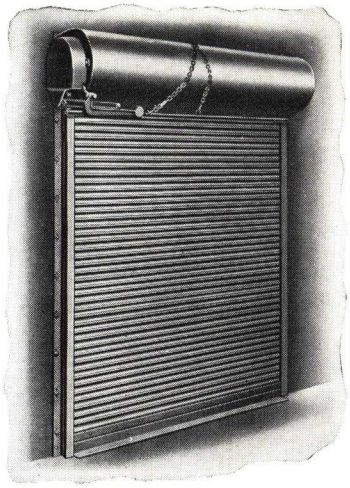
Types Nos. 210 and 212

Location—Same as No. 104.
Operation—Same as No. 104.
Label—For vertical shaft, corridor or room partition as required.

Types Nos. 310 and 312

Location—Same as No. 104.
Operation—Same as No. 104.
Label—For exterior opening.

AUTOMATIC CLOSING LABELED DOORS



HAND LIFT

TYPE 100, 200, 300

Manually operated by handle on the bottom bar.

Mounted on the face of the wall.

Automatic closing with fusible links.

May be operated from both sides of the opening.

No. 100 Labeled A
No. 200 Labeled B or C
No. 300 Labeled D

TYPE 104, 210, 310

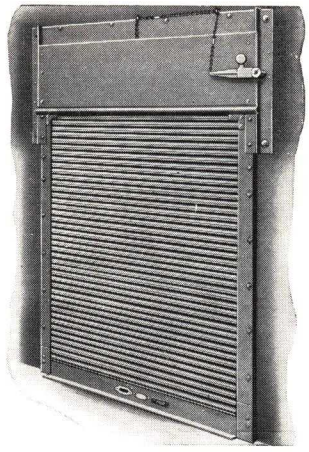
Manually operated by handle on bottom bar.

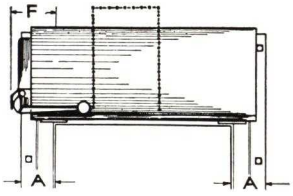
Mounted under lintel with guides on face of wall.

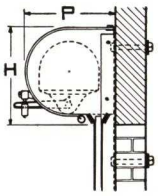
Operated from both sides of opening.

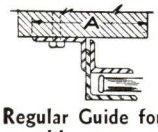
Automatic closing with fusible links.

No. 104 Labeled A
No. 210 Labeled B or C
No. 310 Labeled D

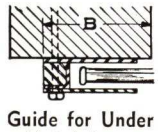




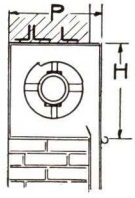


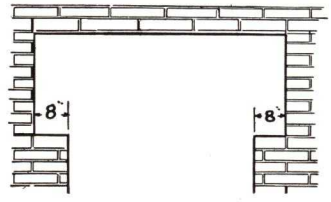


Regular Guide for Masonry



Guide for Under Lintel Doors

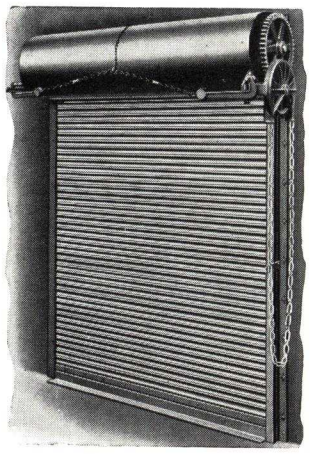




Opening width, ft.	A, in.	F, in.	Opening height, ft.	H, in.	P, in.
6	5 3/8	6 3/8	6	12 1/2	12
8	6 1/8	7 1/8	8	13 1/2	13
10	6 5/8	7 5/8	10	14 1/2	14
12	7 1/8	8 1/8	12	14 1/2	14

Opening width, ft.	A, in.	Opening height, ft.	H, in.	P, in.
6	4	6	12	13
8	4 1/2	8	13	13
10	4 1/2	9	13	13
12	5	10	13	13
		12	15	15

MECHANICALLY OPERATED



CHAIN AND GEAR TYPE 103, 205, 305

These types are mechanically operated by chain sprocket and gear.

Automatic closing with fusible links.

Mounted on the face of the wall.

Operation from chain side only.

No. 103 Labeled A
No. 205 Labeled B or C
No. 305 Labeled D

CRANK AND GEAR TYPE 102, 206, 306

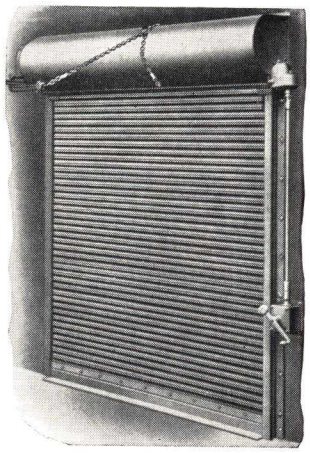
Mechanically operated by crank and gear.

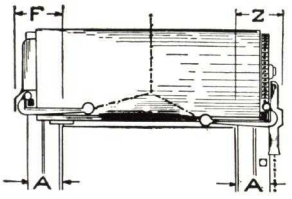
Mounted on face of wall.

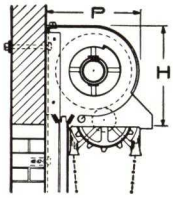
Automatic closing with fusible links.

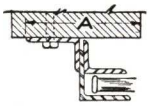
May be operated from one or both sides of the opening.

No. 102 Labeled A
No. 206 Labeled B or C
No. 306 Labeled D

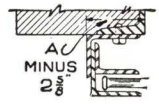




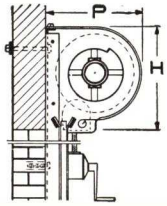


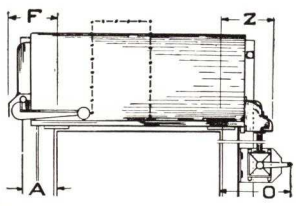


Regular Guide for Masonry



Guide for Structural Frame



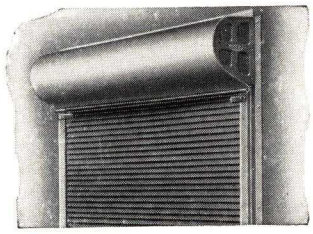


Opening width, ft.	A, in.	Z, in.	F, in.	O, in.	Opening height, ft.	H, in.	P, in.
6	5 3/8	11	6 3/8	19 1/8	6	12 1/2	12
8	6 1/8	11 3/4	7 1/8	19 7/8	8	13 1/2	13
10	6 5/8	12 1/4	7 5/8	20 3/8	10	14 1/2	14
12	7 1/8	12 3/4	8 1/8	21 7/8	12	15 1/2	15
					14	15 1/2	15
					16	16 1/2	16

Opening width, ft.	A, in.	Z, in.	F, in.	Opening height, ft.	H, in.	P, in.
6	5 3/8	8 3/4	6 3/8	6	12 1/2	12
8	6 1/8	9 1/2	7 1/8	8	13 1/2	13
10	6 5/8	10	7 5/8	10	14 1/2	14
12	7 1/8	10 1/2	8 1/8	12	15 1/2	15
				14	15 1/2	15
				16	16 1/2	16

NON-AUTOMATIC LABELED DOORS

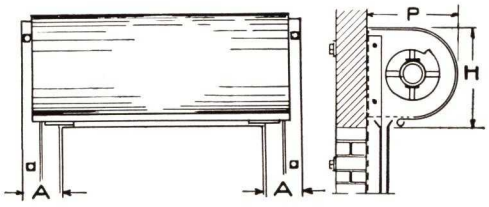
HAND LIFT

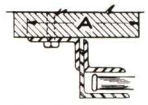


TYPE 202-302

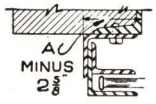
Manually operated by handle on bottom bar. Mounted on face of wall. May be operated from both sides of opening.

No. 202 Labeled B or C
No. 302 Labeled D





Regular Guide for Masonry



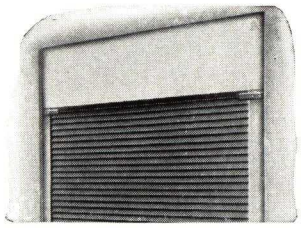
Guide for Structural Frame

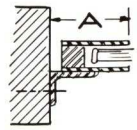
Opening width, ft.	A, in.	Opening height, ft.	H, in.	P, in.
6	5⅜	6	12½	12
8	6⅛	8	13½	13
10	6⅝	10	14½	14
12	7⅛	12	14½	14

TYPE 212-312

Manually operated by handle on bottom bar. Mounted under lintel. Guides are mounted between jambs. Should not be used on openings over 10 ft. x 9 ft. 6 in.

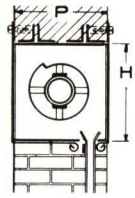
No. 212 Labeled B or C
No. 312 Labeled D

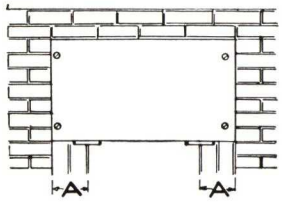




Guide for Mounting Between Walls

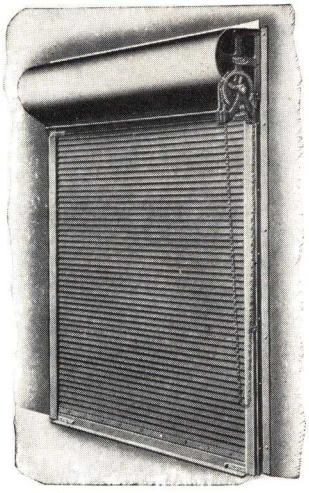
Note: "A" space greater on charging disc end than plain end (see below).





Opening width, ft.	A Plain end	A Charging disc end	Opening height, ft.	H, in.	P, in.
6	4½	6½	6	12	13
8	5	7	8	13	13
10	5½	7½	9	13	13
12	6	8	10	13	13

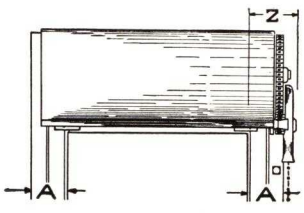
MECHANICALLY OPERATED

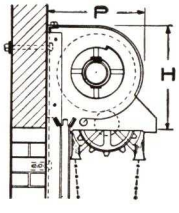


CHAIN AND GEAR TYPE 204-304

Mechanically operated by chain and gear. Mounted on face of wall. Operation from chain side only.

No. 204 Labeled B or C
No. 304 Labeled D



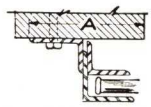


Opening width, ft.	A, in.	Z, in.	Opening height, ft.	H, in.	P, in.
6	5⅜	8¾	6	12½	12
8	6⅛	9½	8	13½	13
10	6⅝	10	10	14½	14
12	7⅛	10½	12	15½	15
			14	15½	15
			16	16½	16

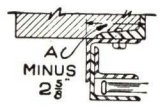
CRANK AND GEAR TYPE 208-308

Crank and gear operated. Used on doors of any dimensions, and may be supplied for operating on one or both sides of the wall—particularly adapted for the latter. Mounted on face of wall.

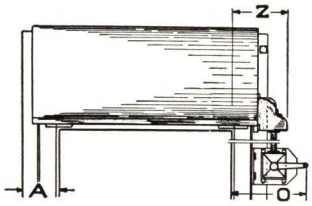
No. 208 Labeled B or C
No. 308 Labeled D

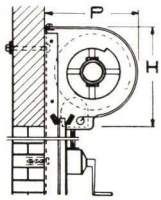


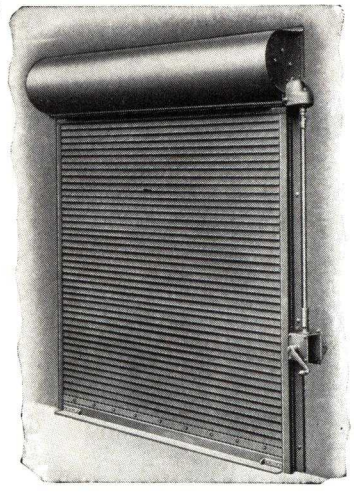
Regular Guide for Masonry



Guide for Structural Frame







Opening width, ft.	A, in.	Z, in.	O, in.	Opening height, ft.	H, in.	P, in.
6	5⅜	11	19⅛	6	12½	12
8	6⅛	11¾	19⅞	8	13½	13
10	6⅝	12¼	20⅜	10	14½	14
12	7⅛	12¾	21⅞	12	15½	15
				14	15½	15
				16	16½	16

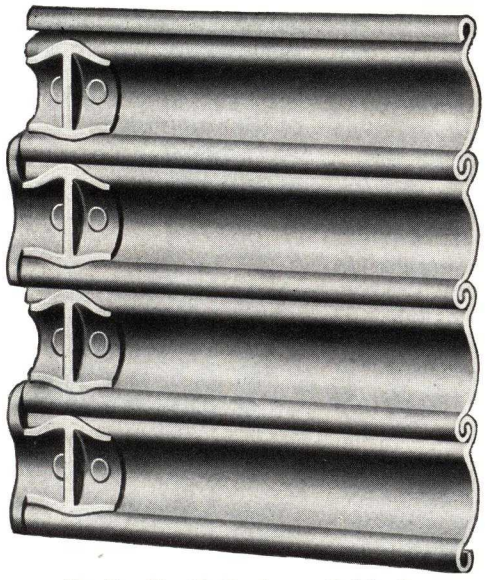
CURTAINS-SLATS-MOUNTINGS

Curtain of all "Mecco" Rolling Doors are made of interlocking slats of galvanized copper bearing open hearth steel—the steel proven to be of greatest rust-resisting properties in tests conducted by the American Society for Testing Materials. Slats are formed by modern rolling machinery in easy curves and bends that insure utmost strength and rigidity.

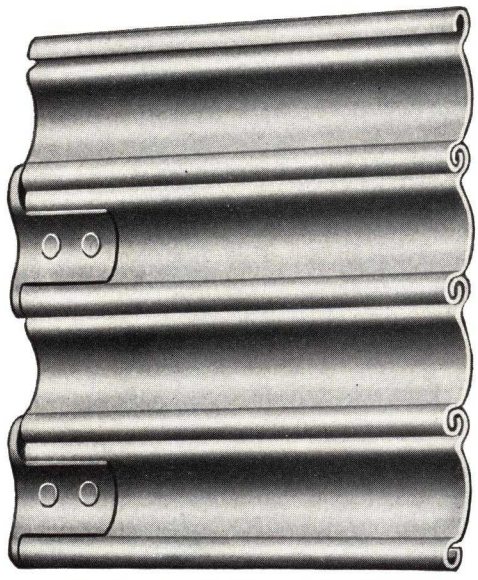
Curtains are hung on shafts provided with roller or ball bearings, thus reducing friction to a minimum. "Mecco" Doors have earned an enviable reputation by their ease of operation.

End Locks

Continuous or alternate malleable iron end locks on curtains prevent lateral movement of the slats, passage of flame at the ends, and provide a wearing surface.



Slat No. 40 with Continuous End Locks



Slat No. 40 with Alternate End Locks

FEATURES OF CONSTRUCTION

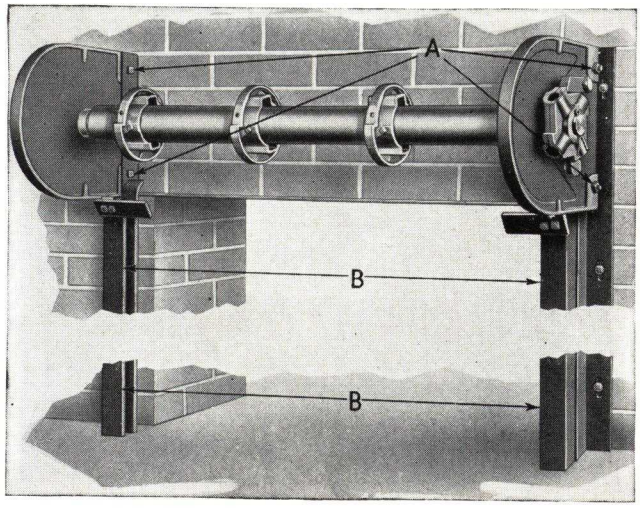
BRACKET MOUNTING

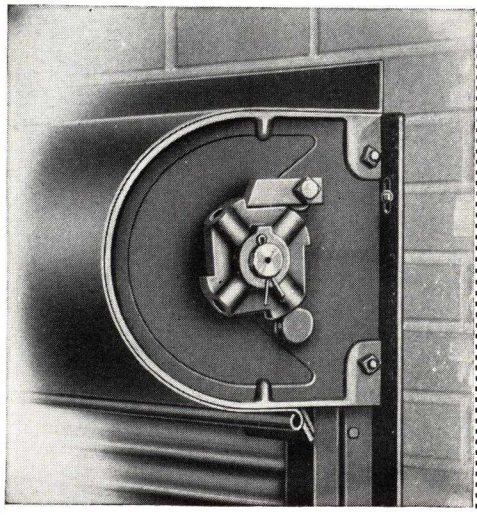
Brackets supporting the shaft are attached direct to the door guides at points "A." This exclusive "MECCO" feature insures perfect alignment of the shaft and curtain by the simple process of spacing the guides equidistant top and bottom as indicated at points "B."

CHARGING DISC

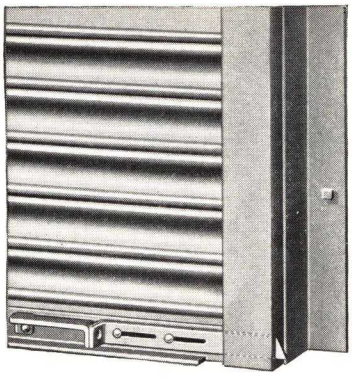
Curtain of rolling doors are counterbalanced by oil-tempered helical springs, adjusted through a charging disc.

The charging disc on MECCO Doors is placed in the most accessible place outside of the bracket.





LOCKS



SLIDE BOLTS

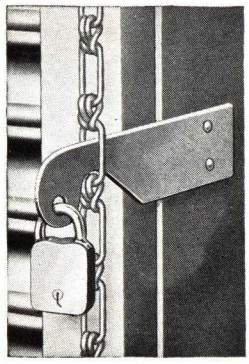
Slide bolts as illustrated are used for locking manual or chain operated doors from interior.

Similar slide bolts with cylinder lock or padlock and operated from exterior can be furnished.

CHAIN AND PADLOCK

Chain operated doors are provided with chain hook (see below) as illustrated for locking from interior.

Chain doors on exterior may be locked by a similar hook and padlock.



SPECIAL TYPES OF ROLLING DOORS

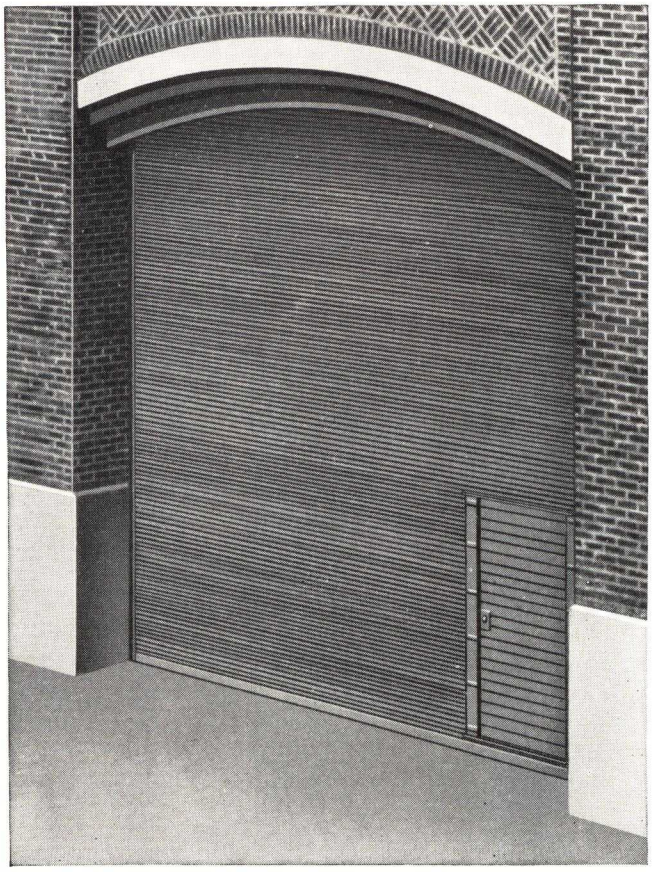
USES NOT GENERALLY KNOWN

Government Maneuver Boats.
Ventilation ducts and wind tunnels.
Enclosing garbage and waste collecting trucks.
Enclosing steam shovels and similar equipment.
Dry Kiln Doors.

PASS OR WICKET DOORS

Used where it is desirable to provide a small entrance door in a less frequently used large rolling steel curtain. Pass doors are hinged to a rigid frame and are furnished with bit key locks. They are operated without disturbing the curtain in any way.

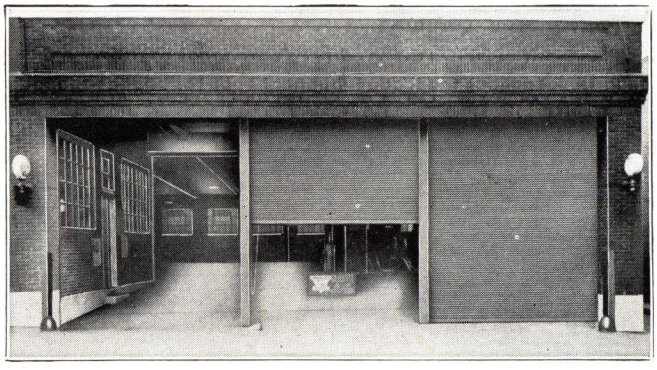
When the entire opening is to be made available the pass door frame is released and swung back out of the way.

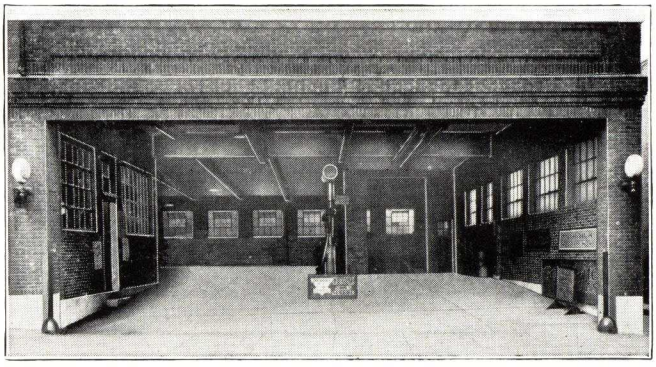


OPENING WITH REMOVABLE POSTS

Posts may be manual or sliding type.

With an installation of this kind a part or all of the opening can be made available if desired. Removable posts are provided and when all curtains are raised and posts removed the entire opening is free of all obstructions. The curtains can be made to be raised individually or as a group. Where two or more posts are used individual posts can be removed without disturbing the others. Opening and closing of an opening can be done in a surprisingly short time.





ELECTRICAL OPERATION

This type of door is particularly suitable for large entrance and exit doors for garages, track entrances, crane openings and all similar openings where it is necessary or desirable to operate doors electrically from a position close to or remote from the entrance.

The doors are usually provided with a single operating station, although multiple operating stations can be supplied where conditions make it necessary.

If the arrangement illustrated cannot be used, other motor applications to suit conditions can be provided.

ELECTRICAL CONTROL

The electrical control is designed and arranged so that by use of the operating control the door will move in direction indicated and may be stopped and reversed or continued to full limit in either direction where it will be stopped automatically by the limit switches.

EMERGENCY OPERATION

In the event of interrupted power service, the door can be operated manually by hand chain and sprocket. This is accomplished by pulling down on hand chains (shown in illustrations) which automatically engages the chain and gear operator cutting out the electric current and releasing the brake. After emergency operator is engaged as above described, door is then operable by hand chain. When not in use operating chains are held against wall by a chain hook.

EQUIPMENT

Equipment Includes—Motor of sufficient capacity to move curtain in either direction at a speed of about 1 ft. per second. Especially designed to meet requirements of high starting torque and intermittent operation.

Fusible operation switches. Single station magnetic starting switches. Automatic limit switches arranged for universal adjustment and attached to reduction to provide accurate control.

Solenoid brake mounted on motor and shield.

Worm reduction gear with hardened steel cut worms and phosphor bronze gear.

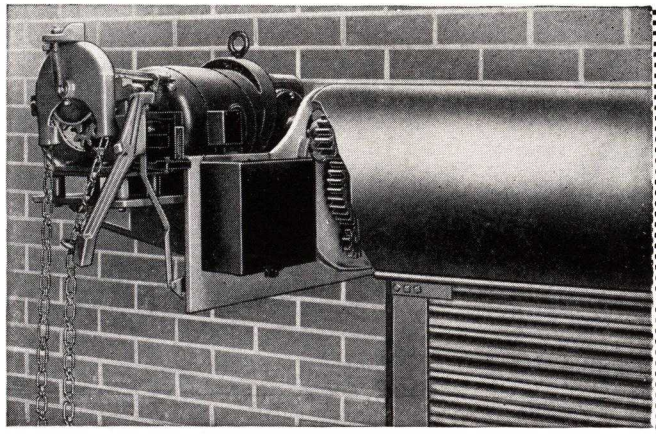
Emergency hand chain operated from floor, automatically engaging chain and gear, cutting out current and releasing brake.

Door brackets designed to carry power unit.

Single enclosed push button control station with up, down and stop control. One station control is standard; additional stations may be added when required.

Wiring diagram.

Equipment Does Not Include: Wires, conduit, service switches, or fuses which are to be installed by others according to diagram furnished.



Typical Installation

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BUILDING TECHNOLOGY HERITAGE LIBRARY
https://archive.org/details/buildingtechnologyheritagelibrary

PARTIAL LIST OF REPRESENTATIVES

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C. Y. Schelly & Bro.	32 North 7th Street	Allentown, Pa.
D. L. Hollowell	P. O. Box 1182	Atlanta, Ga.
W. E. Raines Co., Inc.	S. F. C. Building	Augusta, Ga.
Wm. F. Walker, Jr.	421 Calvert Building	Baltimore, Md.
C. Y. Cushman	25 Roosevelt Avenue	Binghampton, N. Y.
Sherwood A. Moore	3113 Third Ave. South	Birmingham, Ala.
Skillman & Sunderland Co.	1042 Little Building	Boston, Mass.
George Kabureck	477 State Street	Bridgeport, Conn.
Eugene F. Lerch	259 Delaware Avenue	Buffalo, N. Y.
West Virginia Steel Corp.	P. O. Box 1501	Charleston, W. Va.
Southern Engineering Co.	P. O. Box 1087	Charlotte, N. C.
Currin-Andrews Company	821 East 11th Street	Chattanooga, Tenn.
Barber-Colman Company	221 North LaSalle Street	Chicago, Ill.
The Hausman Steel Company	799 West Goodale Street	Columbus, Ohio
O. G. Knoske	P. O. Box 113	Cuyahoga Falls, Ohio (Akron)
J. L. O'Hearn	630 Wilson Building	Dallas, Tex.
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A. L. Oppenheimer	2211 Woodward Avenue	Detroit, Mich.
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Greene Engr. & Sales Co.	P. O. Box 569	Goldsboro, N. C.
Charles Vandervelde	757 Hawthorne Street, N.E.	Grand Rapids, Mich.
C. H. Hershock	1513 North Cameron Street	Harrisburg, Pa.
R. W. Kerr	220 So. Burlington Avenue	Hastings, Nebr.
The H. S. Gray Company	745 Queen Street	Honolulu, T. H.
Lehman Steel Products Co.	Merchants & Mfrs. Building	Houston, Tex.
Engineering Metal Prod. Co.	401 South Harding Street	Indianapolis, Ind.
Meehan Steel Products Company		Ironton, Ohio
Builders Products Company	P. O. Box 3161	Jacksonville, Fla.
G. Edward Riley	950 Dierks Building	Kansas City, Mo.
Howard Stair Company	Empire Building	Knoxville, Tenn.
Soulé Steel Company	6200 Wilmington Avenue	Los Angeles, Cal.
A. P. Montague	Peoples Bank Building	Lynchburg, Va.
Lubbock Steel Works, Inc.	214 Avenue O	Lubbock, Tex.
George O. Friedel	Builders Exchange	Memphis, Tenn.
Miami Wire & Iron Works	225 N. W. First Court	Miami, Fla.
S. A. Smith	1012 North 3rd Street	Milwaukee, Wis.
George T. Warner	126 South 8th Street	Minneapolis, Minn.
T. M. Gorrie	P. O. Box 441	Montgomery, Ala.
M. Malcolm MacGregor	103 Park Avenue	New York, N. Y.
Hall-Hodges Company	Citizens Bank Bldg.	Norfolk, Va.
Harding & Lawler	P. O. Box 588	Orange, Tex.
G. A. Clark	522 Central Ntl. Bank Building	Peoria, Ill.
Wilkinson Equipment Co.	935 South 53rd St.	Philadelphia, Pa.
Baker-Thomas Company	300 South 12th Street	Phoenix, Ariz.
E. W. Lauschke	207 Fulton Building	Pittsburgh, Pa.
Soulé Steel Company	1241 Linnton Road	Portland, Ore.
Earnest Brothers, Inc.	14 North 7th Street	Richmond, Va.
Stone-Tile & Supply Co.	Cleveland Ave. and 18th St.	Roanoke, Va.
Bowerman Builders Service	1307 East Main Street	Rochester, N. Y.
Contractors Supply Agency	1735 Douglas Street	Rockford, Ill.
Constructor Specialties Co.	Louderman Building	St. Louis, Mo.
Steel-Engineers Company	1526 So. West Temple	Salt Lake City, Utah
San Angelo Bldg. Mat'l Co.	109-A W. Beauregard Avenue	San Angelo, Tex.
Jno. W. Phillips Company	Builders Exchange Building	San Antonio, Tex.
Soulé Steel Company	1750 Army Street	San Francisco, Cal.
E. W. Newland Company	1401 South Main Street	South Bend, Ind.
The Hausman Steel Company	P. O. Box 416	Toledo, Ohio
Central Texas Iron Wks.	21st and Webster Streets	Waco, Tex.
L. D. Sheffield Company	517 Atlantic Street, N.E.	Warren, Ohio
Capital Products Company	1222 Connecticut Avenue	Washington, D. C.
Geo. C. Christopher & Son	Blaine near Cleveland	Wichita, Kan.
Harry W. Poust	306 Academy Street	Wilkes-Barre, Pa.
Daniel F. Yost	1234 Dauphin Avenue	Wyomissing (Reading), Pa.

THE MOESCHL-EDWARDS CORRUGATING CO.

CINCINNATI · · · · P. O. BOX 709 · · · · OHIO

THE R. C. MAHON COMPANY

Manufacturers of Rolling Steel Doors, Shutters and Grilles

DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

For Other Mahon Pages, see File Index

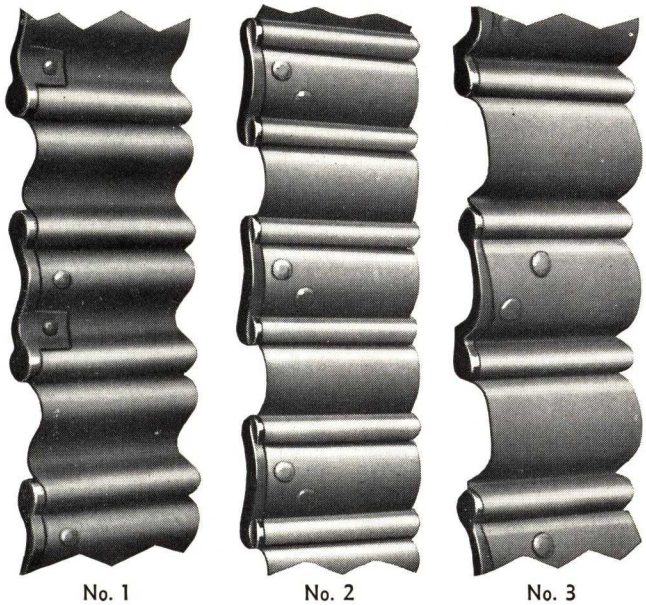
MAHON ROLLING STEEL DOORS MEET EVERY REQUIREMENT UNDER ANY CONDITION

Mahon Rolling Steel Doors are manufactured from the highest grade material obtainable. They are produced in many labeled and non-labeled types to meet every requirement of industrial or commercial use.

MAHON STEEL ROLLING DOORS
APPROVED BY THE UNDERWRITERS' LABORATORIES INC.

STANDARD DOORS

Mahon Standard (non-labeled) Rolling Steel Doors are made with specially designed interlocking slats rolled from copper bearing electro-galvanized steel, aluminum or bronze. These slats are fitted with malleable iron end locks to insure perfect alignment and free, easy operation in the guides. The tubular roller shaft to which the shutter curtain is attached is exceptionally rigid, and operates in ball and bronze bearings fitted into the end brackets. End brackets are heavy gray iron castings. These are of numerous sizes and shapes to accommodate the many door sizes and the various types of operators.



Mahon Interlocking Slats

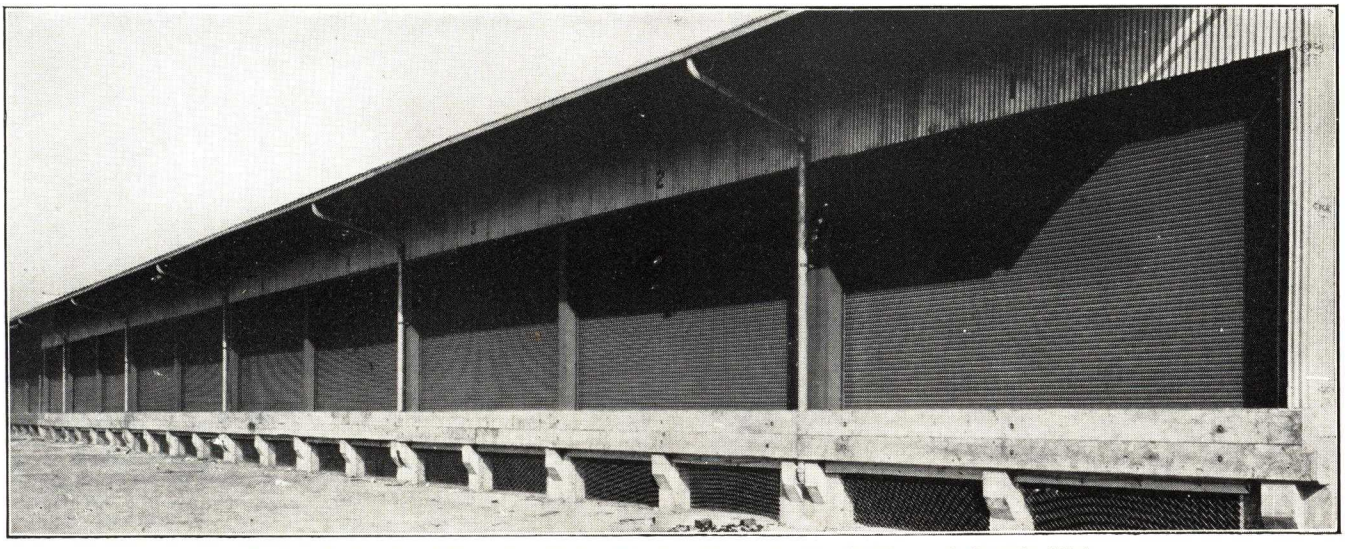
Above are illustrated the three interlocking slats used in the fabrication of Mahon Rolling Steel Doors showing the types of end locks used on Standard Doors

The weight of the shutter curtain is counterbalanced by means of coil springs located inside the roller shaft. The tension of these springs is adjustable to provide perfect balance.

This feature, particularly important in manually operated doors, safely maintains the position of the shutter curtain at all times, and, in the case of electrically operated doors, relieves the load on the operating mechanism.

Installation

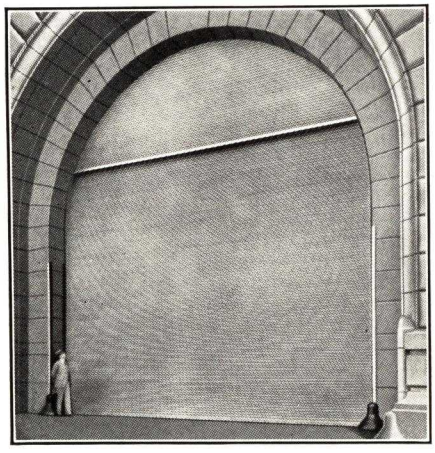
Mahon Rolling Steel Doors can be installed either on the face of the wall or in the door opening. Mounting on the face of the wall with guide channels clear of the door jambs is general practice. This method allows 100% clear opening and provides protection for the guides.



Mahon Rolling Steel Doors Installed in the Pere Marquette Freight Terminal, Detroit, Mich.

However, in many instances where headroom is limited, or other conditions prohibit "face of wall" mounting, Mahon Rolling Steel Doors can be installed in the door opening between jambs.

In "between jambs" installations the height of the door opening is decreased, due to the insertion of the roller housing below the lintel (the amount depending upon the size of the door opening) and the opening width is also decreased due to the insertion of the guide channels on the jambs.



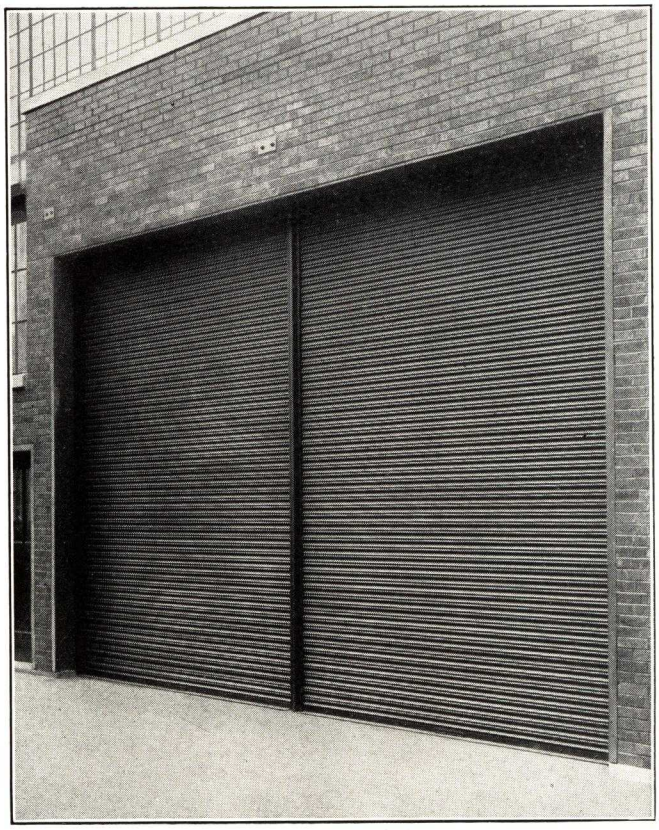
Mahon Rolling Steel Door, 29x32 Ft.
One of thirty furnished for Pier No. 1, San Francisco Harbor

These objections may be eliminated in new construction, where "between jambs" installations are desired, by including built-in guide channels and providing space for the roller housing and operating mechanism in the original plans.

Intermediate Hinged Posts

In some instances where unusually wide openings are desired, it is more economical to use two rolling steel doors with an intermediate hinged post or removable post between. Mahon Rolling Steel Doors installed in this manner can be equipped with either mechanical or power operators, and can be made to operate simultaneously or individually as desired.

The intermediate post between doors can be released at the floor and removed or swung up clear of the opening after the doors are opened.



Typical Installation of Mahon Rolling Steel Doors with Intermediate Hinged or Removable Posts

Wind Locks

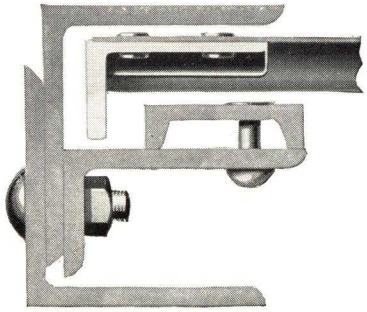
Mahon Rolling Steel Doors of unusual width are fitted with wind locks to eliminate the possibility of the door pulling out of the guides due to excessive wind pressure.

Special end brackets and guides are provided to accommodate the wind lock lugs which are attached to the interlocking slats at intervals between the regular iron end locks.

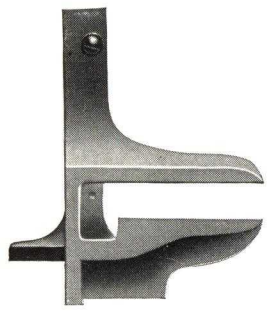
These wind locks are designed and installed so as to insure safe and easy operation even under extraordinary wind pressure.

Mahon No. 1 Interlocking Slats
Showing application of Wind Lock Lug

Mahon No. 3 Interlocking Slats
Showing application of Wind Lock Lug



Cross Section of Guide Channel
Furnished with doors equipped with Wind Locks



Guide Mouth of Special End Bracket
Furnished with doors equipped with Wind Locks

OPERATION—MECHANICAL AND POWER OPERATORS

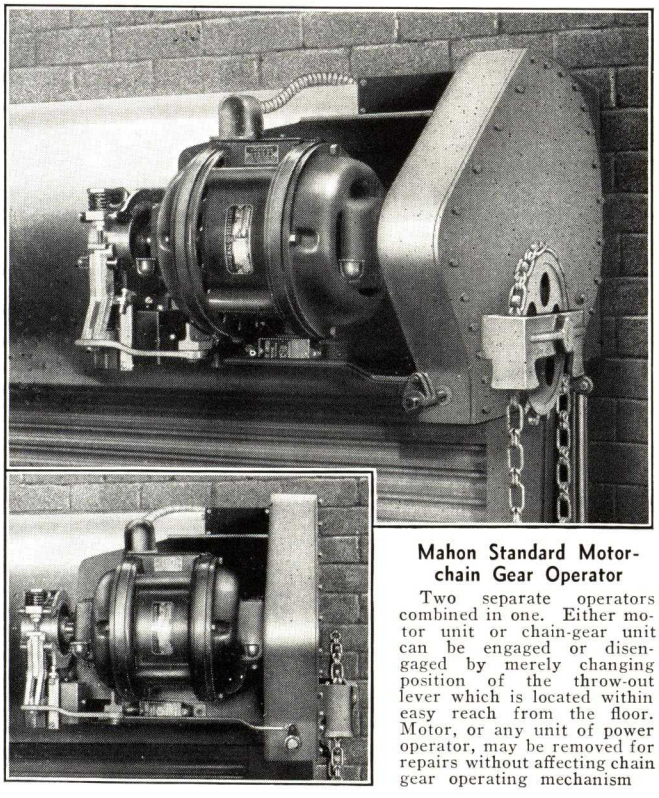
Mechanical Operation

Mahon Rolling Steel Doors can be furnished equipped with handles on the bottom rail, continuous chain-gear operator, hand crank operator, or power operating units.

Handles—Doors of moderate size equipped with handles on the bottom rail, for manual operation, are perfectly balanced by means of an adjustable counterbalancing mechanism. They can be easily opened or closed by one person.

Chain-Gear—The continuous chain-gear operator for medium sized doors consists of a continuous chain, sprocket, and a series of gears. When installed on Mahon Underwriters' Labeled Rolling Steel Doors, the chain-gear operator is equipped with an automatic release, which, in case of fire, disengages it simultaneously with the release of the automatic closing mechanism.

Hand Crank—The hand crank operator consists of a hand crank, gear box, shaft with universal joints, and a series of gears on the roller bracket. The crank can be located on either side of the wall, or, removable cranks can be furnished and the operator installed for operation of the door from both sides of the wall.



Mahon Standard Motor-chain Gear Operator

Two separate operators combined in one. Either motor unit or chain-gear unit can be engaged or disengaged by merely changing position of the throw-out lever which is located within easy reach from the floor. Motor, or any unit of power operator, may be removed for repairs without affecting chain gear operating mechanism

Power Operation

The Mahon Standard Power Operator is mounted directly upon the end bracket of the roller housing. It is a combination power and manual chain-gear operator with a throw-out control lever, located within easy reach of the floor, by which the power operator is immediately converted into a chain-gear operator for manual operation in case of failure in the electrical system.

This Mahon Standard Power Operator meets all requirements. It is so arranged in relation to the roller housing that no additional headroom is required, and it requires a minimum of side clearance outside the door guides.

It is very compact and consists of an electric motor, reduction gears, an interlock, an automatic reversing switch, control switches, a solenoid brake and a throw-out control which operates the interlock, releases the brake, and engages the chain-gear clutch for manual operation.

Control is by means of a push button switch, including "open" and "close" buttons, and an emergency "stop" button.

The door is set in motion by pushing either the "open" or "close" buttons, and is automatically stopped in the open or closed position by means of a limit switch and a solenoid brake. The door can be instantly stopped in any position by pushing the emergency "stop" button.

All wiring and conduit to be furnished by others, but must be installed in accordance with wiring diagram furnished by THE R. C. MAHON COMPANY.

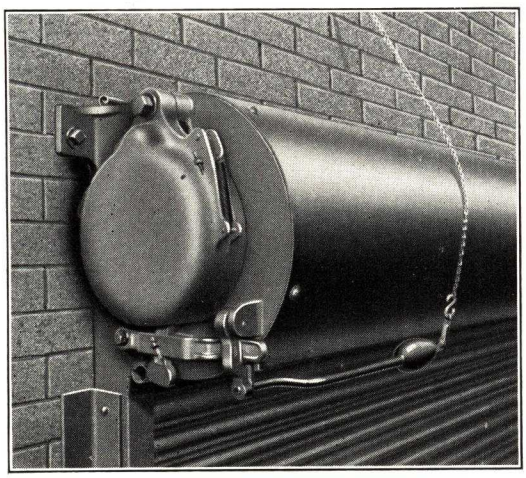
Note: Requests for estimates or bids on *power operated doors must include information as to type of current available.*

Fusible Link

Type used on Mahon Underwriters' Labeled Doors to release the automatic closing mechanism in case of fire

MAHON UNDERWRITERS' LABELED ROLLING STEEL DOORS

Mahon Underwriters' Labeled Doors are approved by the Underwriters' Laboratories, Inc., within certain limitations in total area as specified by the Underwriters for various opening classifications. These limitations are based on requirements of the Underwriters' Laboratories, Inc., and apply to all fire doors of this type.



Mahon Governor and Release Device for Automatic Closing Mechanism

Used on Mahon Underwriters' Labeled Doors

Fire Wall Doors, Class "A"—Approved for fire wall openings not exceeding 80 sq. ft. in area.

Vertical Shaft Doors, Class "B"—Approved for vertical shaft openings not exceeding 80 sq. ft. in area.

Corridor and Room Partition Doors, Class "C"—Approved for corridor or room partition openings not exceeding 80 sq. ft. in area.

Exterior Doors, Class "D"—Approved for exterior wall openings not exceeding 100 sq. ft. in area.

Note: For Standard Label neither dimension of the above listed openings may exceed 12 ft. Mahon Rolling Steel Fire Doors, however, can be manufactured in strict accordance with the Underwriters' specifications and furnished with an Underwriters' "oversize" label for larger openings where fire protection is desirable or where insurance ratings are involved.

Operation

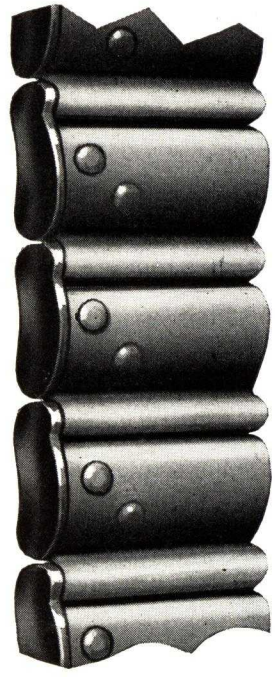
Underwriters' labeled rolling steel doors normally remain open. They are equipped with an automatic closing mechanism and release device which is actuated by fusible links in case of fire. These doors, however, can be operated in general service if desired, being fitted with handles on the bottom rail for manual operation, or equipped with a chain-gear operator for mechanical operation.

In the event of fire, the automatic closing mechanism is released by means of fusible links and the door closes. A flame-stop baffle plate, also released automatically, closes the space between the hood and the roller shaft preventing the passage of flames through the hood.

In the case of mechanically operated Underwriters' labeled doors, the chain-gear operator is automatically disengaged simultaneously with the release of the automatic closing mechanism.

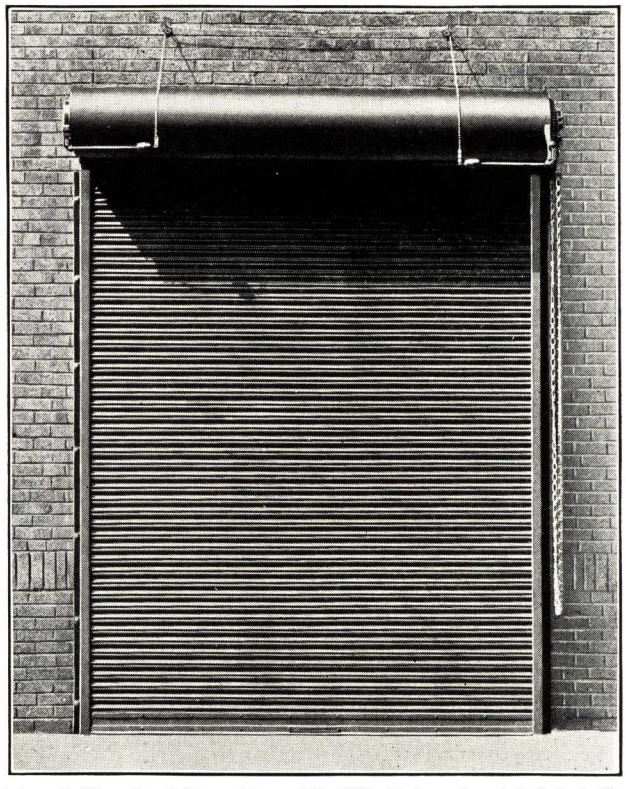
Mahon Underwriters' Labeled Rolling Steel Doors can be quickly reset by one person and put in operation without delay after automatic closing.

Mahon No. 2 Interlocking Slats with Continuous Malleable Iron End Locks



Mahon No. 3 Interlocking Slats with Continuous Malleable Iron End Locks

Continuous End Locks are required by the Underwriters' Laboratories, Inc., on all Underwriters' labeled rolling steel doors for Class "A," "B," "C" and "D" openings



Mahon Rolling Steel Door, Type 600-CHL Underwriters' Labeled Class "A," "B," "C" and "D"
Mounted on the face of the wall

Mahon Rolling Steel Door, Type 300-ML Underwriters' Labeled Class "A," "B," "C" and "D"
Mounted in the opening between jambs

MAHON ROLLING STEEL GRILLES

Mahon Rolling Steel Grilles provide protection against trespassing or burglary without sacrificing daylight or ventilation. This product embodies the same basic operating principles and the same high quality materials and workmanship as Mahon Rolling Steel Doors. The grille proper can be manufactured in steel, bronze or aluminum from $\frac{5}{16}$-in. round bars interconnected with strong pressed links $\frac{3}{4}$x$\frac{1}{8}$ in. formed to produce a pleasing grille pattern.

The grille is attached to a rigid tubular roller shaft which operates in ball and bronze bearings fitted into the supporting end brackets. The weight of the grille is perfectly counterbalanced by means of adjustable coil springs located inside the roller shaft.

Adaptable to Many Uses

Mahon Rolling Steel Grilles lend themselves to many uses in almost every type of commercial or industrial building where positive protection is desired without sacrificing ventilation or daylight. They can be used to advantage in such buildings as commission houses handling perishable merchandise; concessions; stores with show windows and displays of valuable merchandise; schools, post offices, piers, terminals with shipping platforms, etc.

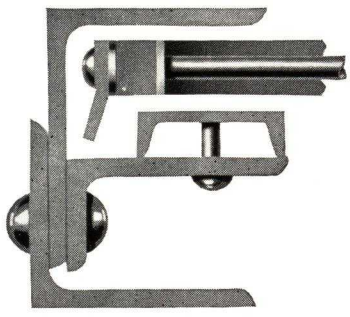
Installation

Mahon Rolling Steel Grilles, like Mahon Rolling Steel Doors, can be installed either on the face of the wall or in the door opening. Mounting on the face of the wall with guide channels clear of the door opening is general practice. This method allows 100% clear opening and provides protection for the guides. In instances where headroom is limited or other conditions prohibit "face of wall" mounting, Mahon Rolling Steel Grilles can be installed in the door opening under the lintel with guide channels flush with the jambs.

In new construction provisions for the roller housing can be included in original plans, in which case the housing can be installed flush with the wall.

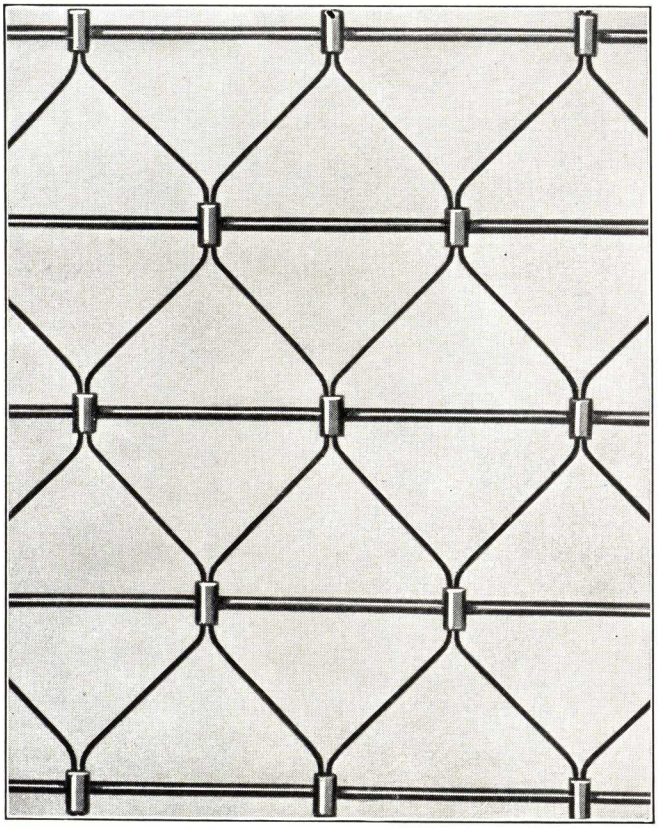
Operation

Mahon Rolling Steel Grilles can be furnished with handles on the bottom rail for manual operation, or with chain gear, hand crank or power operating mechanism—the type of operating device is usually governed by the size of the opening or other conditions.

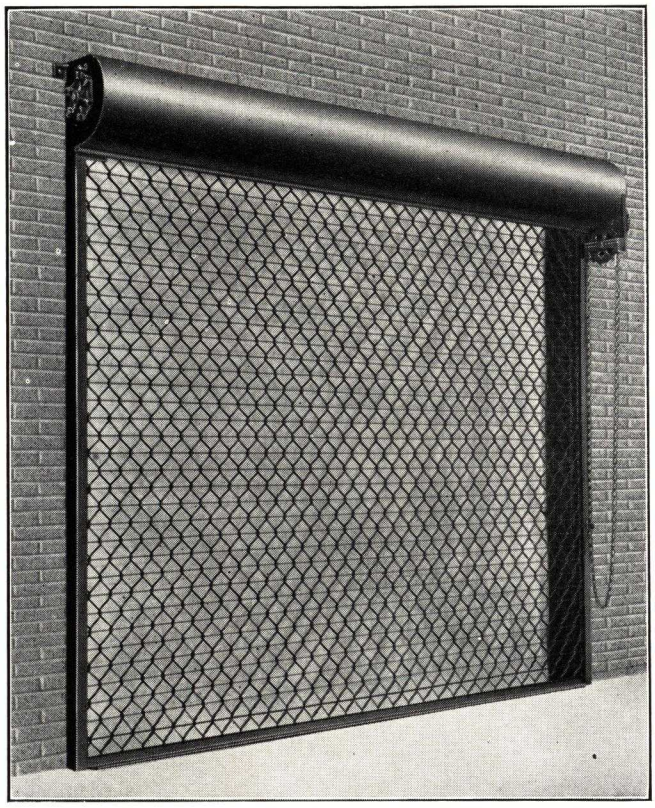


Cross Section of Guide Channel
Showing end locks on Mahon Rolling Steel Grilles

Guide Mouth of Special End Bracket
Furnished with Mahon Rolling Steel Grilles equipped with End Locks



Close-up of the Grille Proper Showing Arrangement of Connecting Links Which Form the Grille Pattern



Typical Installation of a Mahon Rolling Steel Grille Mounted on the Face of the Wall

THE J. G. WILSON CORPORATION

ESTABLISHED 1876

GENERAL OFFICES
1841 Broadway
NEW YORK, N. Y.

FACTORY
P. O. Box 599
NORFOLK, VA.

CABLE: "WILCORP, NEW YORK"
OFFICES IN ALL PRINCIPAL CITIES

For Partitions, Wardrobes and Venetian Blinds, see File Index

Products

WILSON COMMERCIAL ROLLING STEEL DOORS.
WILSON UNDERWRITERS' LABELED STEEL DOORS.
WILSON SECTIONFOLD DOORS OPERATING OVERHEAD.

All Wilson Rolling Doors are made of open hearth or copper bearing steel, electrogalvanized.

Established 1876 Wilson DOORS - PARTITIONS - BLINDS WARDROBES THE J.G.WILSON CORPORATION NEW YORK CITY

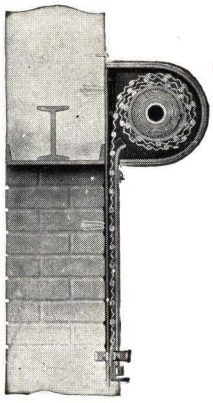
TRADE-MARK

Where Used

Warehouses, Factories, Garages, Breweries, Car Barns, Freight Stations, Piers, Terminals, etc.

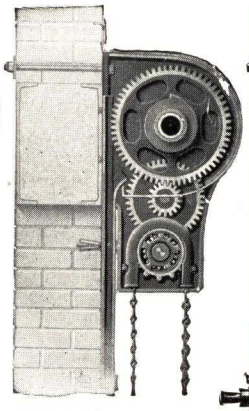
Commercial Rolling Doors are made of Nos. 22, 20, 18 and 16 U. S. Standard Gauges. Underwriters' Labeled Rolling Doors are of Nos. 22 and 20 U. S. Standard Gauges.

TYPES, CLEARANCES AND GROOVES FOR COMMERCIAL ROLLING DOORS



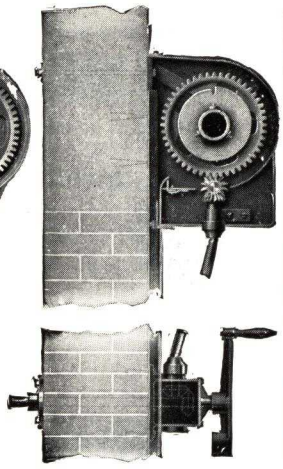
Self-Coiling, Type S.C. 11

Doors are raised and lowered by handles on the bottom bar. Adapted to doors 12x7 ft. or less



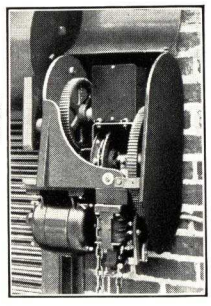
Chain-Gearing, Type C.G. 11

Usually used on doors over 12x7 ft. and up to 300 sq. ft. Gearing is simple or compound depending on size and weight of door. All parts are easily accessible for lubrication



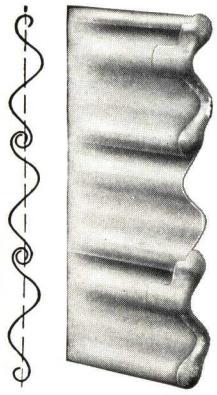
Crank-Gearing Type K.G. 11

Used where operation on both sides of wall is desired

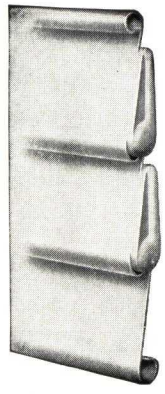


Wilson Motor Unit for Small or Large Doors

Equipped with push-button control, limit switch, Thermo Overload Relay, solenoid brake, and emergency hand chain



Big 4 Interlocking Slat



No. 2 Interlocking Slat with Fire Stops

Coils and Grooves can be placed either on face of wall or between jambs

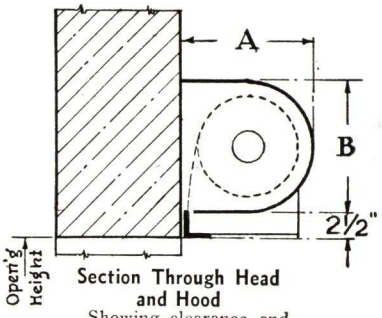
CLEARANCE SCHEDULE FOR COMMERCIAL ROLLING STEEL DOORS

SELF-COILING TYPES

Type SC-11 (on face of wall)			Type SC-22 (between jambs)		
Opening height	A	B	Opening height	A	B
Little 4 Slat			**Little 4 Slat**		
6′0″ to 7′0″	14″	14½″	6′0″	13″	13½″
8′, 9′ and 10′	15″	15½″	7′ and 8′	14″	14½″
11′	16″	16½″	9′ to 12′	15″	15½″

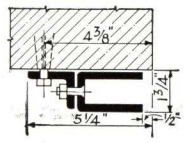
CHAIN OR CRANK OPERATED TYPES

Type CG-11 and Type KG-11 (on face of wall)			Type CG-22 (between jambs)		
Opening height	A	B	Opening height	A	B
Little 4 Slat			**Little 4 Slat**		
8′ to 12′0″	15″	15½″	6′ to 10′0″	14″	14½″
12′1″ to 16′0″	18″	18½″	10′1″ to 14′0″	15″	15½″
			14′1″ to 16′0″	18″	18½″
Big 4 Slat			**Big 4 Slat**		
16′1″ to 18′0″	22″	22½″	16′1″ to 18′0″	20″	20½″
18′1″ to 20′0″	23″	23½″	18′1″ to 20′0″	22″	22½″
20′1″ to 22′0″	23″	23½″	20′1″ to 24′0″	23″	23½″
22′1″ to 24′0″	24″	24½″	24′1″ to 26′0″	24″	24½″
24′1″ to 28′0″	27″	27½″	26′1″ to 28′0″	27″	27½″

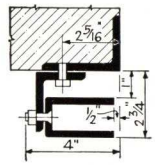


Section Through Head and Hood

Showing clearance and A and B dimensions in tables at left

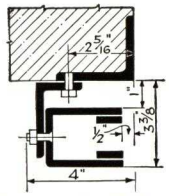


Groove No. 45A



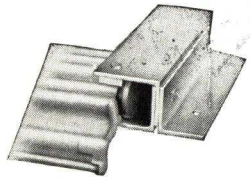
Groove No. 45N

Grooves Nos. 45A and 45N are to be used when opening width is less than 14 ft. 0 in. and opening height is less than 16 ft. 0 in.



Groove No. 32N

This groove to be used when opening width is over 14 ft. 0 in. and opening height is over 16 ft. 0 in.



Safety Groove and Wind Lock

WILSON UNDERWRITERS' LABELED STEEL DOORS

Underwriters' Labeled doors are classified by types in accordance with use, as follows:

Class "A"—Fire Wall Doors

Area of wall opening not to exceed 80 sq. ft.; neither width nor height to exceed 12 ft. *Two doors* are recommended, and may be hung on face of wall or between jambs, self-coiling or crank operation, and close automatically in case of fire. Wilson Type Nos. 31 to 35, inclusive, interlocking slat No. 2, 20 gauge.

Class "B"—Vertical Shaft Doors

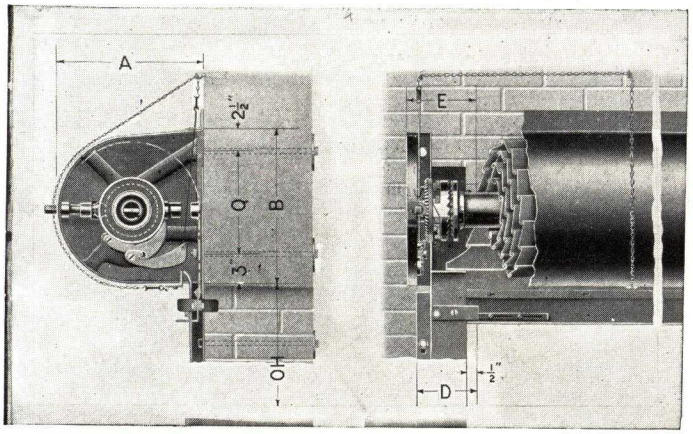
Area of opening not to exceed 80 sq. ft.; neither width nor height of opening to exceed 12 ft. Curtains may be hung on face of wall or between jambs, self-coiling or crank operation, and where required are automatic closing in case of fire. Wilson Type Nos. 21 to 26, inclusive, interlocking slat No. 2, 20 gauge.

Class "C"—Corridor and Room Partition Doors

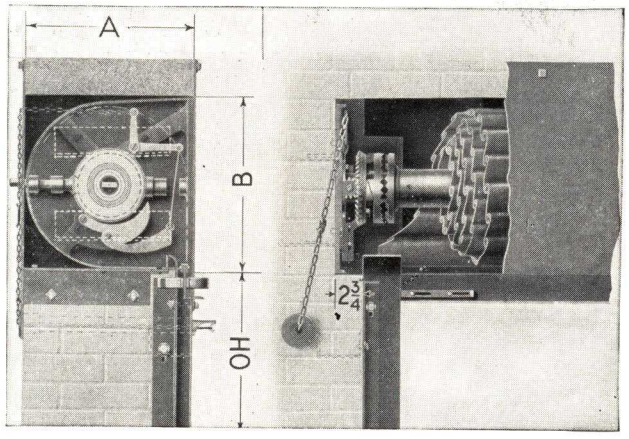
Same requirements as Class "B."

Class "D"—Exterior Wall Doors

Area of wall opening not to exceed 100 sq. ft.; neither width nor height to exceed 12 ft. Curtain may be hung on face of wall or between jambs, self-coiling, chain or crank operation, and, where permitted, may be automatic closing in case of fire. Wilson Type Nos. 41 to 51, inclusive, interlocking slat Little 4, 22 gauge.



Door Applied to Face of Wall



Door Applied Between Jambs

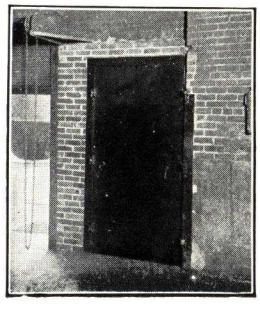
CLEARANCE SCHEDULE FOR UNDERWRITERS' LABELED ROLLING STEEL DOORS

Opening height	Class A, B and C Doors For requirements, see text above — No. 2 slat and fire stops					Opening height	Class D Doors For requirements, see text above — Little 4 slat and fire stops				
	A	B	Q	E	D		A	B	Q	E	D
6′0″ to 8′0″	16″	16½″	11″	Opening width under 8′–0″ equals 6″	Opening width under 8′–0″ equals 5¼″	6′0″ to 7′0″	16″	16½″	11″	Opening width under 10′–0″ equals 6″	Opening width under 10′–0″ equals 5¼″
8′1″ to 10′0″	18″	18½″	13″			7′1″ to 8′0″	17″	17½″	12″		
10′1″ to 12′0″	19″	19½″	14″			8′1″ to 9′0″	18″	18½″			
12′1″ to 13′0″	20″	20½″	15″	Opening width over 8′–0″ equals 7″	Opening width over 8′–0″ equals 6¼″	10′1″ to 13′0″	19″	19½″	14″	Opening width over 10′–0″ equals 7″	Opening width over 10′–0″ equals 6¼″
13′1″ to 14′0″	21″	21½″	16″			13′1″ to 14′0″	21″	21½″	17″		

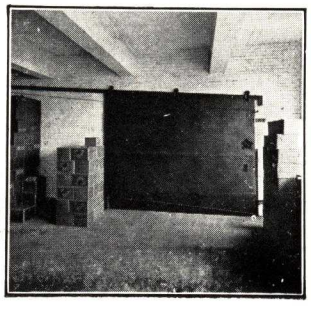
WILSON SLIDING AND SWINGING "AIR-KORE" DOORS

A Fireproof Air Chamber Door, Underwriter Labeled

A most effective fire retardant, this door has been tested by the engineers of the Underwriters' Laboratories, Inc., in Chicago. It was subjected to heat which was gradually raised to 1750°. After undergoing this terriffic heat test for one hour, the door was immediately subjected to a cold water hose stream test. After these tests, far more severe than would have been occasioned by an actual fire when in use, the door showed little deterioration, and to all appearances was "as good as new."

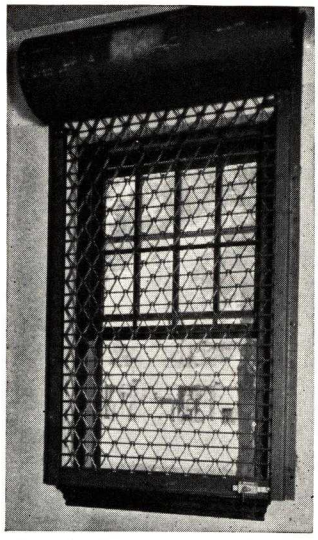


In addition, the Wilson "Air-Kore" Fireproof Air Chamber Door is practical and durable, rugged in construction and capable of withstanding hard usage. Covered with galvanized sheet steel, it is not affected by corrosion. It is simple and easy to operate, and, with its plain, not corrugated, cover sheets, presents a very pleasing appearance.



THE WILSON ROLLING STEEL GRILLE

Allows Passage of Light and Air—Yet Protects Against Intrusion



Wilson Rolling Grille on Inside of Window in a War Memorial
Provides adequate protection for valuable trophies

Wide Application of Uses for

Concessions	Display Windows	Produce Markets	Industrial Buildings
Gateways	Corridor Openings	Elevator Shafts	Commercial Buildings
Transformer Rooms	Vaults	School Building Corridor Segregation	Monumental Buildings
Store Entrances	Storage Rooms of Various Kinds	Nurseries	Residential Buildings

The Wilson Rolling Steel Grille affords real protection for openings where it is desirable to admit light and air yet have the protection necessary against petty theft or intrusion. It offers not only protection but a decorative screen and a practical solution of the problem.

It is made to roll overhead into a hood and is completely out of the way when rolled up.

Construction and Installation

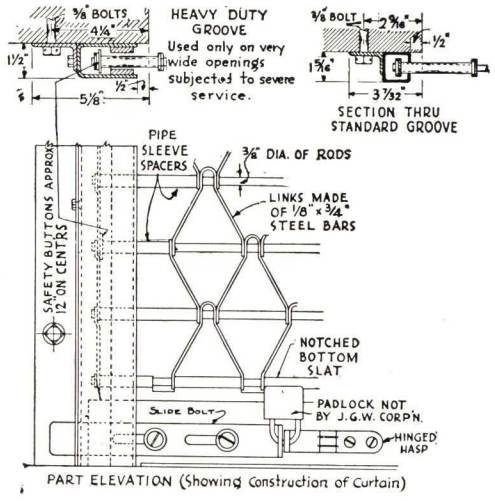
The grille embodies the same principles of construction used in Wilson Rolling Steel and Wood doors for over 60 years. It is constructed of ⅜-in. round rods, separated by ⅛x¾-in. steel triangular shaped links in such a way as to form a rugged, substantial curtain, yet light in appearance and operation (see details below). The grille openings are too small for the ordinary hand to pass through.

It coils on a pipe shaft enclosing a helical counterbalancing spring and travels in steel guide channels in which ends of curtain are secured to prevent the curtains being dislodged therefrom. Coil is surrounded by a suitable sheet metal hood.

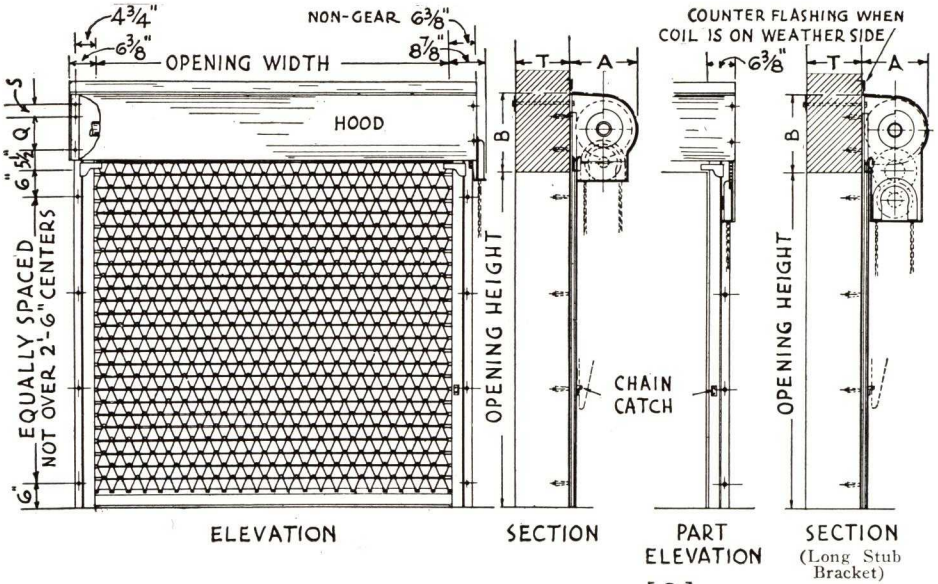
May be operated by hand, chain, crank or motor. It may be placed on the face of the wall to coil above the lintel, or between jambs and below the lintel, or on the outside face of wall, with operation from either side.

Our Engineering Department is at your service for the solution of unusual problems of installation or the preparation of architectural or engineering details.

Wilson Rolling Grille on Factory Storage Shed
Permitting ample light and air and preventing intrusion



PART ELEVATION (Showing Construction of Curtain)



SCHEDULE OF COIL SIZES

Maximum Opn. Ht.	A	B	Q	S
6′-0″	14″	17″	6″	3″
7′-8″	15″	18″	7″	3″
9′-3″	16″	19″	8″	3″
11′-4″	17″	20″	8″	4″
12′-1″	18″	21″	9″	4″
14′-2″	19″	22″	10″	4″

Note: Grilles for openings up to and including 8x8 ft. are made non-gear to be operated manually by handles on bottom bar.

Long Stub Bracket—Used for openings of more than 100 sq. ft., or where sideroom is limited to 6⅜ in.

Size of Bracket Bolts—½-in. diameter when dimension "A" is 19 in. or less ⅝-in. diameter when dimension "A" is 20 in. or more.

WILSON SECTIONFOLD DOORS OPERATING OVERHEAD

For Public or Private Garages, Service Stations, Factories, Warehouses and Commercial Buildings
Made in Stock or Special Sizes—Manual, Chain or Power Operated

Improved Features of Construction

Through Tenon Construction—Prevents water pockets and increases strength.

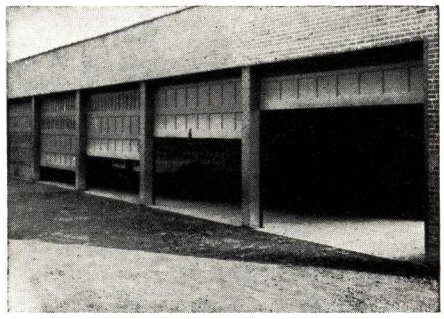
Rustproof Hardware—No unsightly rust spots or gradual deterioration.

Every Bearing a Ball Bearing—Easy operation. Long life. Low maintenance costs.

Selected Kiln Dried Lumber—All lumber kiln dried in our own mills, insuring a custom-made door.

Panels Built Up with Waterproof Glue—Warpage and cupping reduced to a minimum.

Engineered Springs for Each Door—All springs made at our own plant for the individual door, thus guaranteeing a perfectly operating door.



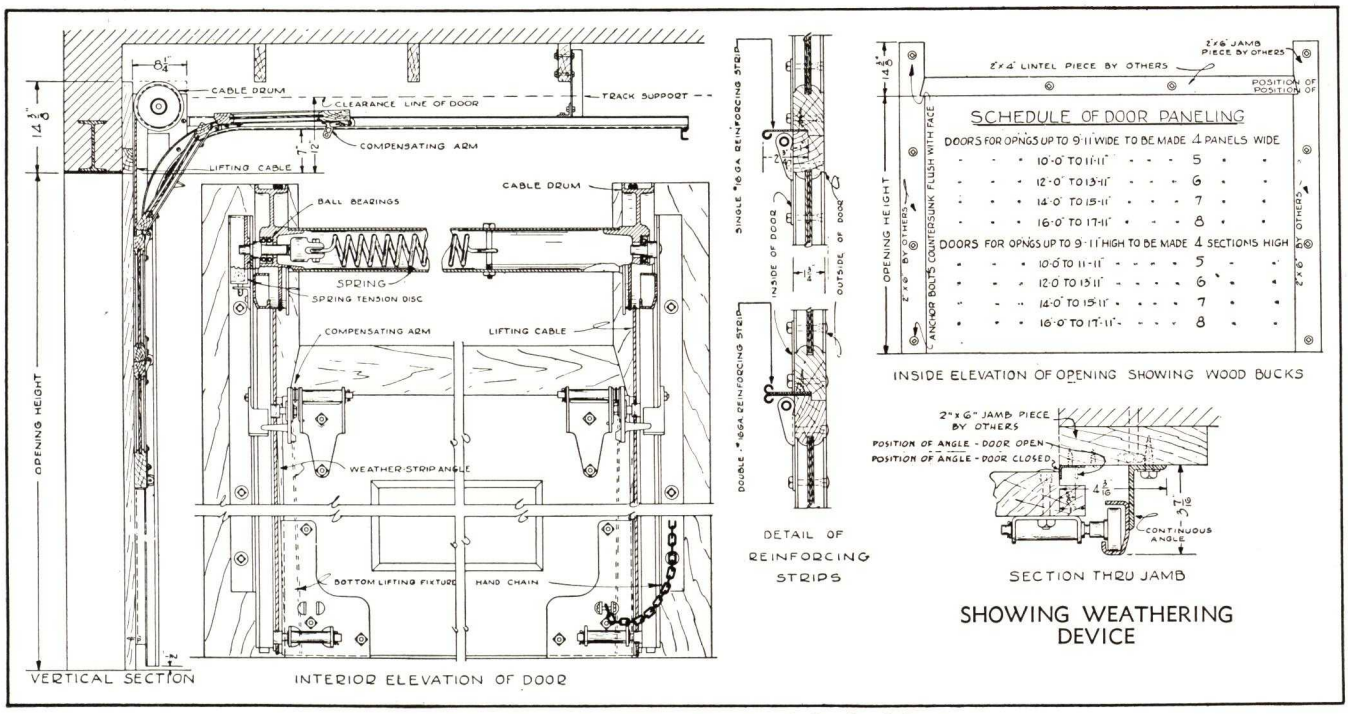
Sectionfold Overhead Doors

Continuous Vertical Track Members—Used instead of angle clips, insuring greater strength and rigidity.

Weathering Device—Steel angles mounted on inside face of jambs, converging toward sill, engaged in converging rout at sides of door, forming weatherproof joint by tight contact between door and angle when door is completely closed. Furnished where desired without extra charge.

Guarantee

The guarantee of a manufacturer with a national reputation for sixty years is behind each Wilson Product.



Installation Details for Wilson Non-Geared Overhead Doors

These details in general also apply to the chain gear-operated doors. Complete installation details will be sent on request

Recommended Specifications to Secure Best Construction

(1) Sections—***Stiles and Rails***—1¾ in. thick; vertical grain clear spruce through-tenoned and steel doweled.

Panels—⅜ in., three-ply fir, built up with a waterproof glue.

Reinforcing Strips—Galvanized steel 16-gauge on all doors over 12 ft. in width or 16 ft. in height, so fastened to the section as to give protection against pressure equally from both sides and to prevent any sagging in the section when raised.

(2) Tracks—Hot rolled steel 13-gauge. All tracks painted. Vertical tracks to be attached to continuous back angles.

(3) Hardware—All door fittings to be of pressed steel, galvanized to prevent rusting. All rollers and sheaves to be ball bearing, and rollers, where used in carrying the weight of the doors, are to be of solid steel. Lock, with two-cylinder keys of the side type that may be operated from either side of the door, locking the door to the track, will be furnished unless otherwise specified.

(4) Counterbalance—All doors to be counterbalanced by means of helical oil-tempered springs, enclosed in steel tubing and mounted parallel with the opening between the two steel track brackets. An adjusting device for applying the proper amount of tension is to be located on the outside of the steel bracket.

Methods of Operation

Self-Coiling—Lifted by Tru-Lay Cables—Recommended on all doors up to 12 ft. in height, where the area is not over 144 sq. ft. and the thickness of the door not over 1¾ in.

Note: Where heavy glass is used or the door is heavier than standard wood, we recommend chain gear operation.

Chain Hoist—Recommended on all doors over the sizes listed under Self-coiling; lifted by electric welded steel chain; all gears made of gray cast iron from cut steel patterns, the gearing mounted on the door brackets.

Type B Motor Unit—Mounted directly to the door bracket equipped with limit switch, solenoid brake and, in addition, with an emergency hand chain operator.

All motor equipment as furnished is operated by three-station push button control, equipped with magnetic switches and brakes to limit the movement of the door at the end of its travel. Constant contact control can also be furnished if desired.

GENERAL BRONZE CORPORATION

Manufacturers of All-Metal Revolving Doors in Bronze, Aluminum, Nickel Silver and Stainless Steel

LONG ISLAND CITY, N. Y.

REPRESENTATIVES IN ALL CITIES

For our complete catalog on Double Hung and Casement Windows, see File Index

TUBULAR METAL REVOLVING DOORS

Easy to Operate—Durable—Attractive—Reasonable in Cost

We recommend, when specifying the use of any metal in the fabrication of a revolving door, our standard tubular construction.

The metal used will be free always from any dents caused by the severe treatment to which the doors may be subjected. The weight of the wings counterbalanced on a center shaft permits anyone to easily operate the door.

This door has appearance, durability and is the most modern form of construction.

Specifications

Scope—Furnish and install where shown on drawings, revolving doors as made by GENERAL BRONZE CORPORATION, of full automatic collapsible, panic-proof type, equipped with operating mechanism and (if desired) speed regulator to control speed of rotation, as herein described.

Revolving door manufacturer shall include circular enclosure, flat ceiling, cornice, revolving wings, hardware, glass, complete mechanism including speed regulator (if desired), and automatic slot closing device in ceiling.

Mechanism—The mechanism of the revolving door shall be full automatic collapsible, panic-proof, either the chain or braceless type. Each of the four revolving wings shall be held in their normal rotating position by hangers at both the top and bottom of the wings.

The mechanism shall be so constructed that the wings will fold from their revolving position to a wide open panic position, instantly, when a force greater than that which is necessary to revolve the wings is exerted on any of two opposing wings. The four wings thus collapsed shall fold on each other, like a book, in the line of egress. The tension holding the wings in their normal rotating position shall be readily adjustable to provide a collapsing pressure of from 60 to 175 pounds when applied at any point 42 inches or more from the floor on the outer stiles of two wings. Provision shall be made for varying such adjustment quickly without dismantling any of the hardware or fixtures.

The mechanism shall also permit the wings to be folded manually in a central open position, in pairs; in a full open side position, in pairs; and in a central panic position with the four wings folded like a book. A simple manual release of the tension holding the wings in normal rotating position shall be provided to permit manual collapsing or folding of the wings without exerting the pressure needed for automatic collapsing of the wings. Each wing shall have self-contained in the supporting hardware a simple automatic device or a simple readily removable device to hold the wings in position when folded in pairs — this to hold the folded wings firmly in balanced position for rolling to the side of the enclosure and to retain them in that position until released.

The center shaft carrying the wings shall be supported overhead by a ball bearing in a universal mounting carried on a four-wheel trolley which, in turn, is set on a self-supporting steel track to permit the wings to be moved to the side of the enclosure when folded. This center shaft shall be held in position by a locking device in the overhead track and by a socket and pivot bolt in the floor. The bottom pivot shall not rotate in the floor socket.

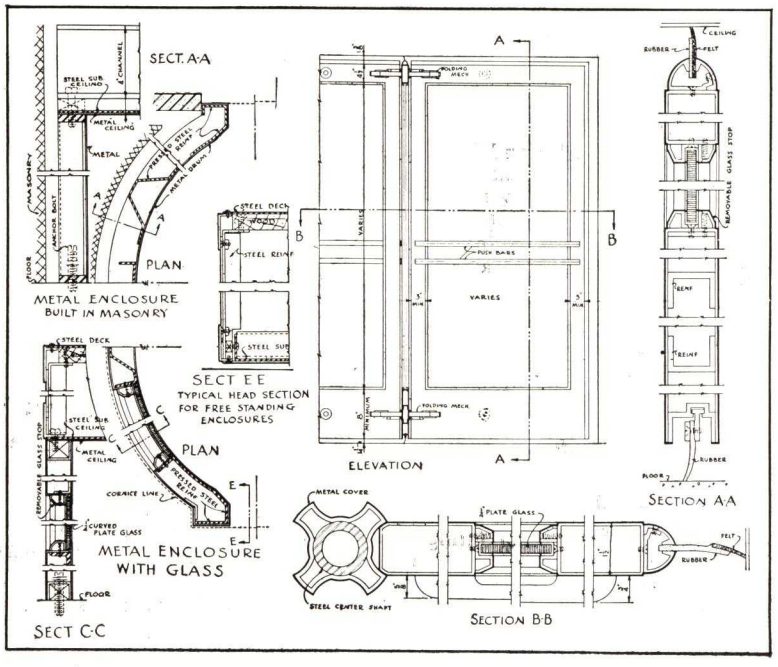
The raising of the bottom pivot shall release the center shaft at both top and bottom, freeing it for movement to the side of the enclosure. Or this same action may be accomplished by raising the floor pivot and tilting the doors slightly from their perpendicular position.

Hardware—Hardware shall include keylocks and bronze push bars as shown. All locks to be keyed alike, and master-keyed (if desired).

Speed Regulator—(if included) the speed of rotation shall be controlled by a mechanical device to be installed in the overhead mechanism chamber in conjunction with the standard trolley. This device shall permit free rotation of the revolving wings up to any predetermined rate of speed, but prevent spinning at all times. An adjustment shall be provided to regulate the maximum speed to meet the particular traffic needs of each entrance.

Glass—All glass, excepting that for ceiling lights, shall be first quality ¼-inch thick polished plate glass. (If required in enclosure walls, the glass shall be accurately bent to radius.) Glass for ceiling lights shall be best quality ⅛-inch thick frosted sheet glass.

Ceiling Lights—Provision shall be made in each revolving door ceiling for two flush lights, each having a removable glass cover. This work shall include reflector. The electric wiring,

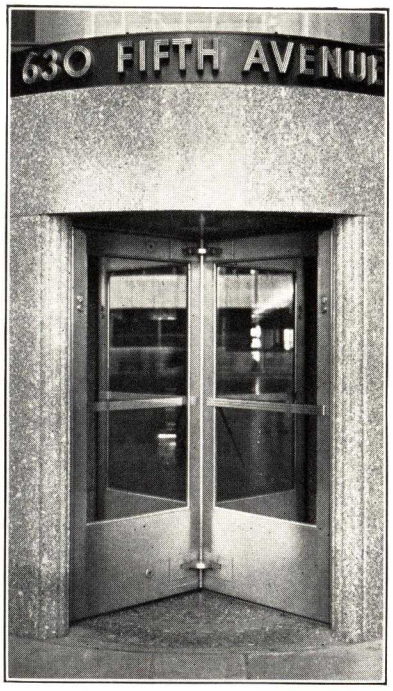


fittings, fixtures and lamps will be furnished and installed by another trade.

Material—***Door Construction*** — Stile and rail shall be tubular shaped construction not less than 14 B&S gauge for bronze, and nickel silver, 10 B&S gauge for aluminum and 16 U.S. gauge for stainless steel. All to be of selected quality without any defects, free from twists and dents.

All joints shall be carefully machined. All corners and intersections shall be reinforced, carefully welded and finished to an even surface. All cut-outs to accommodate hardware and operating mechanism shall be properly reinforced, accurately formed and closely fitted to receive the hardware. Removable glass stops shall conform to detail, carefully mitred and fitted at corners and secured with overhead countersunk machine screws of composition to match balance of material. Screws to be equally spaced approximately 10 inches on center.

The enclosure shall be bronze, nickel silver, aluminum or stainless steel of not less than 14 B&S gauge for bronze, and nickel silver, 12 B&S gauge for aluminum or 16 U.S. gauge for stainless steel. All sheet material must be of first quality patent level, free from dents and defects. Provide for each enclosure a complete skeleton frame of heavy steel, bent to a radius and reinforced with continuous vertical channel-shaped steel support, welded at intersections to a complete unit. Each intersection must be completely fitted to a flush joint and painted with heavy bitumastic paint to prevent electrolytic action between steel and other material. All sheet material shall be formed to radius or shape required by design. All intersections carefully machined, fitted, reinforced and secured to the steel construction by means of finished head machine screws or rivets as may be required. Exposed surfaces of the drum are to be finished to the required texture and colored as desired by architects or owners. Provide cut-out in the ceiling to receive ceiling light. Where enclosures are fully built in, provide a carefully fitted flush hinge panel in each ceiling for access to overhead mechanism. Provide automatic cover to close slots opening in ceiling when wings are in operation.



Rockefeller Center, New York, N. Y.
Thirty-nine Doors
REINHARD & HOFMEISTER; CORBETT, HARRISON & MACMURRAY; HOOD & FOUILHOUX
Architects

Typical Installations

Nemours Office Building, Wilmington, Del.
Lord & Taylor, New York, N. Y.
Greenwich Savings Bank, New York, N. Y.
Thompson Restaurant, Suburban Terminal, Philadelphia, Pa.
Chrysler Car Salon, Chrysler Building, New York, N. Y.
Union Trust Company, Troy, N. Y.
New York Life Ins. Co., New York, N. Y.
The Cincinnati Enquirer, Cincinnati, Ohio
Office Building, 230 Devonshire St., Boston, Mass.
Union Trust Company, Washington, D. C.
Rockefeller Center (39 Doors), New York, N. Y.
Hershey Chocolate Co., Hershey Park, Pa.
Kress Building, New York, N. Y.
First National Bank, New York, N. Y.
Horn & Hardart Co., New York, N. Y.
U. S. Post Office, Chicago, Ill.
U. S. Post Office, Philadelphia, Pa.
U. S. Post Office, St. Louis, Mo.
10 East 40th Street (Office Building), New York, N. Y.

Chrysler Showroom, Chrysler Building, New York, N. Y.
REINHARD & HOFMEISTER, Architects
BARR, IRONS & LANE, Contractors

General Bronze Revolving Doors eliminate drafts, cold air, noise and dirt—save fuel—provide more comfortable working conditions—reduce initial and operating cost of air conditioning plants.

MEMORANDA

THE ATCHISON REVOLVING DOOR CO.

MAIN OFFICE AND FACTORY
INDEPENDENCE, KAN.

LOCAL REPRESENTATIVE

AGENCIES IN 70 OF THE PRINCIPAL CITIES OF THE UNITED STATES AND CANADA
Consult City or Telephone Directory for Name of Nearest Representative or Write the Main Office

Products

REVOLVING DOORS, complete with wings, enclosures, cornices, pilasters, ornament (or without all trimming where these duplicate adjacent work). ADJOINING SWING OR SLIDING DOORS, TRIM, and ACCESSORIES.

In bronze, nickel silver, aluminum, monel metal, steel, stainless steel, micarta, formica, porcelain enamel, and all cabinet woods.

Wings alone furnished only for marble enclosures.

Service

Revolving doors are a specialty that require long experience and training for their successful manufacture, installation and service. During 30 years of continuous progress Atchison has developed a thoroughly experienced and capable sales and service organization in more than 70 cities throughout the country.

Engineering service is available to architects and owners by Atchison engineers and representatives who have had long experience in analyzing entrance problems. Their analyses will show the savings and economies resulting from a revolving door installation and recommendations of design, layout, material and construction suitable to the entrance.

Field service by trained and experienced revolving door men is an essential part of a successful revolving door installation. Atchison doors are installed and serviced by a capable and experienced field organization.

Capacity and Size

Capacity—A revolving door will pass 3,000 to 6,000 persons per hour, each direction. At a normal rate of walking a revolving door makes 15 complete revolutions per minute, each revolution providing unobstructed passage for four persons both IN and OUT. The normal capacity of a revolving door is therefore 3,600 persons in and 3,600 persons out per hour.

Size—Four wing doors are made from 5 ft. 6 in. to 7 ft. 6 in. in diameter. It is recommended that they be not less than 6 ft. 6 in. which will pass traffic most efficiently. Hotels or post offices find the larger doors up to 7 ft. 6 in. more suitable for the handling of luggage and bundles. Elsewhere, doors should not be larger than 7 ft. reducing the temptation for two persons to crowd into one pocket. Inside height varies from 6 ft. 10 in. to 8 ft., the near-standard being 7 ft. It is recommended that the height not exceed 7 ft. 6 in.

Three wing doors are especially adapted to small entrances where traffic is limited as for inside air-lock passages, for toilet room entrances, for dark rooms, and for X-ray rooms.

General Data

Sliding Doors—Of straight or circular design for night closing are furnished with simple, trouble-free supported hardware.

Flexed Walls—Enclosure walls may be hinged to obtain maximum clear width when wings are folded or rolled aside for the passage of automobiles or other large displays.

Screen Doors—For summer use may be attached directly to enclosure wall-ends or to enclosure extensions.

Speed Control—See Master Specification.

Ceiling Lights—10 in. spun polished metal domes or metal frames glazed with diffusing lenslite. Usually located in interior and exterior quarters midway between center and edge of ceiling.

Slot Closer—Is available for keeping ceiling slot of side-rolling doors closed at all times.

Burglar Locks—Of an automatic electric type provide instant locking of revolving doors. They may be controlled from any part of the building in any emergency.

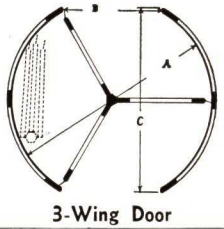
Divided Lights—Applicable to wings and walls.

Base-plates—Recommended on wood doors to prevent floor-scrubbing or damage to walls or finish. Also recommended for use on metal doors for scribing to sloping floors.

Access to Mechanism—Space over door should be accessible for oiling and adjusting main bearing. Ceiling access panels can be had but are undesirable.

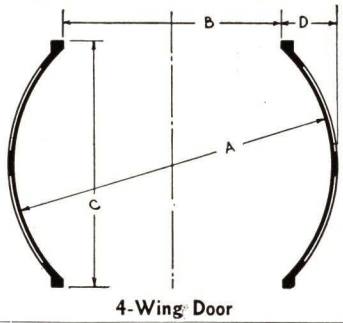
Patents—Cover exclusive features and while not relied on in pricing, infringements will be vigorously resisted.

DIMENSION DIAGRAMS AND TABLES



3-Wing Door

A	B	C
4 ft. 6 in.	2 ft. 2½ in.	4 ft. 2 in.
5 ft.	2 ft. 5½ in.	4 ft. 7 in.
5 ft. 6 in.	2 ft. 8½ in.	4 ft. 2 in.



4-Wing Door

A	B	C	D
5 ft. 6 in.	3 ft. 9 in.	4 ft. 2½ in.	0 ft. 11⅞ in.
6 ft.	4 ft. 1 in.	4 ft. 8½ in.	1 ft. 0⅞ in.
6 ft. 6 in.	4 ft. 5¼ in.	5 ft. 0¼ in.	1 ft. 1¾ in.
7 ft.	4 ft. 9½ in.	5 ft. 5 in.	1 ft. 2⅝ in.
7 ft. 6 in.	5 ft. 1¾ in.	5 ft. 9 in.	1 ft. 3½ in.
8 ft.	5 ft. 6 in.	6 ft. 1½ in.	1 ft. 4⅜ in.

BRACELESS TYPE NTS WINGS PANIC-PROOF

Atchison Type NTS Braceless Wings are the result of over 30 years experience by a progressive revolving door manufacturer. Patents cover the valuable features of NTS and NTJ braceless wings. Both Types, NTS and NTJ, meet the requirements of the U. S. Government Specifications.

Mechanism

Type NTS and NTJ Braceless Wings are automatic, collapsible, panic-proof, having each of the four wings carried upon the center post disks, independently of the other three, by cored one-piece box hinges or hangers. The wings are held in radial revolving position (position 1) by spring-tensioned ball and socket catches, all stainless steel to eliminate corrosion. Hinges giving support at both top and bottom overcome torsion forces and eliminate twisting and racking.

The metal center post, to which the disks are secured, is suspended from a cup-and-cone ball bearing carried by a compact roller bearing overhead carriage assuring easy rolling aside in the "Atchison" truss-shaped channel.

The center pivot pin is stationary in a floor socket having a removable center piece for easy cleaning. The pivot is surrounded by long roller bearings eliminating the possibility of wear and looseness at this important point.

Wings lock with ceiling keylocks of the mortise bolt type, tumbler operated, using standard or master-keyed lock cylinders, and operate from exterior or interior.

Major Improvements

Releasing—Top and bottom hinges in NTS are simultaneously tensioned or released for folding purposes. They are connected by rods operating in preformed grooves in the inner stiles, with special powerful flush levers located breast high on facing sides of each pair of adjacent wings. Moving each flush lever tensions or releases both top and bottom ball catches. Rolling the wings aside only requires the throwing of two wing levers in one pocket and two wing levers and one center post lever in the opposite pocket, the latter simultaneously lifting the center pivot and releasing the overhead carriage latch.

This arrangement of tension operation levers is easily the outstanding development in ease of handling revolving door wings. Heretofore on all braceless type wings, as in NTJ, each hinge has had its individual tensioning lever making it necessary, when folding the wings, to kneel and reach down to operate the bottom tension levers and stretch or climb on a box or stepladder to reach the top tension levers, going into each of the four wing pockets successively to perform the eight operations.

Adjustment—The amount of holding power or collapsing pressure can be readily adjusted with an ordinary screwdriver from the inner edge of the hinges when the wing is turned about 45 degrees from radial position, without dismantling any part of the hinges.

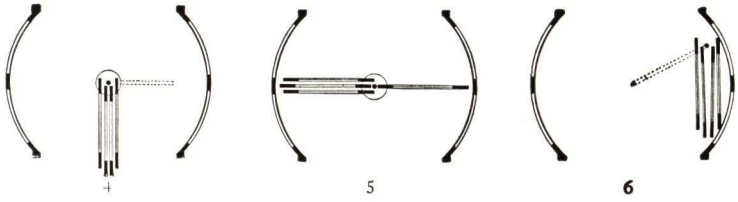
Conway Building, Chicago, Ill.
GRAHAM, ANDERSON, PROBST AND WHITE, Architects

Automatic Pressure Variation—The special patented toggle device tensions the ball catches so that they have their maximum pressure and holding power when the balls are seated in the radial position sockets and least pressure when dislodged and riding on the face of the disk.

The leverage gained by the use of the toggle device allows the ball to seat less deeply into the holding socket and still have surplus holding power. This gives a safety factor as all possibility of the ball "freezing" in the socket is eliminated.

With the pressure of the ball against the face of the disk, there is no pressure against the pivoting Mechanism to cause wear and looseness. It also permits the free swinging of wings back to radial position.

Broadway-Continental Building, 1450 Broadway, New York, N. Y.
Type NTS, "Curved Wing" .050 (16 B&S ga.) Nickel Silver



4 5 6

Other Advantages

The center post is round with the inner edge of the wing shaped to fit and provided with a spring felt strip, making an absolutely weatherproof contact leaving an easily cleaned, smooth, attractive contour.

Close fitting of fulcrum points and surplus power in the spring-tensioned releasable catches prevent development of undesirable looseness.

Disks are located away from ceiling and floor, making easier the rolling of wings aside, the entering of the center pivot into floor sockets, and the replacement of air-lock strips.

This simplicity and durability makes safe and easy operation even by inexperienced help.

Folding

An important feature is that the ball catches which hold the wings in radial position also hold them in all folded positions, requiring no folding bar or additional mechanism for that purpose. Separate sockets are so located on the disks that they automatically engage the balls when the wings reach their proper folded positions.

An exclusive feature is that the wings may be easily returned from folded to revolving position without operating the tension levers. A pull of sufficient force to disengage the ball from the folded position socket is all that is necessary to return the wings to normal rotating position where the balls snap into the radial sockets automatically.

Position 2, center folded—For ventilation or free passage. Door can be folded to this position in 15 seconds and returned to revolving position in 6 seconds.

Position 3, wings folded and rolled aside—giving large free opening for passing bulky objects or free traffic or ventilation. Door can be folded and rolled aside in 30 seconds and returned with equal speed.

Position 4, panic position—Pressure against the wings in excess of the pressure needed to rotate the door automatically releases the ball and socket catches, allowing the wings to swing freely and fold outwardly in one equally spaced pack giving free and unobstructed passage.

Position 5, locked position—The wearing surfaces of disks and hinges are so ample that in locked position a single wing may be used, without danger of wear, as a swing door, for exit purposes after-hours.

Position 6—Wings folded and rolled aside with diagonal ceiling slot. Of especial value to allow use of curved sliding doors or attaching of screen doors direct to enclosure wall-ends.

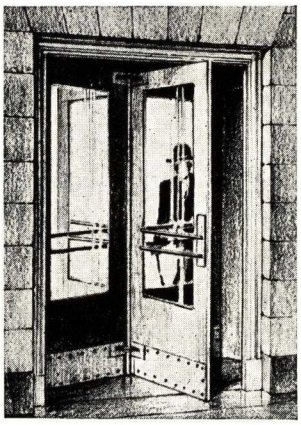
Type NTS and NTJ wings fold into the smallest pack possible, occupying only 3¼ in. in positions 2 and 3 and 8 in. in position 4 with all wings equally spaced.

CURVED WINGS

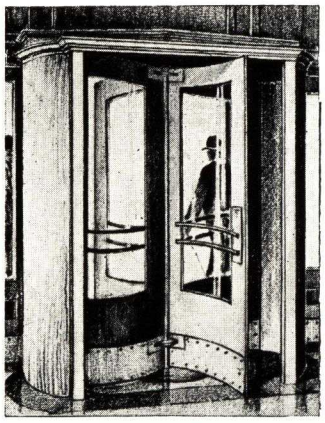
Curved Wings make the best *revolving* door. They are an exclusive Atchison development. They are the *only* improvement ever made affecting the *primary* use of revolving doors—the revolving use wherein an entrance is always closed yet constantly open to traffic.

The shape of the wings does not, of course, increase the area within the circle, but it does divide this area into spaces so shaped that passage through a Curved Wing door is more than a fourth easier than passage through a straight wing door.

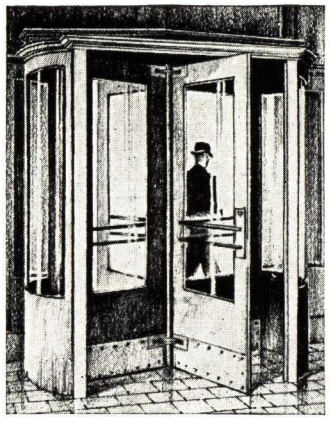
Curved Wings, following the contour of the enclosure walls (figure 6), have a more natural and handsome appearance when folded; are a natural traffic regulator eliminating any temptation for travel in the wrong direction; afford a safety factor because bent glass is less liable to breakage owing to the arched shape.



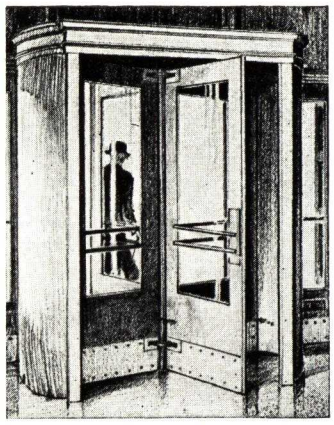
Design 1U
Walls—Unfinished Convex.
No Cornice or Roof



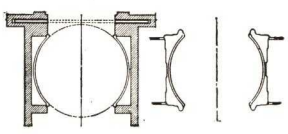
Design 1
Walls—Smooth Convex
These designs include 3-in. plain cornice,

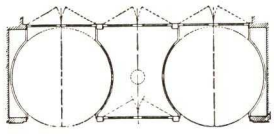


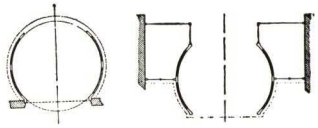
Design 1G
Walls—Bent Plate Glass

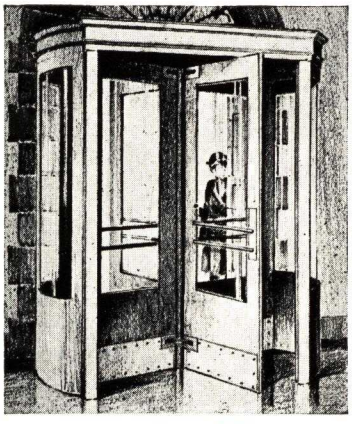


Design 2
Walls—Smooth Convex
These designs include 6 to 8-in. plain moulded cornice, roof and trap door

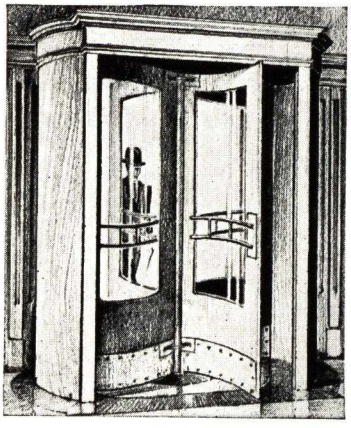




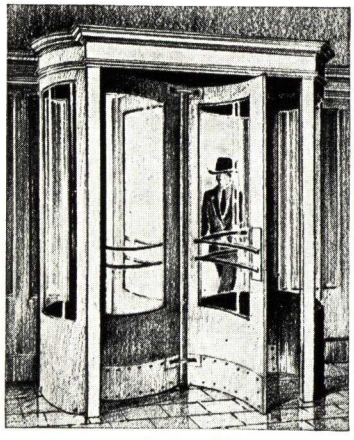




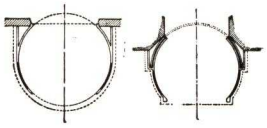
Design 2G
Walls—Bent Plate Glass

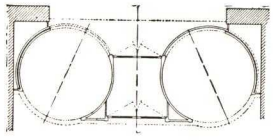


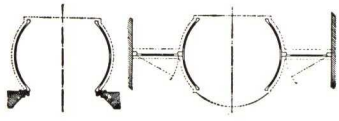
Design 3
Walls—Smooth Convex
These designs include 10 to 12-in.



Design 3G
Walls—Bent Plate Glass





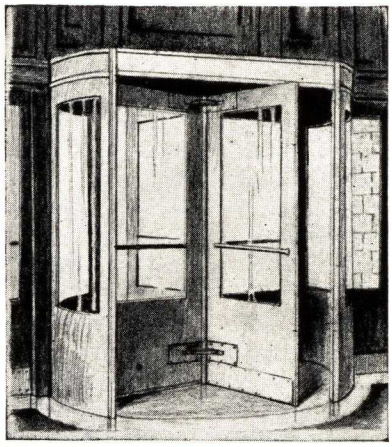


STANDARD DESIGN SCHEDULE

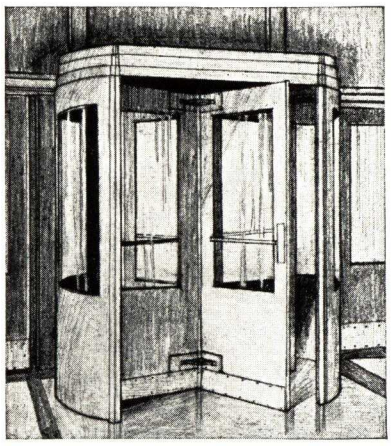
With Suggestive Layouts Applicable to Various Designs

Stock Doors

No. 70—7 x 7 ft.
No. 66—6 ft. 6 in. x 7 ft.
No. 60—6 x 7 ft.
No. 56—5 ft. 6 in. x 7 ft.
Design G—Glass in walls.
Design 1—Solid flush walls.
Design U—Unfinished convex.
Cornice— { Recovery—8 in. plain band.
Moderne—8 in. modernistic.
Material—Birch.
Finish—4-coat rubbed varnish.
Mechanism—Type NTJ braceless, panic-proof side-rolling.
Hardware—Bronze.
Kickplates—5½ in. two sides.
Pushbars—One per wing.
Glass—$\frac{7}{32}$-in. drawn.
Bottom rail height—27 in. from floor.

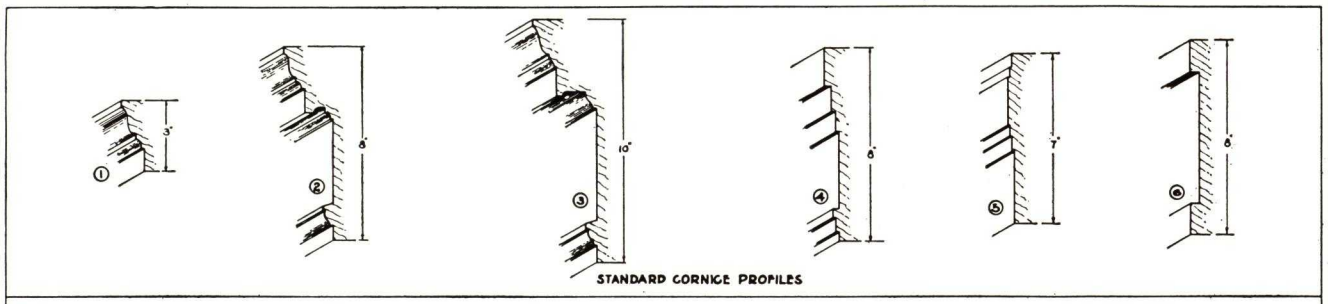


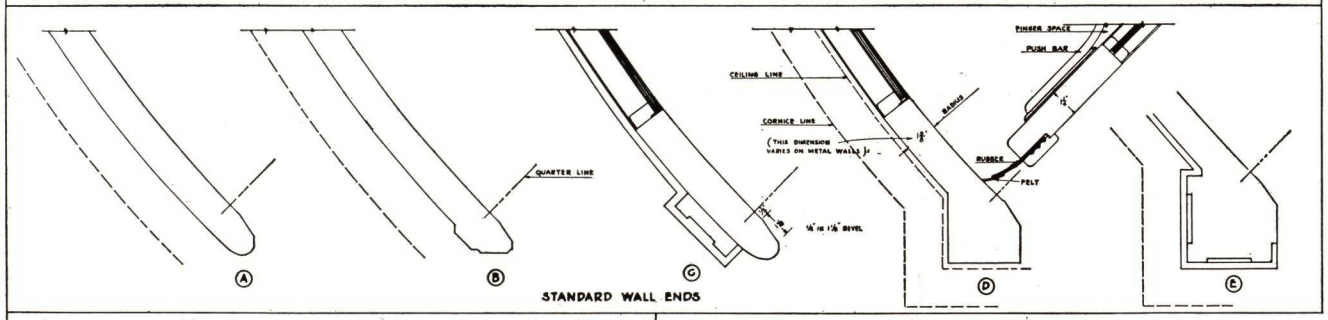
The Recovery

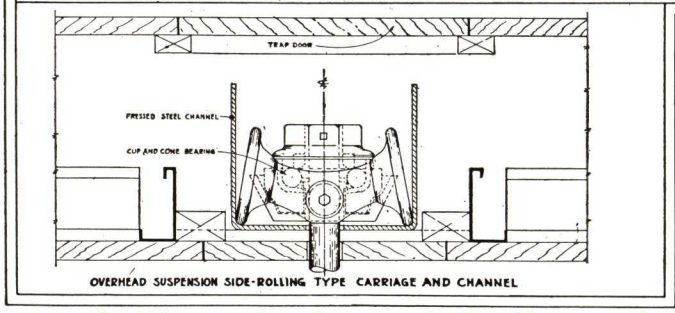


The Moderne

ATCHISON REVOLVING DOOR ~ RECOMMENDED DETAILS







Wood—Wings and enclosures of all cabinet woods veneered with 5-ply laminated waterproof construction, making one-piece or slab wall sections or wings with correspondingly greater strength.

Metal Covering—Wings and enclosures—bronze, nickel silver, aluminum, monel, steel, or stainless steel in .050 in. (16 B&S gauge) plate overlay applied with special metal holding cement, under power pressure, to hardwood faced laminated waterproof cores. One-piece metal sheets, or joints of hairline construction reinforced with riveted, sweated strips. This construction is recommended in preference to hollow metal for all except welded tubular aluminum wings, because of (1) greater stiffness to resist unusual twisting strains in wings, (2) less weight for necessary stiffness, reducing undesirable momentum and inertia effects, (3) lower cost, and (4) greater fire resistance.

Hollow Metal—Wings of hollow reinforced welded tubular construction fabricated from 1¼x5-in. rectangular seamless tubes. Enclosures in 12 to 14 B&S gauge on welded steel frames.

Hollow Welded Tubular Aluminum Wings—Developed in collaboration with Aluminum Company of America, are one-third to one-half the weight of any other wings, very strong and stiff, easy to revolve, and quick to stop.

Porcelain Enamel—On steel in any desired color or design.

Micarta, Formica and Other Composition Materials—May be used in place of wood or metal veneers in any color or design treatment or in combination with metal inlays. They are applied under pressure with special adhesives to hardwood faced, laminated, waterproof cores.

Finish—*Wood*—Painter's finish regularly supplied in two grades, 3-coat gloss, or 4-coat rubbed varnish, or enamel in black or colors to approved samples.

Metal—To match adjacent work. Fine-lined natural or medium oxidized recommended, not lacquered. Samples on request.

Alumilite—The highly desirable, durable, and attractive electrolitic finish for aluminum is now available on revolving doors as a result of special construction technique developed by Atchison.

Hardware—Of heavy, plain beveled design, solid cast bronze, nickel silver, aluminum, or chromium plate. No other plating recommended.

Cylinder locks, standard or master-keyed, operant from inside or outside, optional.

Air-lock Strips—Consist of wide bottom rubber for flexibility, thick woven felt top strips, and tapered moulded side rubbers of anti-aging composition with piano-felt edges, all especially designed and selected for maintaining the air-lock with proper amount of friction.

Glass—Furnished in polished plate or drawn. Bottom rail height 18 in. from floor recommended to resist unusual twisting strains, 10 in. minimum limit.

STANDARD DESIGNS

These are shown on opposite page so arranged, numbered and lettered to show in schedule form the combination of various standard cornice and enclosure wall designs.

The standard design schedule is presented as a standard reference for basic designs. It is intended as a convenient base upon which the Architect may develop his individual designs of cornices, pilasters or wall-ends, and enclosure wall panels and glass openings in harmony with modern architectural treatment.

Illustrations in these pages are of actual installations of such designs. Thus, Conway Building—Graham, Anderson, Probst & White, Architects—(page 2) illustrates modern architectural modification of standard Design 3. Similar modification of Design 2G is illustrated on page 3.

MASTER SPECIFICATION FOR ATCHISON REVOLVING DOORS

(Notes in italics are explanatory or advisory only and should not be included in the specification. Whenever words or phrases occur in the body of the specification in italics and parentheses, choose that word which applies to the particular door. Wherever the word "specify" occurs in italics and parentheses, add the particular word or clause applicable, optional with the writer.)

(1) Revolving Doors

Revolving door contractor shall furnish and install where specified and shown on plans ATCHISON REVOLVING DOORS, type *(NTS or NTJ, braceless, panic-proof, side-rolling) (equipped with speed control)* built of *(specify)*.

***(Note:** For design see Standard Design Schedule, page 4.)*

(2) Scope

Revolving door contractor shall include circular enclosure, flat ceiling *(cornice) (pilasters) (sliding doors) (adjoining trim)*, revolving wings, hardware, glass, and complete mechanism *(including speed control)*.

(3) Mechanism

(3a) Panic-Proof Device—

(3a1) The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position instantly when a force somewhat greater than that necessary to revolve the wings is applied on any two wings.

(3a2) The tension holding the wings in their radial position shall be adjustable to a collapsing pressure of from 60 to 175 pounds quickly without disassembling any of the mechanism.

(3b) Radial Position Mechanism—

Each of the four wings shall be carried independently of each other by cored one-piece hangers pivoted to the center disks at both top and bottom of each wing. Each wing shall be held in radial revolving position by spring tensioned ball and socket catches of stainless steel contained in the disks and hangers. No brace arms, chains or cables will be permitted between the wings. Tensioning mechanism shall be so constructed that ball catches have maximum holding power when balls are seated in sockets and minimum pressure when dislodged and riding on face of disks. Top and bottom tensioning mechanisms shall be simultaneously tensioned or released for folding purposes by manually operated flush levers located at breast height on facing sides of each pair of adjacent wings.

***Note:** In type NTJ substitute for last sentence "Top and bottom tensioning mechanism shall be tensioned or released for folding purposes by manually operated levers located on each hanger."*

(3c) Folding—

Mechanism shall permit the wings to be folded manually in a central position in pairs; rolled to one side of enclosure in pairs; in a central panic position with four wings folded like a book. Sockets shall be so located on disks to engage tension balls in folded position and hold wings without separate folding bar. Wings shall be manually returned to radial position without releasing of tension.

(3d) Overhead Mechanism—

(3d1) The center post carrying the wings shall be suspended from a cup-and-cone ball bearing carried in a 4-wheel, roller-bearing overhead carriage to roll aside in truss-shaped supporting channel.

(3d2) Center post shall be held in position by a locking device at top and by a socket in the floor. Bottom pivot shall not rotate in floor socket. Flush lever shall simultaneously release wings at top and bottom for free movement to sides of enclosure.

(4) Construction

(4a) For Wood Doors—Wings and enclosures shall be finished in *(specify)* veneer not less than ⅛ in. thick in 5-ply waterproof laminated, one-piece slab construction.

(4b) For Metal Plate-Overlay Doors—Wings and enclosures are to be finished in .050 in. *(specify metal)* plate overlay on 5-ply hardwood faced waterproof, laminated slab construction cores. Metal shall be in one piece sheets or with hair-line joints properly reinforced, invisible on the finished surface.

(4c) For Hollow Metal Doors—Wings shall be constructed of 1¼ in. by 5 in. rectangular seamless tubing with welded joints and suitable reinforcements at hangers. Enclosures shall be built of *(specify)* gauge *(specify metal)* on welded steel frames.

***Note:** For hollow aluminum specify "special extruded sections."*

(4d) For Micarta or Formica Doors—Wings and enclosures shall be built of *(specify)* sheets applied under pressure with special adhesives to hardwood-faced 5-ply laminated, waterproof cores.

(5) Finish

(5a) For Wood Doors—Wood surfaces exposed on finished work shall be sanded to a perfect finish and given *(3 coat gloss varnish) (4 coat hand rubbed (color) enamel finish to approved sample)*.

(5b) For Metal Doors—All finished surfaces shall be brought to a smooth fine-lined surface and properly treated to match approved sample.

(5c) For Aluminum Doors — Satin fine line lacquered *(Alumilite finish optional)*.

(6) Glass

All glass in revolving wings and enclosures shall be *(¼ in. American polished plate) (7/32 in. drawn plate)*.

(7) Hardware

The hardware shall include mortise bolt keylocks with *(standard) (masterkeyed)* cylinders, kickplates, pushbars and pushplates made of *(specify)*.

(8) Ceiling Lights (Optional)

(8a) Two 10 in. spun *(specify metal)* dome ceiling lights shall be furnished, but not including lamps or wiring.

(8b) Two 10 in. flush hinged *(specify metal)* frame ceiling lights shall be furnished glazed with Lenslite including reflectors but no fixtures or wiring.

(9) Speed Control (Optional)

The speed of rotation of the revolving door shall be controlled by a hydraulic or liquid check type speed control installed in the overhead mechanism. This device shall prevent spinning or excessive speed at all times and shall be readily adjustable for adapting to traffic requirements.

RECENT INSTALLATIONS

Akron Savings & Loan Co., Akron, Ohio
Apartment Hotel, Omaha, Neb.
Nicholas Building, Toledo, Ohio
Milwaukee Gas Light Co., Milwaukee, Wis.
City National Bank, Omaha, Neb.
Union and Planters National Bank, Memphis, Tenn.
Roosevelt Hotel, New Orleans, La.
City Hall, Kansas City, Mo.
National Life & Accident Insurance Co., Nashville, Tenn.
Central Nati[illegible] Bank & Trust Co., Des Moi[illegible]

Palmolive Building, Chicago, Ill.
Manhattan Bank, Memphis, Tenn.
John Taylor Dry Goods, Kansas City, Mo.
Stewart Dry Goods, Louisville, Ky.
National Bank of Chester Co., West Chester, Pa.
Grosvenor Building, Providence, R. I.
Borough Hall, Staten Island, N. Y.
Potomac Electric Power Co., Washington, D. C.
Crescent Department Store, Spokane, Wash.
U. S. Post Office and Court House, San Antonio, Tex.
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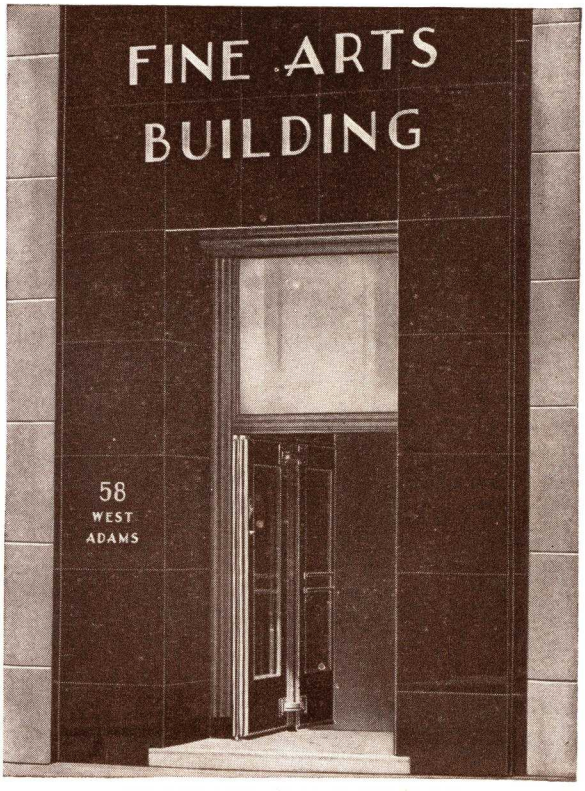
INTERNATIONAL REVOLVING DOORS

INTERNATIONAL REVOLVING DOORS TRADE MARK MOVE WITH THE TREND

INTERNATIONAL REVOLVING DOOR CO.
EVANSVILLE, INDIANA. U.S.A.

Aluminum Wings and Exterior: Walnut Interior
MILLER'S DEPARTMENT STORE—KNOXVILLE, TENN.
Archts: Barber & McMurry, Knoxville, Tenn.
Contrs: V. L. Nicholson Co., Knoxville, Tenn.



Black Formica: Chromium Hardware
FINE ARTS BUILDING—DETROIT, MICHIGAN
Archts: C. Howard Crane & Assoc., Detroit, Mich.
Contrs: F. Korneffel Co., Detroit, Mich.

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INTERNATIONAL RE

★ OF EVANSVILLE,

LOCAL REPRESENTATIVES

ALBANY, N. Y.—Harding Building Specialties Co., 271 Washington Ave.
BALTIMORE, MARYLAND—Edw. J. Seager, 308 Baltimore Life Bldg.
BOSTON, MASS.—Rubin-Burke Co., 216 Tremont St.
BUFFALO, N. Y.—Eugene F. Lerch, 259 Delaware Ave.
CASPER, WYO.—Harry Champion, 523 Park Ave.
CHARLESTON, W. VA.—General Roofing & Air Conditioning Co.
CHATTANOOGA, TENN.—Nixon-Hasselle Co., 1300 Carter
CHEYENNE, WYO.—The Colorado Builders' Supply Co., 1534 Blake St., Denver, Colo.
CHICAGO, ILL.—John H. Brodt, 228 N. La Salle St.
CINCINNATI, OHIO—Calvin C. Huenefeld, 626 Broadway
CLEVELAND, OHIO—Wm. C. Pfleider, Inc., 406-7 Swetland Bldg.
COLUMBUS, OHIO—Campbell J. "Honus" Graf, 358 N. High St.
DALLAS, TEXAS—R. M. Sedwick Company, 412 Construction Bldg.
DAVENPORT, IOWA—Benedict Material Company, 604 Union Bank Bldg.
DAYTON, OHIO—G. H. Condit, 712-713 Gas & Electric Bldg.
DENVER, COLO.—Colorado Builders' Supply Co., 1534 Blake St.
DES MOINES, IA.—Hawkeye Engineering Company, 819 Hubbell Bldg.
DETROIT, MICH.—Theo. H. Ollesheimer, 2539 Woodward Ave.
ERIE, PENNA.—Geo. H. Kraft & Son, 602 Shenley Drive
FORT WORTH, TEXAS—R. M. Sedwick Co., 412 Construction Bldg., Dallas, Texas
GRAND RAPIDS, MICH.—Haven-Busch Co., 501-519 Front Ave., N.W.
HARRISBURG, PENNA.—Metal Building Products Co., 1515 N. Cameron St.
HARTFORD, CONN.—Bidwell Hardware Co., 1293 Main St.
HOUSTON, TEXAS—Robert Voigtlander, 1612 Miller St.
HUNTINGTON, W. VA.—James J. Weiler & Sons, 202 Elm St.
INDIANAPOLIS, IND.—Hoover Brothers, 630 Arch'ts. & Bldr's. Bldg.
JACKSONVILLE, FLORIDA—Specialty Supply Co., 412 Margaret St.
KANSAS CITY, MO.—B.D.R. Materials, Midland Bldg.

★ ★ PRODUCTS ★ ★

A complete line of revolving doors and revolving door entrances, including enclosure walls, wings, mechanism, and hardware. Accessory items in connection with Revolving Doors, such as swing doors, sliding doors, glazed panels, transoms, etc., are furnished when desired.

International Revolving Doors can be furnished in all the finer grades of cabinet woods, Formica, aluminum, bronze, nickel silver and stainless steel.

★ ★ DESCRIPTION ★ ★

Newer, smarter, more economical and dependable—International Revolving Doors have revolutionized many old conceptions about revolving door design and operation.

They are in perfect accord with modern architectural conceptions. They have sweeping, curved enclosure walls with smooth surfaces of modern metals, plastics, and wood. Hardware, facia and pilasters harmonize with the newer architecture, or bring up to date the old. Flexible, they meet all traffic needs or architectural expressions.

The **STANDARD** line is made in various materials, (described on pages 6 and 7) and four basic construction methods. The design or sizes of this line are not fixed, but may be varied widely to interpret individual design.

The **STOCK** line (shown on page 8) is an economy line of wood doors where low cost is combined with high quality through production economies.

VOLVING DOOR CO.

INDIANA, U. S.A. ★

LOCAL REPRESENTATIVES

KNOXVILLE, TENN.—Chavannes Lumber Co., Inc., 400 W. Oldham Ave.
LEXINGTON, KY.—Faulkner Builders Supply Co., 585 E. Third St.
LITTLE ROCK, ARK.—Chas. E. Watts, Pyramid Insurance Bldg.
LOUISVILLE, KY.—The Equipment & Supply Co., 420 Baxter Ave.
MEMPHIS, TENN.—Geo. O. Friedel, Builders Exchange
MINNEAPOLIS, MINN.—Hauenstein & Deggendorf, 800 Builders Bldg.
MILWAUKEE, WISC.—Jackson & Fahey Co., Inc., 1311 Majestic Bldg.
MOBILE, ALA.—Zelnicker Company, Inc., 235 First National Bank Bldg.
NASHVILLE, TENN.—Builders Specialties Co., Third National Bank Bldg.
NEW YORK CITY, N. Y.—Wm. K. Waterman, 100 E. 42nd St.
OKLAHOMA CITY, OKLA.—Harry C. Geatches, P.O. Box 223
OMAHA, NEBR.—Kraus & Trustin, 636 Paxton Block
PEORIA, ILL.—Builders' Specialty Co., 325 S. Washington St.
PHILADELPHIA, PENNA.—Robert R. MacKay, 2206 Chestnut St.
PITTSBURGH, PENNA.—Joseph H. Throm, 1639 Oliver Bldg.
PORTSMOUTH, OHIO—Horr Brothers, 1302 Tenth St.
RICHMOND, VA.—M. R. Mills, Jr., 210 E. Franklin St.
ROANOKE, VA.—G. Eric Sachers, P.O. Box 1885
ST. LOUIS, MO.—Building Specialty Company, 2nd Floor Mart Bldg.
ST. PAUL, MINN.—Hauenstein & Deggendorf, 800 Bldr's. Bldg., Minneapolis, Minn.
SALT LAKE CITY, UTAH—Crager Wire & Iron Works, 34 E. 9th St., S.
SAN ANTONIO, TEXAS—Jno. W. Phillips Co., 207 Builder's Exch. Bldg.
SAN FRANCISCO, CALIF.—Rolph, Mills & Company, Rialto Bldg.
SYRACUSE, N. Y.—Waterman Building Specialties, 1407 Erie Blvd., E.
TOLEDO, OHIO—Spencer Comstock, 817 Security Bank Bldg.
TULSA, OKLA.—Ray S. Trimble, Philcade Bldg.
WASHINGTON, D. C.—H. G. Garlock, 412 Southern Bldg.
WICHITA, KANSAS—Grabendike Engineering Sales Co., P.O. Box 333
WINSTON-SALEM, N. C.—The Steel Service Co., P.O. Box 454

★ ★ SERVICE ★ ★

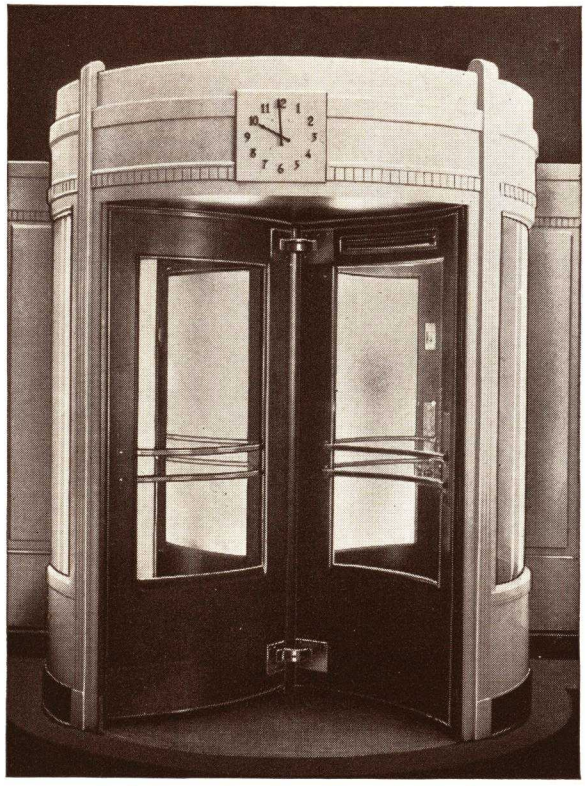
ENGINEERING: The International Revolving Door Company maintains a skilled engineering and design department at its home office in Evansville, Indiana. In addition, it is nationally represented in the principal cities.

This organization, or its representatives will cooperate (without obligation) with the architect in development of designs, or surveys of entrance requirements and recommendations as to capacity, and type best suited. In addition, International will develop figures on the exact cooling or heating loss in any type of entrance.

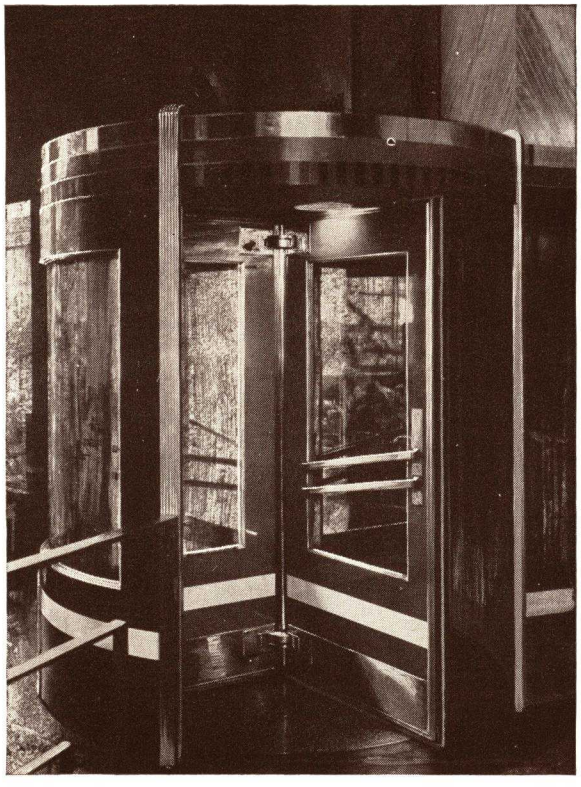
MAINTENANCE: Each branch office has experienced service men and a complete stock of parts to insure uninterrupted service.

★ ★ APPLICATION ★ ★

International Doors can be installed in entrances under varying conditions. By installing revolving doors, lobby areas now vacant because of draughts may be commercially occupied. Heat losses can be conserved in cold weather, and cooling losses in hot weather. High winds or chimney-like suction in tall buildings will make the use of swinging doors difficult, compared to the ease of operation of a revolving door. International Doors, having wings completely weather-sealed eliminate discomfort and damage resulting from draughts, dirt and noise. Savings resulting from above will soon pay for the initial cost of International Revolving Doors.



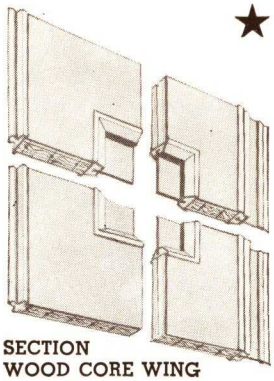
Birch Door: Natural and Enameled Finish
SMITH'S CAFETERIA—TOLEDO, OHIO
Archts: Mills, Rhines, Bellman & Nordhoff
Contr: J. H. Berkebile & Sons



Blue and Red Formica: Nickel Hardware
THOMPSON'S RESTAURANT—156 Mkt. St., NEWARK, N. J.
Archt: Garret J. Couchois, N. Y. City
Contr: Kuhn, Smith & Harris, N. Y. City

★ ★ ★

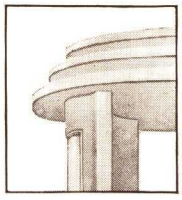
★ INTERNATIONAL STANDARD



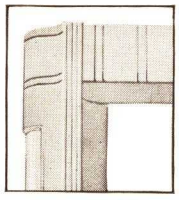
SECTION
WOOD CORE WING

★

DESIGN SUGGESTIONS



No. 500 WS



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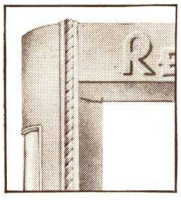
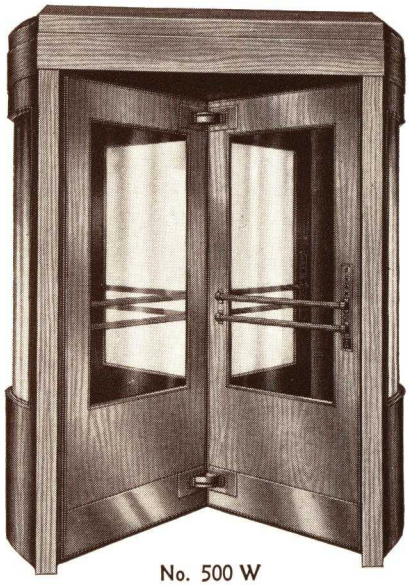


No. 300 A1-8

SERIES W

Wood Doors on a Wood Core

★



No. 500 W

SERIES F

Formica Doors on a Wood Core

★

No. 200 F

CONSTRUCTION—made of any veneered wood in finish specified. All wood doors are 5-ply laminated. They are waterproof, scientifically designed, with ventilated cores to prevent warping.

DESIGN—Base design includes hardware, wings, enclosure walls (unglazed, or glazed in quarter, or half sections), push plates, kick plates, and extruded metal bindings in glazed portions and outer edges of wings. Cornice included to be similar to one shown above.

Full circular cornice, special designs, swing doors, etc., may be added if desired.

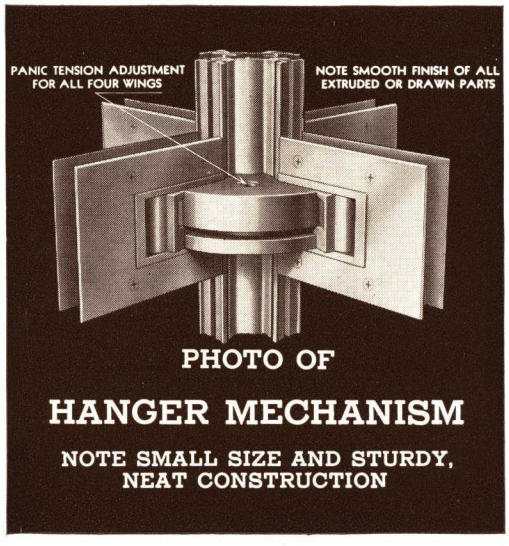
SIZES—International Doors are manufactured in any sizes—to fit building conditions. Recommended sizes are shown on page 9.

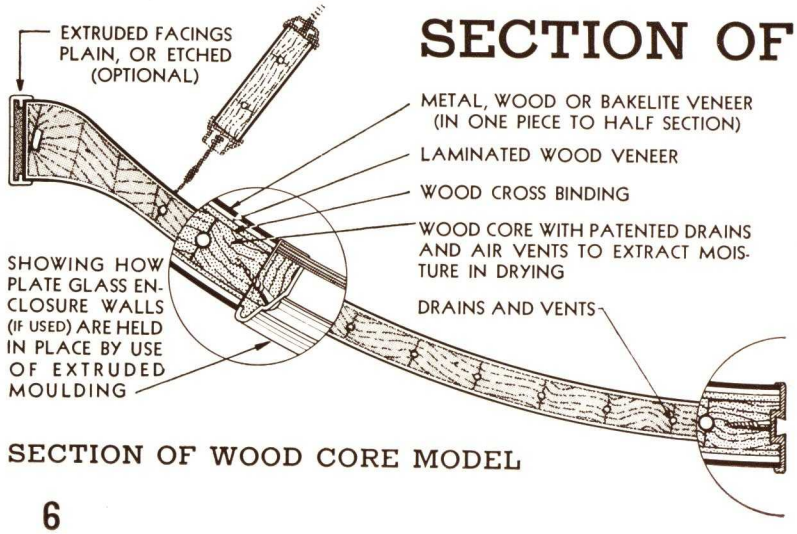
International has been the pioneer in the use of Plastics in the revolving door field. This process, as developed by International, consists in a special manufacturing technique by which the Formica covering is integrally bound to wood with waterproof adhesive under pressure.

To the Architect, this process opens a new field of design. It means that he can make his revolving doors (and accessories) in any of the wide range of plastic colors.

Formica can be inlaid with other colors, or various metals. Its finish is hard, permanent, and requires little care.

Conditions for design or size are same as for Series W.





SECTION OF

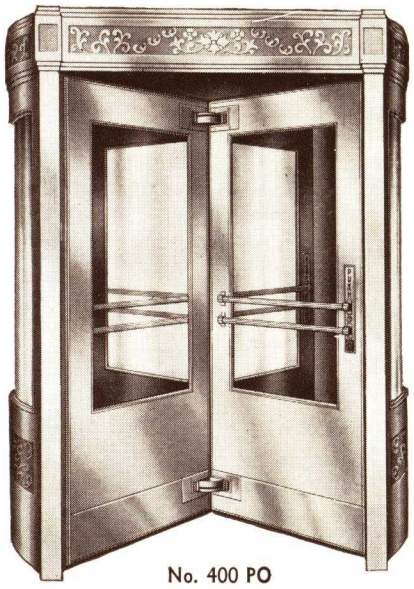
SECTION OF WOOD CORE MODEL

MODEL REVOLVING DOORS ★

SERIES PO

Metal Doors with Wood Core

★



No. 400 PO

A special process of prepared surfaces, waterproof adhesive, and pressure, make the metal surfaces of International Series PO doors an integral, permanent, outer surface to the wood.

An interesting effect made possible by this process is a combination of wood and metal, (or Formica) surfaces in the same door. As an example, an entrance in bronze may have the exterior revolving door surfaces bronze, and the inside veneered to harmonize with interior woodwork.

Any metal may be used: Aluminum (natural or alumilited), bronze, nickel, silver, stainless steel, monel, and many others have been successfully applied.

Glass moulding, hardware, binding, etc., are standard in extruded aluminum, bronze, nickel, silver, or bronze, chromium plated.

Design and size are same as for series W.

SERIES HM

Hollow-Metal with Tubular Wings

★

No. 300 HM

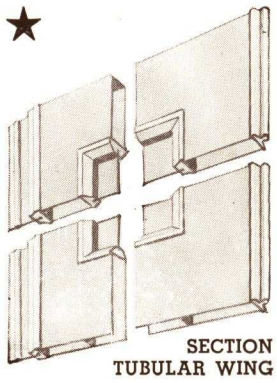
International hollow-metal doors—of all-metal construction are slightly higher in price than the series PO doors. They are permanent, rigid and fireproof.

CONSTRUCTION—The wings—of any metal—are made of seamless tubes welded and rigidly reinforced at corners. With the exception of alumilited aluminum, which shows a fine hair line at the top, there are absolutely no joints visible in International hollow metal wings.

The enclosure—of any metal—is fastened to a specially-braced, electrically-welded steel frame by concealed rivets or welds.

CORNICE—International's high standard of craftsmanship makes it possible to execute unusual, full circular, or special effects in all metal cornices.

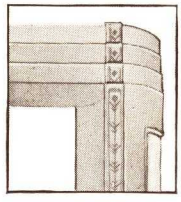
Conditions of design and size as for series W.



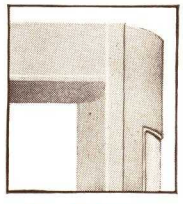
SECTION
TUBULAR WING

★

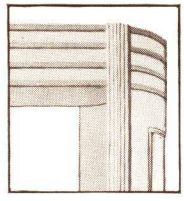
DESIGN SUGGESTIONS



No. 200 F2-4

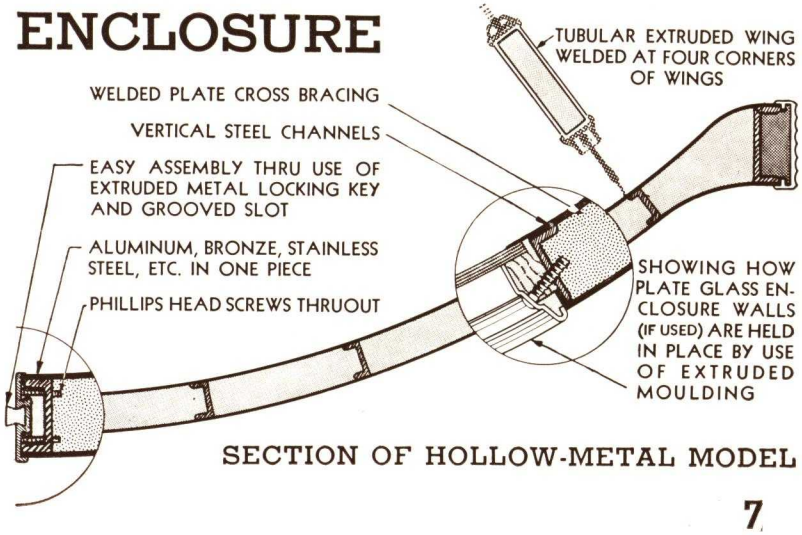


No. 500 W1

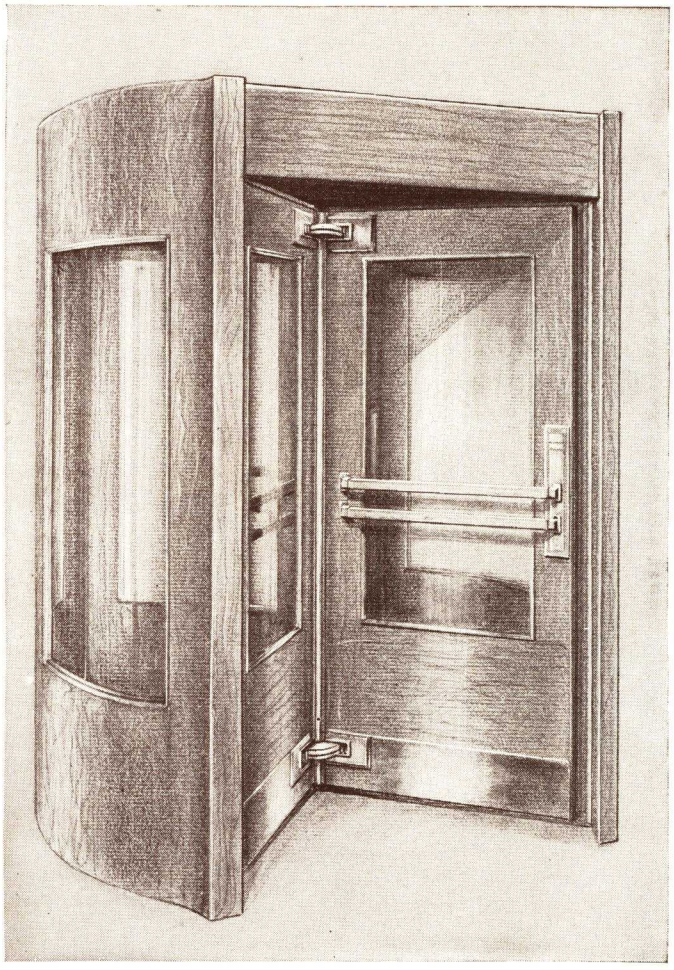


No. 200 F1-4

ENCLOSURE



SECTION OF HOLLOW-METAL MODEL



THE "900" SERIES STOCK DOORS

An economy line of wood doors carried in stock for quick delivery. A high quality product, priced economically only because of production economies.

DESIGN

Available only in the basic design shown at the left. This design may be altered in appearance by addition of horizontal moulds, cornices, lights, or any feature that does not change its basic structure.

MATERIAL

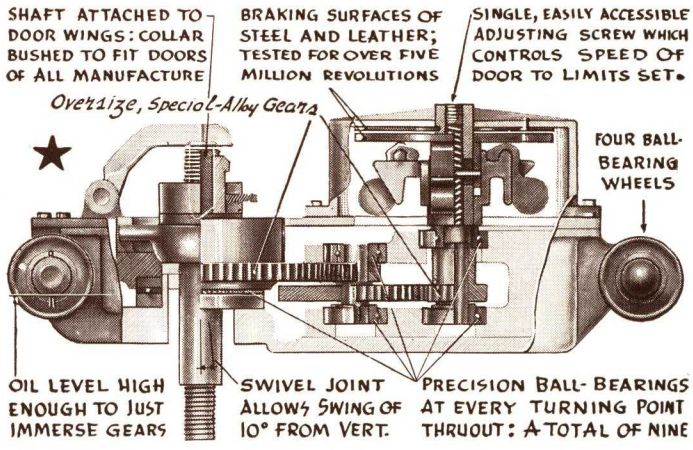
WINGS AND ENCLOSURES—Birch veneer with vented wood core, gloss varnished. (Four-coat hand rubbed varnish, enamel, or lacquer finishes, slightly higher.)

GLAZING—Enclosure walls are either flush veneered or glazed. Glass used is 7/32″ drawn plate. (Polished plate slightly higher.)

WEATHERSTRIPPING — Integral-felt-and-rubber, International airlock strip-adjustable for wear.

HARDWARE—Includes Standard International Simultaneous-Releasable-Panic-Proof hardware, kick-plates, pushplates, two standard pushbars approach side of each wing and standard track and trolley. Finish is bronze—natural, satin finish. Chromium plated or nickel silver optional at slight advance in price.

SIZES — Diameter 5′6″—6′0″—6′6″—7′0″. Height 6′10″ and 7′0″. Inner stile 5½″—outer stile 5½″—top rail 8″—bottom rail 24″. Cornice height 10½″. Refer to plan on opposite page for other dimensions for each diameter.



LEGEND OF OPERATION—*Revolving door shaft (with a cup-and-finger pivot to allow door to swing 10° from vertical) is connected to rotating assembly (top right of diagram) by a ball bearing gear system having a total ratio of 16 to 1.*

Speed control is made up of four brass weights which hang upon and bear against a rotating rack. Rotation of door past set speed makes these weights press upward against rotating brass disc, which touches leather brake washer, causing braking reaction magnified 16 times through gearing system.

Two springs in opposition against a pin set in rotating disc determine its vertical position. An accessible set screw at top acts on the springs, providing precise adjustable speed control.

SPEED CONTROL AND GOVERNOR

DESCRIPTION—The International Speed Control is a postive "limit" brake of the centrifugal type. It controls speed below any predetermined limit. At normal speeds, it is completely out of engagement.

ADVANTAGES—An International Speed Control prevents spinning and bumping, handling more traffic more efficiently. It reduces wear on all parts—especially rubber strips—and assures safety and convenience to revolving door users. The International Speed Control is recommended by all insurance companies who have investigated entrance accidents.

UNIVERSALITY—The International Speed Control may be installed on revolving doors of any make.

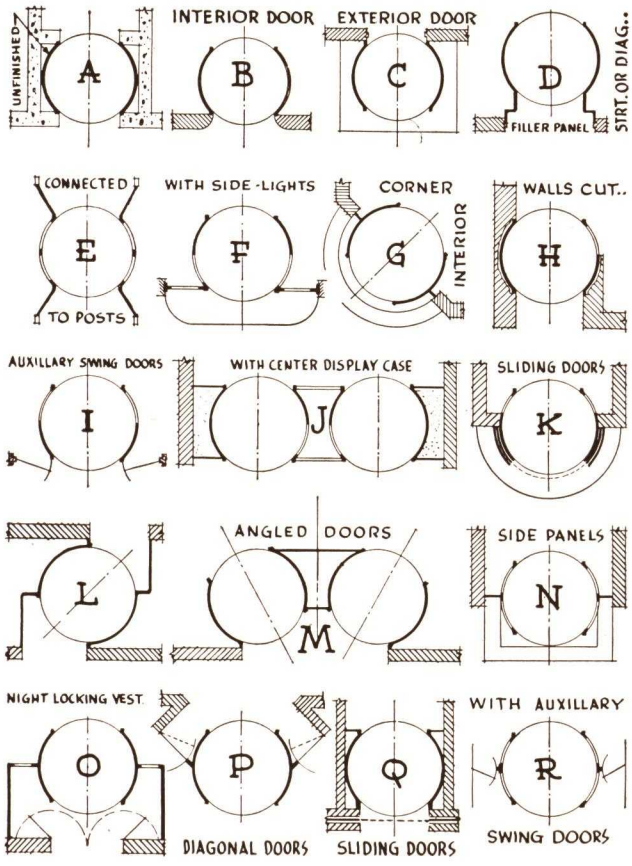
SPACE REQUIRED—Clearance required is the same as that required for standard track and trolley, which is shown at bottom right of page 9.

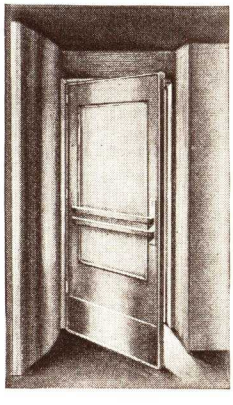
MAINTENANCE—The International Speed Control requires no oiling. Adjustment is made by one easily accessible adjustment screw. Exclusive mechanical features such as ball bearings, special alloy gears running in oil, etc., result in a governor that will run for years with little or no attention.

International Speed Control is protected by U. S. patents and applications, among which are: Patents No. 1,946,160; 2,029,318; 2,047,468. Other patents pending.

TYPICAL FLOOR PLANS

Below are shown some special and typical conditions that may occur. These are not standard plans, but are included simply as suggestive, and for convenience in correspondence.

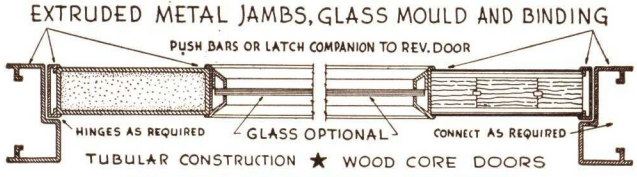




SWING DOORS

International auxiliary swing doors are made in identical materials to the standard line of revolving doors described on pages 6 and 7. They are available in wood, Formica, and metal on a wood core; and hollow metal tubular, with extruded jambs.

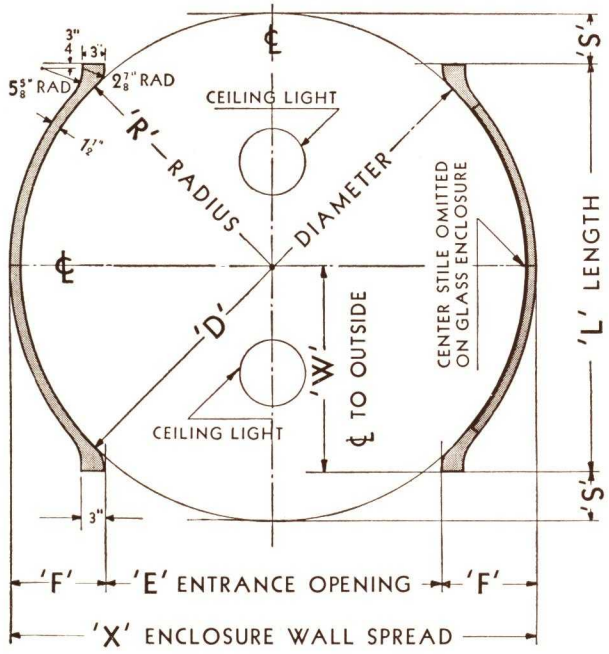
Extrusions, pushplates, pushbars, colours, finish, etc., being companion or identical with revolving door, permit consistency in both design and construction.



TYPICAL HORIZONTAL SECTION

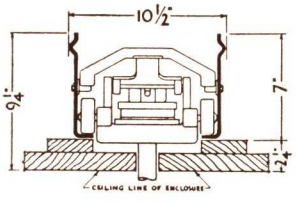
STANDARD DOOR SIZES

STANDARD AND STOCK ENCLOSURE PLAN



STANDARD DIMENSIONS FOR PLAN ABOVE

'D'	'R'	'E'	'X'	'L'	'F'	'S'	'W'
6'-0"	3'-0"	4'-0 3/4"	6'-3"	4'-9 1/8"	1'-1 1/8"	7'-7/16"	2'4 9/16"
6'-2"	3'-1"	4'-2 1/4"	6'-5"	4'-10 3/8"	1'-1 3/8"	7'-13/16"	2'5 3/16"
6'-4"	3'-2"	4'-3 7/8"	6'-7"	4'-11 1/2"	1'-1 9/16"	8'-1/4"	2'5 3/4"
6'-6"	3'-3"	4'-4 7/8"	6'-9"	5'-1 3/8"	1'-2 1/16"	8'-5/16"	2'6 11/16"
6'-8"	3'-4"	4'-6 1/4"	6'-11"	5'-2 5/8"	1'-2 3/8"	8'-9/16"	2'7 5/16"
6'-10"	3'-5"	4'-8"	7'-1"	5'-4 1/8"	1'-2 1/2"	8'-15/16"	2'8 1/16"
7'-0"	3'-6"	4'-8 7/8"	7'-3"	5'-5 3/4"	1'-2 3/8"	9'-1/8"	2'8 7/8"
7'-2"	3'-7"	4'-10 3/4"	7'-5"	5'-6 3/4"	1'-3 1/8"	9'-3/8"	2'9 3/8"
7'-4"	3'-8"	5'-0 1/2"	7'-7"	5'-8"	1'-3 1/4"	10"	2'10"
7'-6"	3'-9"	5'-2 1/8"	7'-9"	5'-9 1/4"	1'-3 7/16"	10 3/8"	2'10 5/8"
7'-8"	3'-10"	5'-2 3/4"	7'-11"	5'-11 3/8"	1'-4 1/8"	10 5/16"	2'11 11/16"

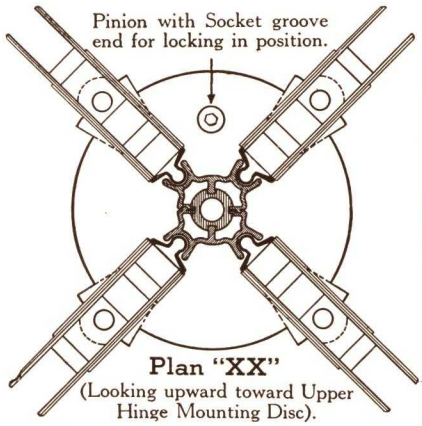


Section through trolley (and speed control) showing clearances required above ceiling for housing mechanism.

Standard door height whatever required, with recommended height 7'0" or 7'6".

Information on such special items as motor control, burglar locks, flexed walls, etc., will be furnished on request.

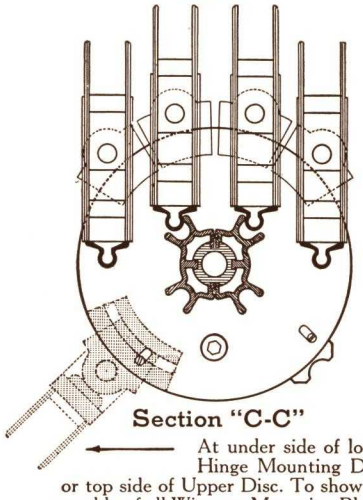
DETAILS OF PANIC-PROOF MECHANISM



Plan "XX"
(Looking upward toward Upper Hinge Mounting Disc).

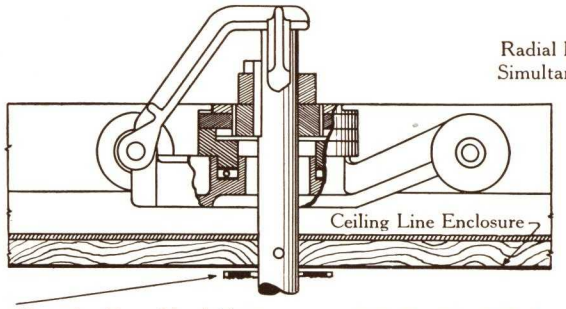
Showing all Wings locked in a revolving position. The Center Shaft Housing of extruded metal member with four rounded angularly spaced grooves receives, engages and seats the extruded metal members the full height of inner edges of Wings, thus stabilizing and completely air-sealing the Wings.

Plan "Y-Y"
Showing Wings collapsed and folded outward

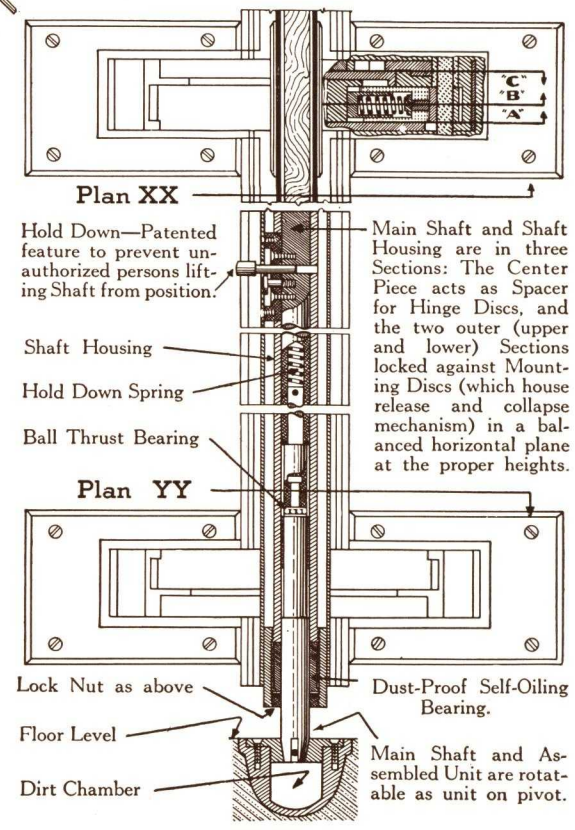


Section "C-C"

At under side of lower Hinge Mounting Disc, or top side of Upper Disc. To show assembly of all Wings to Mounting Block. Annular Mounting Guide (moving in groove as shown) controls movement of Wings (within limits) in revolving and collapsible position.

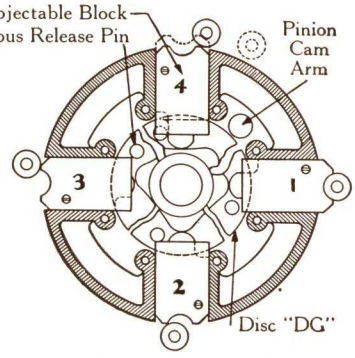


Upper (and lower) Lock Nut to assure positive locating of Shaft Sections against Hinge Mounting Discs. Seals the Shaft Housing against dust and dirt.



LONGITUDINAL SECTION

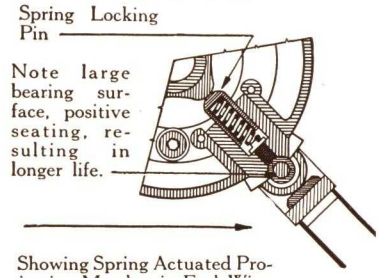
Showing Speed Control, Door Hanger, Roller Carriage, Shaft and Housing, Hinge Mounting Discs and Release Roller Locking Device.



Section "A-A"
(Looking Upward)

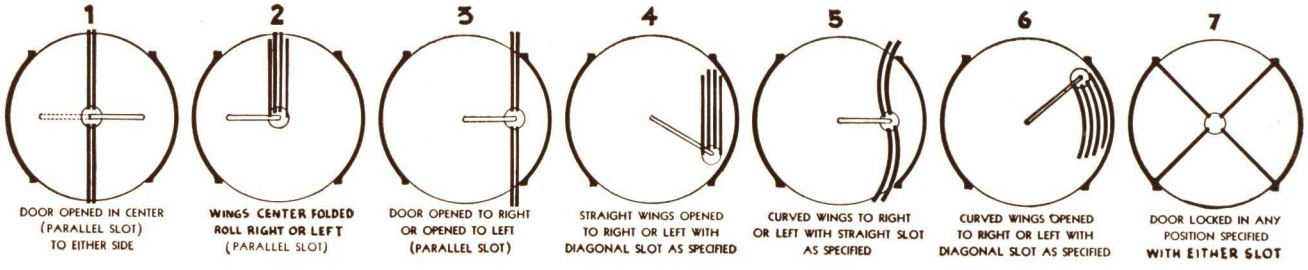
Of Hinge Mounting Discs. Note Annular Cam Actuator for shiftable movements (within predetermined limits) to simultaneously lock or unlock Wings. Wing No. 4 shows cam face of Actuator rotated to a position out of path of the spring projected Locking Pin in Wing, thus freeing and allowing Wings to collapse. The Cam Plate shown as Disc "DG" is machined integrally with Cam Actuator Disc, and has on its reverse side a geared quarter section for controlled movement of Cam Actuator within predetermined limits. This geared quarter section meshes with geared end of Pinion (shown above) on whose reverse end is a grooved socket to receive key for manual locking of Wings.

Section "B-B"



Showing Spring Actuated Projecting Member in End Wing Sections engaging Cam Arm of Cam Plate in revolving position.

VARIOUS FOLDING POSITIONS OF STANDARD WINGS



INTERNATIONAL REVOLVING DOOR COMPANY

SPECIFICATIONS

GENERAL

Revolving Door contractor shall furnish and install as indicated on plans and specifications .... revolving doors Series .... No. .... as manufactured by the International Revolving Door Company, Evansville, Indiana, U.S.A., or an approved equal. Revolving Door contractor to furnish and install enclosure walls, ceiling, cornice, mechanism, trolley, and all necessary hardware and glass.

MECHANISM

Mechanism shall be simultaneously releasing collapsible panic proof, by which application of excess pressure to one or more of the four wings will cause all the remaining wings to be simultaneously released from tension, and entirely free to collapse and swing outward. Mechanism shall be equipped with easy adjustment to allow door wings to be "individually" collapsible, so they may be reset by one man.

Main shaft and shaft housing to be in three sections—the center piece to act as a spacer for hinged disc, and the two upper and lower sections to lock against mounting disc in a horizontal plane.

Door to be equipped with a hold down spring in shaft to prevent unauthorized persons lifting shaft from position.

Mechanism throughout the door shall be sealed and protected from dust and dirt. Mechanism shall be provided with a lower pivot bearing of Parkerized steel and Oilite bronze.

Locking system to have steel-bearing-against-steel and moving engaging members of solid stainless steel.

The center shaft housing to be an extruded metal member with four, rounded, angularly-spaced grooves to receive, engage and seat an extruded metal member which extends the full height of inner wing edges, and stabilizes and completely air-seals wings.

WINGS AND ENCLOSURE WALLS

Wood veneer on wood core—All revolving wings and enclosures to be five ply—(specify wood) on a ventilated wood core. The enclosure walls to be of sweeping streamlined design with corner post laminated as part of the enclosure walls.

Metal Veneer on Wood Core—All revolving wings and enclosures to be ..... gauge ..... (specify metal) glued to five ply ventilated wood core with a water-proof adhesive under pressure. Finish of metal to be .....

(Following is minimum thicknesses of metal recommended for enclosures and wings: Aluminum No. 16 B. & S. gauge; Nickel Silver No. 16 B. & S. gauge; Stainless Steel No. 22 U.S.S. gauge; Bronze No. 16 B. & S. gauge.)

Formica on Wood Core—All revolving wings and enclosures to be of (specify color) ..... Sheets to be applied under pressure with special waterproof adhesive five-ply ventilated wood core. Wings and enclosure walls to be finished ..... (dull or polished finish).

Hollow Metal Doors—The wings to be of tubular metal construction welded and polished, with the exception of alumilited doors which can not be made on welds and are, therefore, fastened with concealed rivets. No joints to be visible. All corners to be reinforced with solid metal.

Enclosure walls to be of ..... gauge ..... metal fastened to steel channel structural supports with welds or concealed rivets. All welds to be ground and polished so no joint is visible (except on alumilited doors where a hairline will show at the top of wings).

OVERHEAD TROLLEY

Wings to be assembled to main shaft, which in turn is securely anchored to and suspended from overhead trolley or carrying member. Trolley to be constructed of steel parts, including ball bearing wheels and track housing. Trolley to be provided with means for rolling all wings to one side of enclosure.

HARDWARE

Weather strip to be integrally vulcanized, one piece felt and rubber, secured by a special clamp which will permit moving the felt out to a second groove when it becomes worn.

Weather strip to be secured by Double wear clamp No. ..... (specify number).

No. 1. All metal snap clamp which has no screws visible, and slips into extruded mouldings on three edges of each wing.

No. 2. Wood clamp fastened by screws and set in extruded moulding on all three edges.

No. 3. Wood clamp for wood wings. Weatherstrip to be set in wing itself and held by a double grooved wood clamp fastened to door with visible screws.

Push Bars and Push Plates—Push bars to be of extruded metal section in one piece and to be secured by a solid metal bracket.

Push plate to be of aluminum, bronze, etc., etched or plain as desired.

Air Sealing—All four wings are to be completely air-sealed on the inside edges with special full length extruded moulding.

Master-keyed, regular or burglar-locking systems optional.

GLASS

Glass—good quality American polished plate glass of ¼" thickness.

CEILING AND PILASTER LIGHTS (Optional)

One or two flush ceiling lights to be furnished, including reflectors and removable glass covers, but not to include any electric fixtures. (This latter item and wiring are to be included under "electric contract.")

TRAFFIC SPEED CONTROL (Optional)

Speed of revolving door shall be controlled by a mechanical device, attached and assembled in the trolley carriage. This centrifugal brake shall have special alloy, oversize steel gears operating in oil; friction surface protected from oil splash, and precision ball bearings throughout. The brake shall remain out of engagement at normal speeds. The mechanism to have a single adjustment screw, easily accessible, to keep door speed below any predetermined limit.

AUTOMATIC SLOT CLOSURE (Optional)

Furnish automatic slot closure in ceiling of door opening as required.

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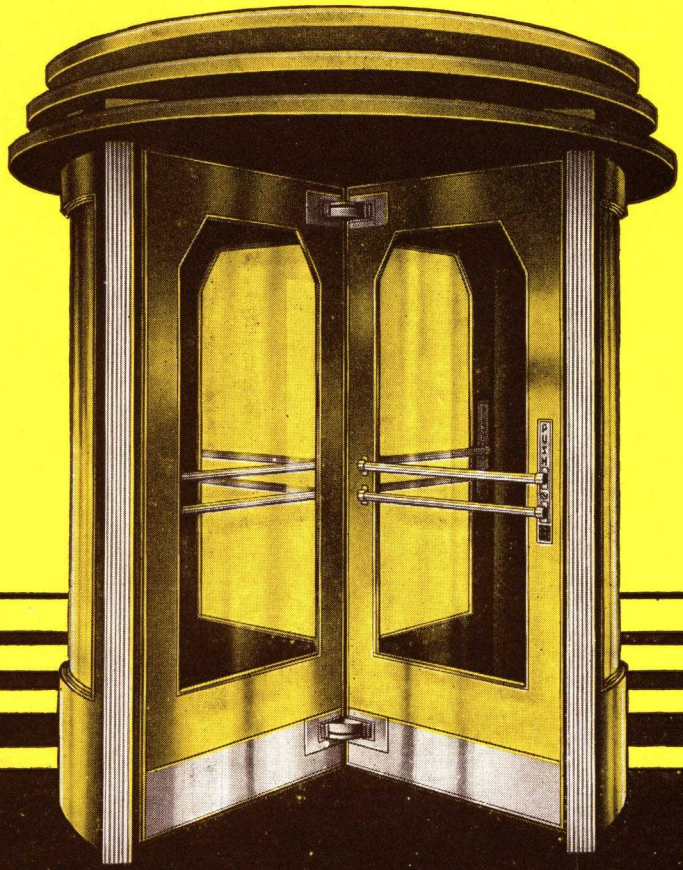
INTERNATIONAL REVOLVING DOORS

INTERNATIONAL REVOLVING DOORS
TRADE MARK
MOVE WITH THE TREND



INTERNATIONAL REVOLVING DOOR CO.
EVANSVILLE, INDIANA. U.S.A.

ALWAYS OPEN—ALWAYS CLOSED

Maximum
Entrance Visibility

VAN KANNEL REVOLVING DOORS

The Van Kannel Revolving Door Co.

PRODUCTS, FACILITIES & SERVICE

Van Kannel Revolving Doors have always been built to the highest standards of workmanship and material. This is demonstrated by the hundreds of Van Kannel Revolving Doors which have given continuous day-in and day-out service for 20, 30 and 40 years and are still operating satisfactorily. This quality construction has resulted in an enviable record of durability and service, and has proven that a well-built revolving door is the most inexpensive entrance for a modern building. Large operators of real estate have found revolving doors more economical to maintain and operate than swing doors and door checks.

Architects, contractors and owners have found that the revolving door is a specialty that requires exceptional experience and training for its successful manufacture, installation and service. Van Kannel has developed a capable service organization in more than 100 cities throughout the country. This organization has been an important factor in the excellent record for durability and reliability of Van Kannel revolving doors and the many economies made by them.

Van Kannel Products

Revolving Doors

A revolving door consists of three or more wings mounted on a central shaft, rotating as a unit inside of circular enclosure. The door is so designed that the entrance is always sealed against drafts or air flow. Persons entering or leaving the building pass through the compartment formed by any two of the wings, operating the door by pushing or leaning against the wing directly ahead. As the wings are always in contact with both sides of the circular enclosure, the use of the entrance does not break the seal of the opening against drafts or air flow.

Continuous improvements have made the modern Van Kannel revolving door the most convenient type of entrance and the most suitable for heavy traffic. Being in perfect balance against wind and suction pressure, Van Kannel revolving doors always operate with effortless freedom at normal speeds.

Collapsible and Panic Proof

Modern revolving door mechanism is so designed that excessive pressure on any wing causes it to be released and to fold about the center shaft before damage or injury can occur. In emergencies or panics, pressure on the wings *instantly* releases them from their radial position and collapses them like the pages of a book, folding them outward in line of egress. This leaves a free unobstructed passageway on both sides of the center shaft.

The center shaft is carried on an overhead roller bearing trolley and track. When desired, the wings may be folded in pairs and rolled to one side of the opening, leaving a clear, unobstructed passageway.

Door Traffic Adapter

This is a control which prevents speeds in excess of a normal walking rate. It increases the normal capacity of the door and avoids the inconvenience and discomfort which results from excessive speed.

Revolving Pantry Pass Windows

This compact unit, including two decks of a variable diameter to meet specific requirements, revolving within a circular enclosure, is used for the passage of food between kitchen and pantry, and for the exclusion of cooking odors.

Van Kannel Facilities

FIRST MAKER AND ORIGINAL PATENTEE OF REVOLVING DOORS

Van Kannel is the pioneer manufacturer and original patentee of revolving doors. Always leading in the development of revolving doors, the company has patented all recent improvements. It offers a complete service in the design, manufacture, installation and maintenance of revolving doors of the most modern and improved type.

Engineering Service For Architects

Van Kannel engineers and representatives are widely experienced in analyzing entrance conditions to determine the economic value of a revolving door for any entrance. Such an analysis will show the savings and economies to be effected by a revolving door suitable for the entrance. This service is available to architects and owners.

Erection and Maintenance Service

Van Kannel revolving doors are installed and serviced by trained, responsible men. This is as essential for satisfactory operation as high quality construction. A successful revolving door depends on excellent workmanship and thorough care in installation—*both* must be of the best for a smooth operation and reliable service. In Van Kannel revolving doors both are assured—*by adequate manufacturing facilities—by a thoroughly experienced service organization.*

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VAN KANNEL REVOLVING DOOR CO.

101 PARK AVENUE NEW YORK, N. Y.

THE 4 MOST IMPORTANT REASONS WHY YOU SHOULD SPECIFY *Revolving Doors*

1. Only Revolving Doors Can Cope with Modern Traffic Volume and Draft Intensity

The necessity for revolving doors at the entrance to modern buildings, banks, restaurants or stores is caused by modern intensity of draft and traffic. The lack of protection and limited capacity of hinged or swing doors or swing door vestibules makes them inadequate to meet the needs of modern conditions.

A modern revolving door always rotates without effort and at a convenient rate of speed.

Being in perfect balance, it is not affected by wind or suction pressures.

Its rotation divides traffic naturally to the right and left, obviating confusion.

Its speed control (the Traffic Adapter) regulates the speed to the volume of traffic—never more than a normal walking rate—providing capacities far in excess of hinged door entrances.

This controlled operation makes it especially suitable for entrances to stores or buildings from which people carry packages, since the operation simply requires that the user walk through and lean or push against a wing.

The revolving door protects valuable sales areas or lobbies near the entrance from the costly handicap of drafts and chill in winter and of heat and humidity in summer.

It prevents losses by shutting out the dust and dirt of present-day streets.

It reduces the cost of heating in winter and the cost of air conditioning in summer.

2. Reduces Heating Costs—By Lowering Infiltration Losses

The second difficulty, and the more important, is caused by the intense entrance drafts and excessive infiltration resulting from the wind and suction pressures referred to above. Under normal winter temperature (approximately 35° F.) the combined effect of wind pressure and suction pressure produces entrance draft velocities that vary between 10 and 30 miles per hour, depending upon the height of the building, the chimney action or the exhaust suction. In severely cold weather, these velocities become excessive . . . the chimney action of tall buildings frequently producing draft velocities of 60 miles per hour.

Returning to a consideration of normal conditions, we find that the operation of a single swing door causes a draft opening per person which is equivalent to a full door opening for a period of two seconds. The draft volume for each person passing through a single swing door entrance varies from 600 to 1800 cu. ft. With a swing door vestibule, which actual tests show to have an equivalent full draft opening of 1.5 seconds for each person, the draft volume varies from 450 to 1350 cu. ft. per person passing through.

Revolving doors, by actual tests in the field and laboratory, show an average displacement of 26 cu. ft. per person passing through. This volume is not affected by variations in draft pressure or wind pressure. It depends only on the size of the revolving door and the number of people using it. When more people use it, it becomes more efficient, for the cubic feet per person is lower as the operation speeds up.

3. Eliminates Difficult Door Operation in All Weathers

A revolving door, *which is always in perfect balance*, eliminates difficult door operation. Its operation is uniformly easy and regular under *all* conditions of wind pressure, suction pressure and temperature. It assures satisfactory, convenient, effortless operation month-in and month-out.

4. Reduces Air Conditioning Costs

In the case of a store or building which is air-conditioned for summer cooling, the value of a revolving door is doubled. It protects against dust-laden, super-heated humid air being swept in from sun-baked sidewalks and pavements and is as important, for economical operation, as a means of preventing loss of cooled conditioned air in summer, as it is in the prevention of air infiltration in winter.

The principal need for a revolving door in connection with air-conditioning (summer cooling) is the elimination of entrance infiltration. In hot weather, infiltration is due primarily to entrance drafts caused by wind velocity. In modern cities, the eddy currents and pressure areas caused by the obstruction of large buildings, induce entrance drafts even where there is no direct exposure to prevailing winds. The operation of the air-conditioning unit itself frequently creates a difference in pressure that causes entrance infiltration or exfiltration that represents a waste of cooled, conditioned air.

This entrance infiltration, which occurs during the opening and closing of doors as people pass in and out, causes an average displacement of 150 cu. ft. of air per person passing through a single swing door entrance, and 125 cu. ft. for each person passing through a swing door vestibule entrance, in stores or buildings having more than one entrance. As compared to this, the average displacement of a revolving door . . . depending on the size of the door and the number of people using it . . . is 26 cu. ft. for each person passing through the entrance. The reduction of 100 to 125 cu. ft. of infiltration per entrance passage where revolving doors are used represents the exclusion of a vast amount of hot, humid dust-laden air that seriously affects the efficiency of the air-conditioning installation.

The following table shows the economies resulting from the use of a revolving door. The more traffic there is, the greater is the need of protection.

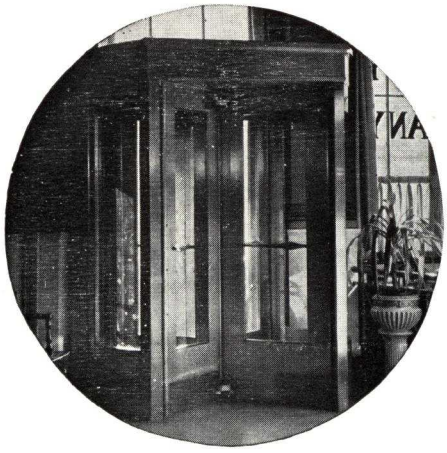
REDUCTION IN COOLING LOAD GAINED BY USE OF REVOLVING DOORS IN STORES OR BUILDINGS WITH ENTRANCES IN TWO OR MORE OUTSIDE WALLS

Number of persons entering and leaving per hour	100	400	800	Wide open double door
Saving in infiltration, cu. ft. per hour	20,000	80,000	200,000	500,000
Saving in cooling load, tons capacity	1	4	9	23

COMPARATIVE INFILTRATION REVOLVING DOORS VS. SWING DOORS

Height of building	Average draft velocity under normal winter conditions, miles per hour	Infiltration (cubic feet per hour) with 1000 entrance passages per hour—500 "in," 500 "out"		
		SWING DOOR 2 seconds effective draft opening per person	SWING DOOR VESTIBULE 1.5 seconds effective draft opening per person	REVOLVING DOOR
10 Floors or usual restaurant exhaust ventilation	14	820,000	615,000	26,000
20 Floors	16	940,000	700,000	26,000
30 Floors	18	1,030,000	790,000	26,000
40 Floors	20.5	1,200,000	900,000	26,000

ADVANTAGES OF *Revolving* DOORS
In BANKS, HOTELS, RESTAURANTS, OFFICE BUILDINGS, STORES, SHOPS



Bronx County Trust Co.

Insures Orderly Traffic in Banks

Revolving doors provide protection to officers, customers and employees against the chilling discomfort of wasteful, dangerous entrance drafts. Better health, greater efficiency, more business.

The most convenient and accessible entrance. Revolving doors operate without effort under all conditions of wind pressure and cold weather. They always assure greater capacity by the orderly division of traffic.

A saving in fuel varying from $60.00 to $600.00 per year.

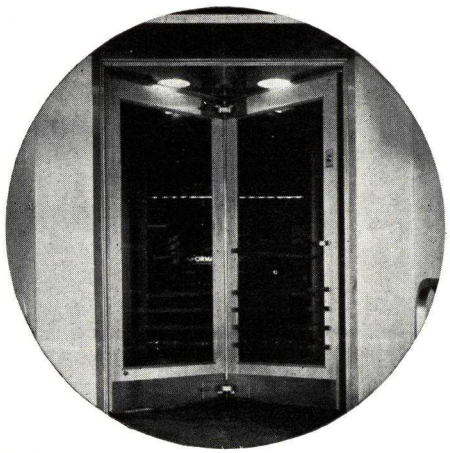
A material saving in the cost of installing and operating an air-conditioning plant.

The elimination of dust and dirt from the street.

Lost cost of maintenance for entrance doors.

A substantial saving in building cost by reduced radiation requirements, the elimination of swing doors and ineffective vestibules.

With modern safety mechanism and speed control, the prevention of entrance accidents and elimination of confusion.



Hotel Astor

For Draftless Hotel Lobbies

They result in assurance of a comfortable, draftless lobby . . . providing complete comfort for guests under all weather conditions.

The most convenient and practical hotel entrance. Porters loaded with luggage merely push their way through . . . no holding the door open to chill the interior . . . no interference with other traffic.

Protection of health and increased efficiency of employees stationed in the lobby, through the elimination of drafts and chill.

Reduction in the cost of heating plant and an annual saving in cost of fuel.

Saving in initial cost of air-conditioning system and in annual cost of operation.

Protection to furnishings and decorations, preventing depreciation by dust and dirt carried in by entrance drafts.

A balanced door which operates without effort under all weather conditions. There is no expense for adjusting and maintaining swing doors and door checks.

Traffic control that provides maximum capacity with an orderly division of "in" and "out" traffic.

Freedom from entrance accidents and inconvenience.

Astor Bar

Makes Clean, Pleasant Restaurants

Assures increased sales in the valuable area near the entrance by protection against the handicaps of drafts and chill in the winter and of heat, dust and dirt from the street in summer.

Improved health and efficiency of cashiers, waiters and other employees by the elimination of severe entrance chill.

A saving in fuel and in the cost of radiation for winter heating.

A material saving in the cost of installation and operation of an air-conditioning plant.

Elimination of dust and dirt from street drafts . . . improving sanitation and reducing the cost of cleaning, dusting and re-decorating.

Lower maintenance cost than other types of doors.

Greater convenience and capacity for entrance traffic. Revolving Doors are not affected by wind pressure or suction pressure but *always* operate without effort at a controlled rate of speed.

Denver Telephone Bldg.

Lower Heating Costs in Office Buildings

They bring protection against entrance drafts caused by severe chimney action in tall buildings, resulting in:

- Increased comfort for tenants, visitors and employees.
- Saving in fuel.
- Improved health and efficiency of employees.
- Greater value to cigar stands and other concessions.

The most convenient and accessible entrance. Revolving doors operate without effort under all conditions of wind pressure and cold weather. Furthermore, greater capacity is provided by modern controlled speed and the orderly division of traffic.

Reduction in cleaning and decorating by the elimination of dust, dirt and filth from street drafts.

Lower cost of maintaining entrance doors than is possible with swing doors and door checks.

A lower first cost of the building, resulting from savings in radiation and elimination of ineffective swing door vestibules.

Bloomingdale's Dept. Store

Increases Entrance Counter Sales in Stores

Vital protection is given to small sales areas against the serious handicap of chilling blasts from the entrance doors in winter, resulting in:

- Increased sales . . . the result of comfortable conditions for both customer and employee.
- Saving in fuel.
- Improved health and efficiency of employees.
- Marked reduction in depreciation of displayed merchandise because of the elimination of dust and dirt from the street.

In summer, protection against hot air from sun-baked pavement and sidewalks bring:

- Reduced cost of air-conditioning plant and its operation.
- Further saving in depreciation by shutting out dust-bearing drafts.

Greater capacity and convenience of entrance due to the effortless operation and the division of incoming and outgoing traffic at a controlled rate of speed.

Protection to paint and decorations by the elimination of dust and dirt.

Elimination of the cost of excess radiation and wasteful vestibule.

I. Miller Store

Eliminates Street Dust in Shops

Revolving doors make for increased sales in ground floor areas near the entrance. Drafts and chill from entrance doors are eliminated in winter, and heat, dust and dirt from entrance doors are excluded in summer.

Improved health and efficiency of employees on the street floor by the elimination of entrance drafts and chill.

Reduced depreciation of merchandise on display near the entrance as the result of the elimination of dust, and dirt from the street.

A saving in fuel and in the amount of radiation needed in winter for heating.

A substantial saving in the cost of installing and operating an air-conditioning plant.

Less cleaning and dusting of stock, merchandise, walls, fixtures and furniture.

An entrance door which is always easy, convenient to operate and with a minimum of upkeep and expense.

Greater capacity and better traffic control due to speed regulation and natural division of traffic to right and left.

The Van Kannel Revolving Door

MEETS *Your* REQUIREMENTS ON *Every* COUNT

The Basic Principle of Van Kannel Revolving Doors

A revolving door consists of three or more wings mounted on a center shaft rotating as a unit inside a circular enclosure. The door is so designed that the entrance is *always sealed* against drafts or air flow. Persons entering or leaving the building pass through the compartment formed by any two of the wings, operating the door by pushing or leaning against the wing directly ahead. As the wings are always in contact with both sides of the circular enclosure, use of the entrance does not break the seal of the opening against draft or air flow.

Continuous improvements have made the modern Van Kannel Revolving Door the most convenient type of entrance and the most suitable for heavy traffic. Being in perfect balance against wind and suction pressures, Van Kannel Revolving Doors always operate with effortless freedom at normal speeds.

Every Size to Meet Your Needs

Four wing revolving doors are ordinarily made 6′10″ or 7′0″ high, and vary from 5′6″ to 7′6″ in diameter. There is rarely any need for the use of a door over 7′0″ in height, and it is recommended that for ease of operation and the utmost in convenience, doors do not exceed this height. The most popular diameter is 6′6″, but where space is limited, a 5′6″ diameter door will give entire satisfaction. At entrances where a considerable number of people are carrying luggage or bundles, a 7′0″ diameter door is recommended.

Flexed Walls Available for Maximum Clear Width

In instances where additional width is a factor of importance, such as for the purpose of admitting automobiles to the lobby of a hotel for display purposes, Van Kannel doors can be furnished with enclosure walls that are hinged to a narrow center panel, permitting them to swing back, and providing the full width of the enclosure.

Capacity Tests Do Not Tax Van Kannel Doors

At a normal walking rate, a revolving door rotates 15 revolutions per minute. Each revolution provides unobstructed passageway for four persons both "*in*" and "*out.*" With the modern Traffic Adapter, which prevents speeds in excess of those needed to handle the traffic, full load capacity is readily obtained since, at a comfortable speed, each compartment can be occupied. Thus the normal full hourly load capacity of a revolving door is 3,600 persons "*in*" and 3,600 persons "*out.*"

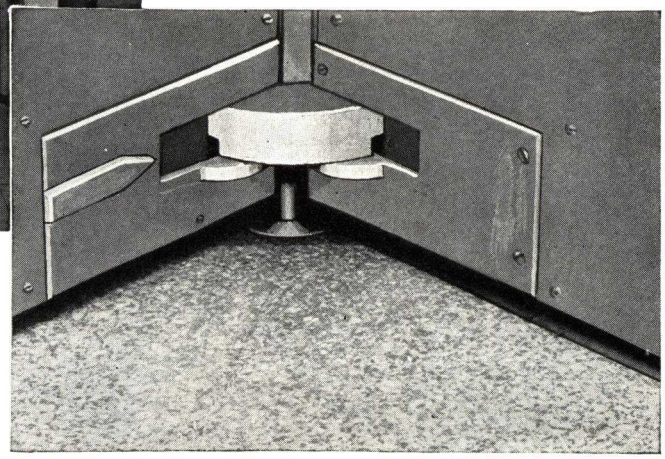
This has been exceeded in a number of instances as in the test at Marshall Field & Co., Chicago, and at several entrances to the offices of large public utilities where the speed of rotation has been set at 18 revolutions per minute.

It will be evident, from the data given below, that the traffic in the busy entrances to the largest and most active office buildings, banks and restaurants, does not tax the normal capacity of a Van Kannel Revolving Door.

Name and Location	Duration of Test	Total Number of Persons	Rate per hour in One Direction *Based on maximum number of persons passing in one direction for 15-minute period*
Marshall Field & Co., Chicago, Ill.	10 minutes (5:00 to 5:10 P.M.)	1,075 Out 57 In	6,300 Out 332 In
R. H. Macy, New York, N. Y.	1 hour	2,303 In 1,988 Out	2,708 In 2,320 Out
Gimbel Bros., New York, N. Y.	1 hour	1,327 In 77 Out	1,604 In 95 Out
Y. M. C. A., New York, N. Y.	1 hour	398 In 355 Out	480 In 440 Out
Hotel Commodore, New York, N. Y.	1 hour	240 In 295 Out	376 In 420 Out
Hotel Astor, New York, N. Y.	30 minutes	478 In 427 Out	960 In 854 Out
Childs Restaurant, New York, N. Y.	1 hour	1,134 In 487 Out	1,228 In 680 Out
Bank of United States, New York, N. Y.	15 minutes	109 In 110 Out	436 In 440 Out
World Building, New York, N. Y.	1 hour	496 In 629 Out	564 In 740 Out
Commercial Cable Building, New York, N. Y.	1 hour	1,018 In 1,034 Out	1,104 In 1,164 Out
Bank of Commerce Building, New York, N. Y.	1 hour	961 In 679 Out	1,192 In 800 Out
Equitable Building, New York, N. Y.	10 hours	9,046 In 8,508 Out	1,142 In 1,815 Out
Barclay-Vesey Building, New York Telephone Co.	1 hour	31 In 674 Out	40 In 1,660 Out
Hudson Terminal Building, New York, N. Y.	1 hour	2,192 In 1,669 Out	3,208 In 2,520 Out

THE *Van Kannel* TYPE "AA" *Is an Automatic, Collapsible,*

HERE IS A MODERN REVOLVING DOOR OF BEAUTIFUL DESIGN AND SENSITIVE ADJUSTMENT, DEVELOPED AND MADE WHOLLY BY VAN KANNEL COMPANY



NOTE *(at Right)* Enlarged View of Self Bracing Hardware located at Top and Bottom of Wings.

All movable parts of mechanism subject to wear are assembled in hangers. Access to these parts can be had without dismantling center shaft or any of the other wings.

The Van Kannel Type "AA" Has Fewer Wearing Parts

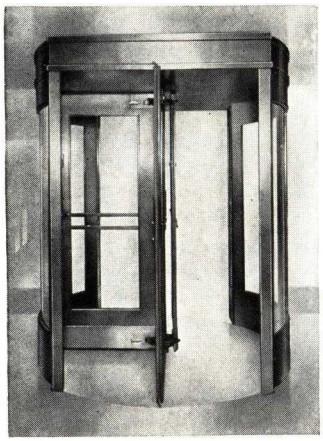
Type "AA" Van Kannel Revolving Doors have fewer parts and are the most durable doors we have ever manufactured, notwithstanding that there are many Van Kannel Doors, with previous styles of hardware, in use for more than a third of a century.

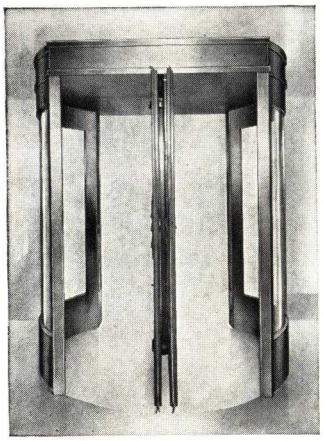
The simplicity of design and operation makes the Type "AA" door easy to collapse or fold and just as easy to reset into operating position. When re-setting, the spring socket quickly and automatically lines up the wings. The absence of braces, cables or chains between the wings facilitates handling, provides more room between the wings, and makes possible a neat, modernistic design.

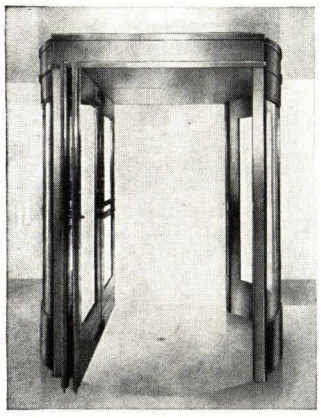
When equipped with the Traffic Adapter, which assures operation at a comfortable, convenient rate of movement without excessive speeds or spinning, this modern revolving door provides any entrance with . . . *great capacity . . . freedom of movement . . . absolute safety.*

Panic Proof Revolving Door Without Cables or Braces

ILLUSTRATIONS BELOW SHOW FOLDING ABILITIES OF TYPE "AA"







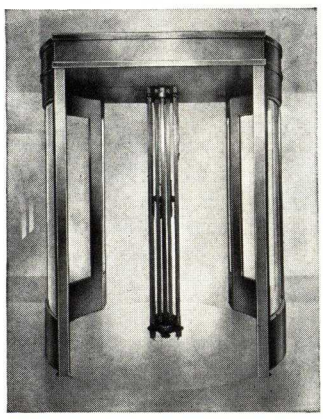


Fig. 1

In Half Collapsed Position

Only three seconds are required to place one wing of a Type "AA" door in half collapsed position shown and to reset it into operating position for regular use. With one wing in this position long objects or other equipment are readily passed through.

Fig. 2

In Folded Center Position

Type "AA" doors can be folded without effort by manually releasing the tension on wings. The secondary engagement in the discs holds the wings in folded position until released. To restore wings to operating position they need only be moved back into place and tension re-applied. The wings of this modern door can be folded to the position shown in thirty seconds and re-set, ready for use, in even shorter time.

Fig. 3

With Wings Folded and Rolled to One Side

In this position, Type "AA" doors provide a clear opening through the entrance for ventilation, movement of furniture, equipment, etc. When wings are folded, they are held firmly in place by the secondary engagement assuring easy, balanced handling. Wings can be folded and moved to one side of the enclosure in thirty seconds and, as quickly, can be re-set in the center ready for regular use.

Fig. 4

Panic Proof Position with Four Wings Collapsed

In case of a panic, a crowd rushing and pressing against wings of the Type "AA" door would cause them to collapse, *automatically* and *instantly* to the position shown in Fig. 4. Thus a clear, unobstructed passage is quickly provided on both sides of the center post. From this collapsed position the door can be re-set for regular use within six seconds.

Design and Construction of Type "AA"

In appearance and design, Van Kannel Type "AA" Revolving Doors are entirely in keeping with the present-day vogue for simple, clean cut straight line effects . . . *no braces* . . . *no cables* . . . *no chains.*

This outstanding improvement in revolving door construction is made possible by the unique mechanism which

(1) holds the wings firmly in their radial operating position, and

(2) makes it possible for the wings to collapse automatically to a folded position when the pressure on them exceeds the predetermined resistance for which the mechanism has been adjusted.

Thus, Type "AA" doors are entirely panic proof and provide a new measure of safety in emergencies necessitating a clear, unobstructed passageway. The mechanism is ruggedly constructed throughout for long, dependable service.

In Type "AA" doors the wings are mounted on hangers supported by a pivoted connection to heavy discs both at the top and at the bottom. An adjustable spring and socket engagement between each door hanger and the disc provides an independent radial support for the wing. It also acts as a safety release in case of an emergency.

The Panic Proof Feature of Type "AA"

Type "AA" doors are panic proof because pressure of a crowd rushing against the wings will cause all four wings to collapse *outward* in line of egress, causing them to fold together like a book and permitting free passage on both sides of the center.

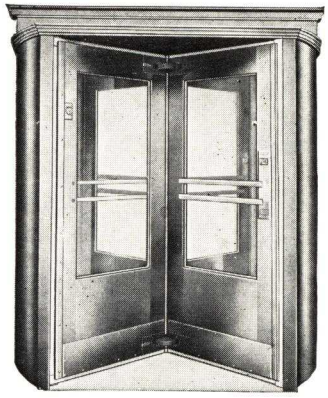
Setting the tension on each wing for the desired collapsing pressure is quickly and easily accomplished. No dis-assembly is required for this purpose. Once the resistance is set, it maintains a permanent, uniform tension. Releasing the tension manually for folding does not vary the adjustment and, when the doors are re-set in their operating position, the tension is automatically re-established exactly as it was before folding.

When the wings are folded in pairs, they are automatically held in folded position by a secondary engagement incorporated in the mechanism between the hanger and disc. No separate folding bars or keepers are required.

THE *Van Kannel* TYPE "AA"

STANDARD DESIGNS AVAILABLE

The four principal designs of Van Kannel doors are shown in the left-hand column of illustrations below. These, together with stock models shown, provide a sufficient variety of design to meet all general requirements.



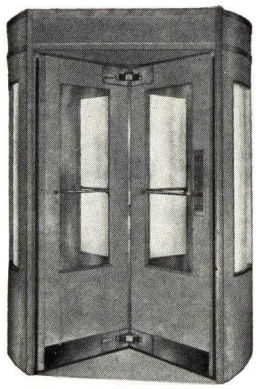
Type "AA" Design 1

Note 3″ cornice and solid enclosure walls, furnished in any metal or wood.

FIG. 1
REVOLVING POSITION

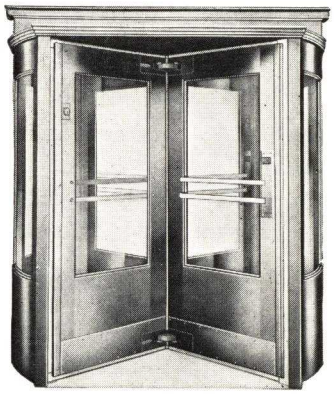
FIG. 2
CENTRAL OPEN POSITION

FIG. 3
FULL OPEN POSITION



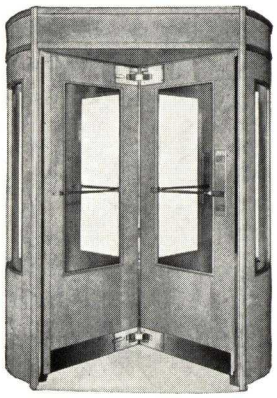
Economy Junior 5′6″ x 6′10″

Note 10″ cornice and glass panels in enclosure walls, furnished in Birch, Walnut or Mahogany finish.



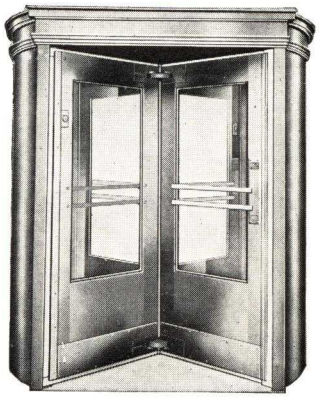
Type "AA" Design 1G

Note 3″ cornice and glass panels in enclosure walls, furnished in any metal or wood.



Economy Standard 6′ x 6′10″

Same as Economy Junior above, but larger size. (Door here shown in natural wood.)



Type "AA" Design 3

Note 10″ cornice and solid enclosure walls, furnished in any metal or wood.

FIG. 4
PANIC COLLAPSED POSITION

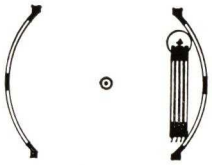


FIG. 5
FULL OPEN POSITION WITH WINGS COLLAPSED

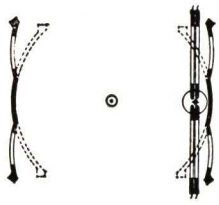
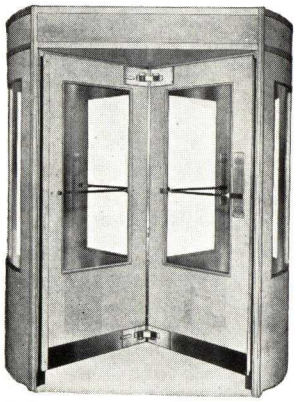


FIG. 6
FULL OPEN POSITION WITH FLEXED WALLS

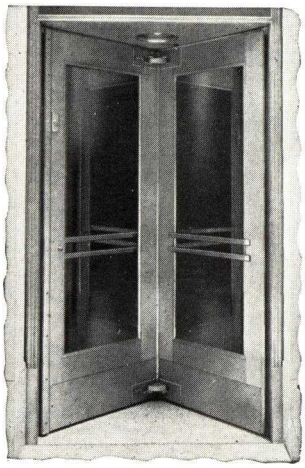


Economy Chief 6′6″ x 6′10″ Economy Special 7′ x 6′10″

Same as Economy Junior above, but larger size. (Door here shown is Economy Chief in natural wood.)

Type "AA" Design 3G

Note 10″ cornice and glass panels in enclosure walls, furnished in any metal or wood.



Type "AA" Design U

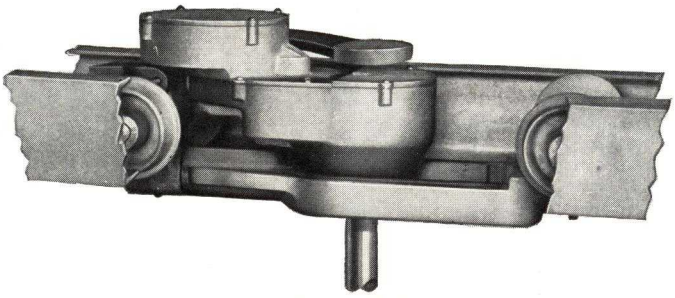
Note solid enclosure walls, finished inside only, due to abutment against adjoining walls. No cornice or roof furnished.

Van Kannel Door Traffic Adapter for Regulating Speed According to Traffic

The Van Kannel Mechanical Traffic Adapter can be applied to any Van Kannel Revolving Door . . . old or new. This device is incorporated in the overhead mechanism without structural changes. It is a simple and dependable centrifugal brake. An easy, permanent adjustment holds the brake out of engagement at normal speeds, but causes it to act as soon as the desired maximum speed is reached. This prevents any excessive speed or spinning. The revolving door always rotates at a comfortable, convenient speed which can be adjusted to handle crowds rapidly or slowly.

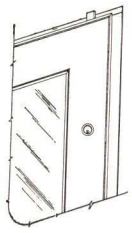
The Van Kannel Mechanical Traffic Adapter, like the revolving doors themselves, is built for years of satisfactory and trouble-free service. Steel gears . . . shafts mounted in felt-sealed ball bearings . . . heavy duty brake lining . . . combine to insure years of dependable operation.

This device meets the requirements of the U. S. Government standard specifications.



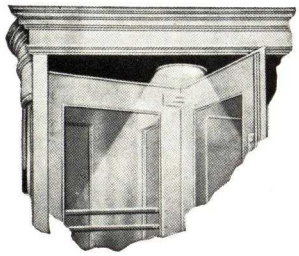
Center Shaft

Cylinder Locks



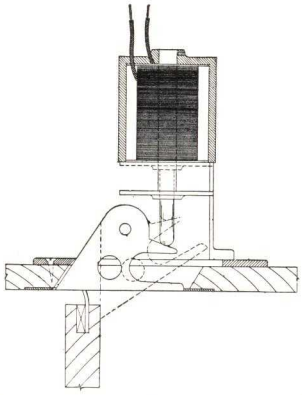
Cylinder locks are available for all Van Kannel doors where specified. Two locks are required and are generally installed one each on opposite wings. In hollow metal construction, locking bar is concealed by mortised construction as shown.

Ceiling Light Reflectors



Ceiling Light Reflectors, with or without flush obscure glass cover, can be furnished and installed where needed with solid wall enclosure. These lights are normally 10 inches in diameter, and are usually located in the interior and exterior quarters, half way between the center and the edge of the ceiling.

Automatic Burglar Locks



The Van Kannel Electric Burglar Lock provides instant locking for the revolving door from one of as many stations as may be desired throughout the banking quarters. It is a gravity lock, electrically controlled. Two locks are located on the quarter line in the ceiling of the revolving door enclosure. They may be actuated from any part of the building, through as many stations as desired, insuring the instantaneous locking of the door in any emergency.

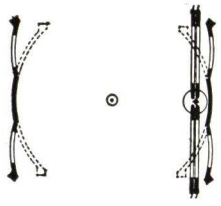
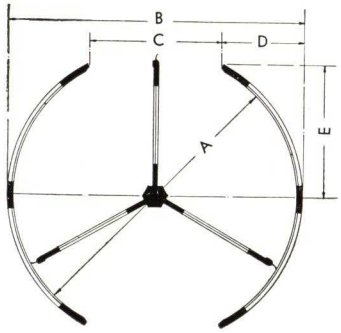


FIG. 6
FULL OPEN POSITION WITH FLEXED WALLS

Flexed Walls

Flexed walls used for maximum entrance width to permit passage of automobiles for display purposes, as for example in hotel lobbies or exposition halls.

Three Wing Doors—for Low Cost Installations



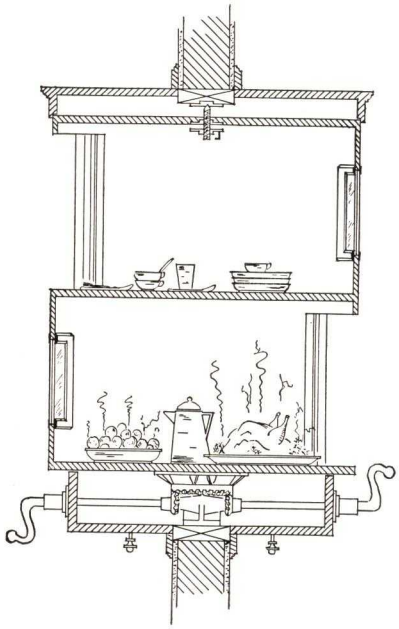
Three-wing doors provide an effective seal against drafts or odors, and a low cost revolving door where space is limited and traffic is not heavy. Capacity of the three-wing door is equivalent to a single swing door. They are suitable for entrances to toilet rooms and photographic or X-Ray rooms, etc. (Further details on request.)

DIMENSIONS OF THREE WING DOORS

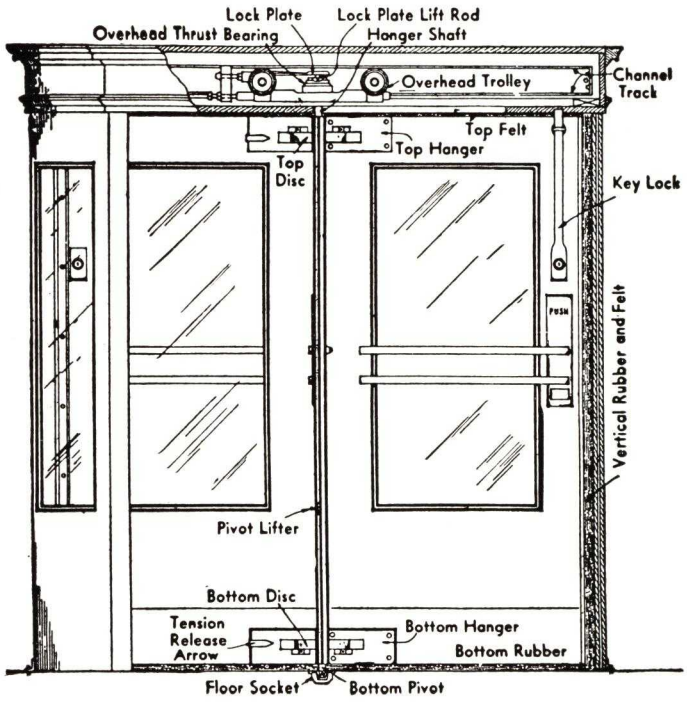
A	B	C	D	E
4′– 8″	4′–10¾″	2′–1¾″	1′–4½″	2′–2¼″
4′–10″	5′– 0¾″	2′–2¾″	1′–5″	2′–3⅛″
5′– 0″	5′– 2¾″	2′–3¾″	1′–5½″	2′–4″
5′– 2″	5′– 4¾″	2′–4¾″	1′–6″	2′–4⅞″

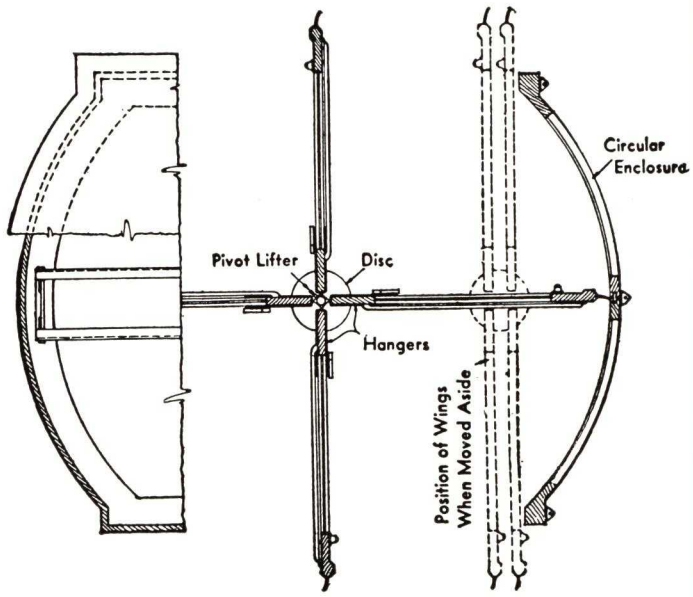
Revolving Pantry Pass Windows

This method of passing food between pantry and kitchen avoids the passage of cooking odors, and this unit therefore is of special interest to architects who are designing the better class of homes. The unit is also of interest to architects designing hotels and restaurants.



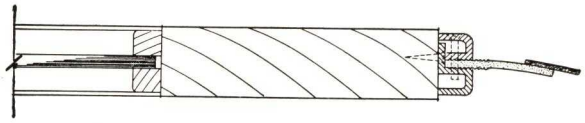
Cross Section of Pantry Window





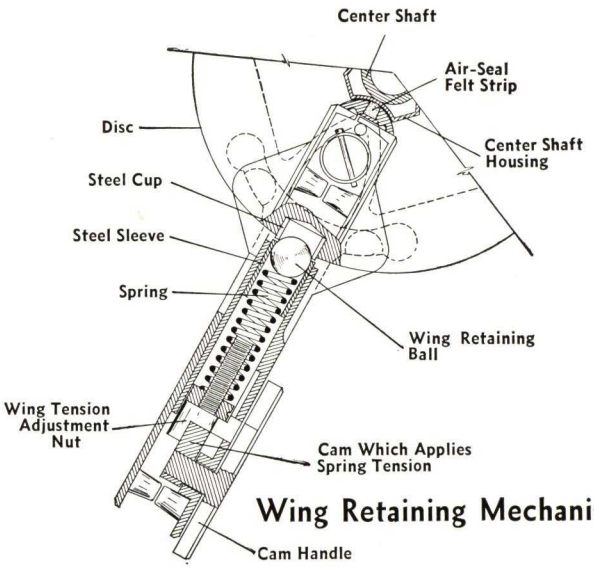
Plan Elevation of Door Assembly

Showing assembled position of track trolley, trolley locking device, center shaft, disc, hangers, floor socket, pivot, pivot lifter, lift rod, wings and enclosures.



Door End Sections Showing Weatherstrip

Shows cross-section of outer stile, and shows the methods of adjustment provided for vertical weather strips. Design here illustrated is special, and subject to small extra charge.



Wing Retaining Mechanism

(1) Note construction of center shaft housing and back stile of wing with inserted felt strip, providing an absolute air seal.

(2) Highly wear-resistant steel cup is imbedded in disc to receive wing retaining ball.

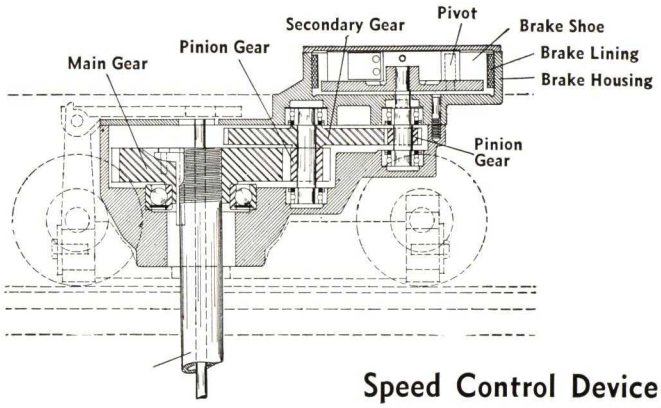
(3) Wing retaining ball is mounted in hanger in steel sleeve. This construction, and use of ball, produces action which is not affected by dirt and corrosion, providing uniform action.

(4) Note sturdy spring construction, which provides for variation of collapsing tension from 60 to 180 lb. applied against outer stile of wing.

(5) Note wing tension adjustment nut, which is readily adjustable through opening in side of hanger, and can be adjusted without collapsing wing.

(6) To manually release wing, cam which applies spring tension is reversed by simply throwing cam handle. Each wing is independently held in radial position by means of the mechanism above described, installed at both top and bottom of wing.

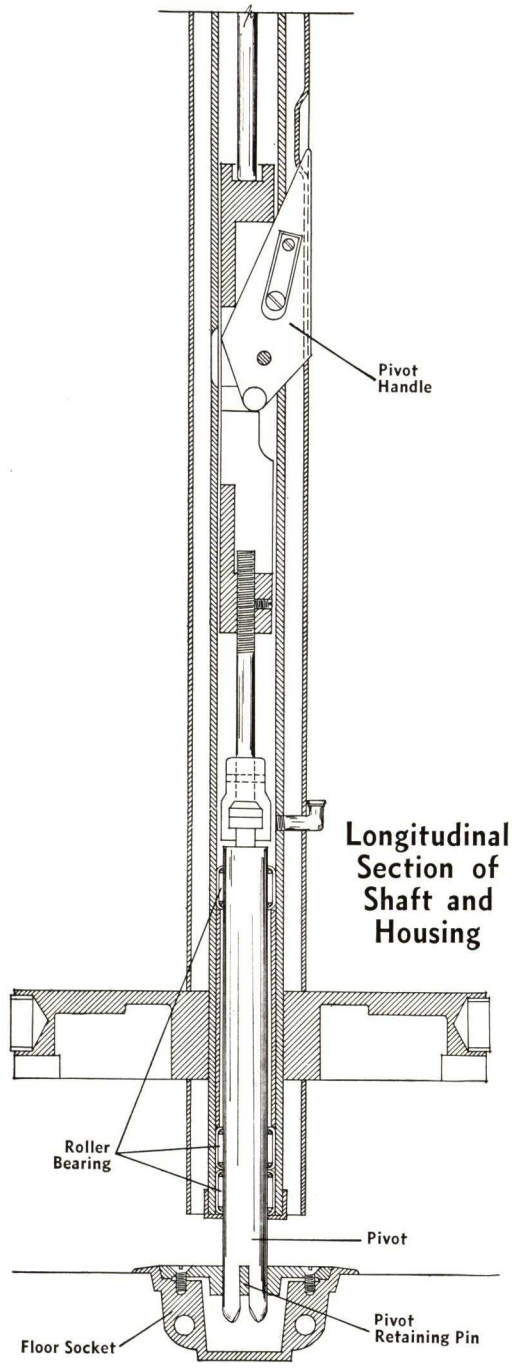
All parts subject to wear are readily replaceable without dismantling any other member of the door.



Speed Control Device

(1) Note dimensions of gear train. This is a slow speed device and at center shaft speed of 15 R.P.M. brake shoes revolve at speed of 315 R.P.M. This mechanism is practically wear-proof and will more than equal the life of the door itself.

(2) By reason of the design of brake shoes and relation of bearing point to pivotal point, self-loading brake is produced which positively prevents wings from being revolved at a speed in excess of the predetermined point at which the shoes are adjusted to take hold. In other words, this device does not act as a drag on the door. Its presence cannot even be noted by anyone going through the door until the speed of the wings has reached the point at which the device is set to apply braking action. At this point the action is positive and any amount of pressure applied, even by concerted action of four people, one in each compartment of the door, would not succeed in speeding up the wings.



Longitudinal Section of Shaft and Housing

(1) Note positive action of pivot handle and leverage provided, which produces positive positioning of pivot in either raised or lowered position. Pivot can be raised or lowered with the utmost ease because of leverage provided.

(2) Note three roller bearings at bottom of center shaft, providing for frictionless, smooth operation. This construction prevents wear and therefore prevents door from developing vibration at this point. When wear occurs at this point, it results in side weather strips striking more forcibly against enclosure, producing jerky, noisy operation.

(3) Pivot is constructed of stainless steel, which, together with roller bearings, insures long life.

(4) Note pivot retaining pin and straight sided pivot end. The straight side, together with positive locking handle definitely prevents pivot from working up out of position.

DESCRIPTION OF CONSTRUCTION DETAILS

Wing Support—The four wings are supported at the center shaft on two discs to which hangers supporting the wings are pivoted, so as to allow a movement of 135°. The wings are held in their radial position by an engagement between the hangers and the discs. This engagement may be released to permit the wings to be folded in pairs. When folded, a secondary engagement holds the wings in a balanced position.

Central Shaft and Trolley—In modern revolving doors, the central shaft is supported overhead by a self-aligning ball bearing, mounted on a four-wheel trolley which runs on an overhead channel track. This trolley is held securely in central position by an automatic lock. The bottom of the shaft is held in the central position by a non-rotating pivot in the floor.

Release Lever—A release lever, located at a convenient height on the center shaft, may be raised to release both the bottom pivot and the overhead trolley. With the wings folded and the trolley and center shaft released, the wings may be rolled to the side of the enclosure, providing a clear opening, when needed, for the movement of furniture or equipment.

Panic Proof Feature—The engagement between the discs and hangers which holds the wings in radial position is a resilient support which is instantly released by any excess load or pressure against the wings. This makes the door automatically collapsible in case of a panic, for the pressure of a crowd would cause all the wings to fold outward like the leaves of a book, providing a clear passage on each side of the collapsed wings and center shaft.

Weatherstripping—The contact between the wings and the circular enclosure is maintained by wide rubber and felt weatherstrips which brush against the sidewalls, ceiling and floor, giving a tight seal against draft and air infiltration.

Speed Conrtol—The speed of rotation is controlled by a traffic adapter (centrifugal governor) which is located in the overhead trolley. Speed can be adjusted to suit the traffic and any excessive speed is prevented.

Design—Revolving doors are built of any wood or metal to harmonize with any architectural design.

Wood—Wood doors and enclosures are built-up of five-ply core and veneer construction in accordance with the highest standards of workmanship and material.

Metal—Any kind of architectural metal may be used in the construction of revolving doors—bronze, copper, brass, nickel, silver, monel metal, steel, stainless steel or aluminum.

Other Materials—Other materials, such as Micarta or Formica may be used in place of wood or metal veneers.

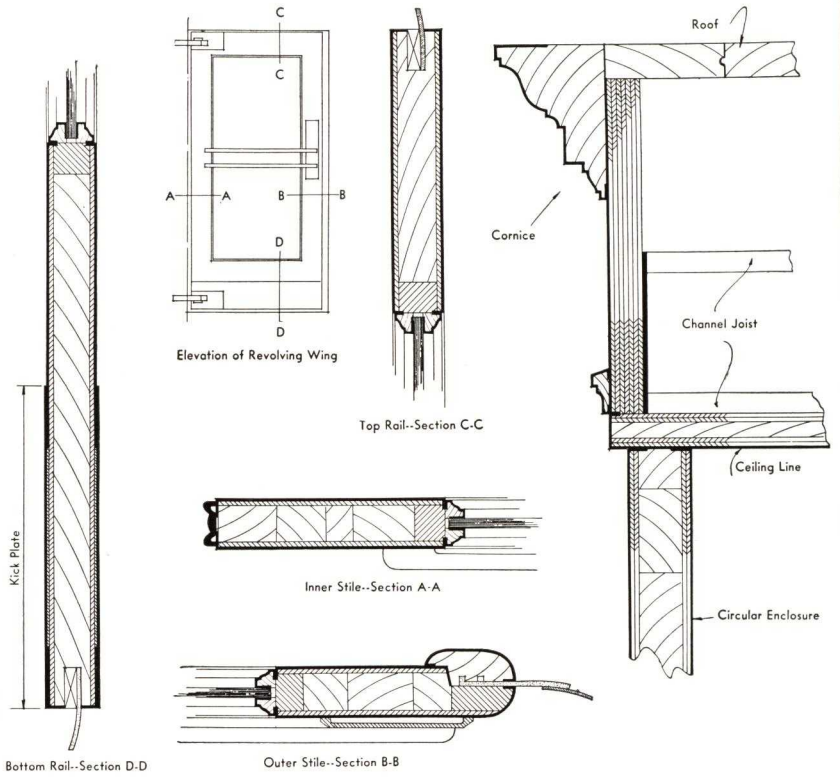
The Superiorities of Plate Overlay Construction—It is recommended that metal doors be built by fitting the metal veneer (approximately 16-gauge) to a wood core and cementing it in place under pressure, the same as a wood veneer. This assures added strength and durability, with less weight than is possible with hollow metal construction.

Revolving doors can be (and many have been) built of hollow metal construction, but the combined weight of the four wings makes this construction less desirable than the metal overlay on wood core.

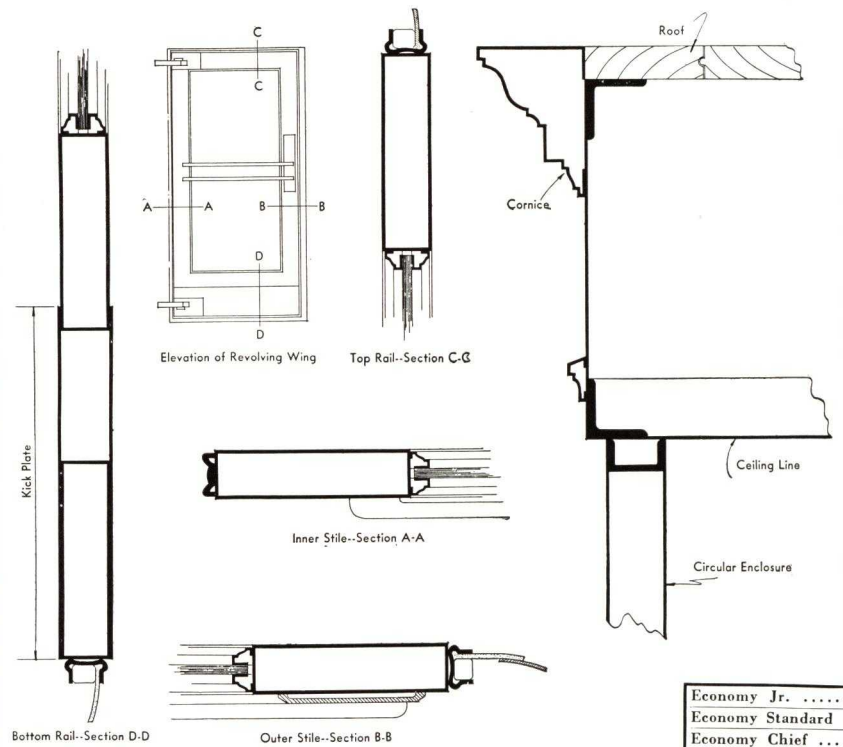
The circular walls support the ceiling, cornice and overhead mechanism. They may be finished on the inside only, for assembly within other construction, or they may be finished inside and outside with glazed panels and cornice as a complete separate unit.

Four wing revolving doors are commonly made 6′10″ or 7′0″ high and vary from 5′6″ to 7′6″ in diameter. It is recommended that the height be kept below 7′6″. The most popular diameter is 6′6″, but where space is limited a 5′6″ diameter door is very satisfactory. At entrances to hotels or post offices, where hand luggage or bundles are carried, a 7′0″ diameter door is recommended.

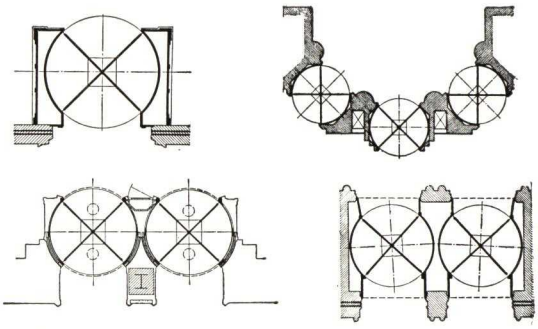
Details of Metal Veneer Over Wood Core Construction



Details of Hollow Metal Construction

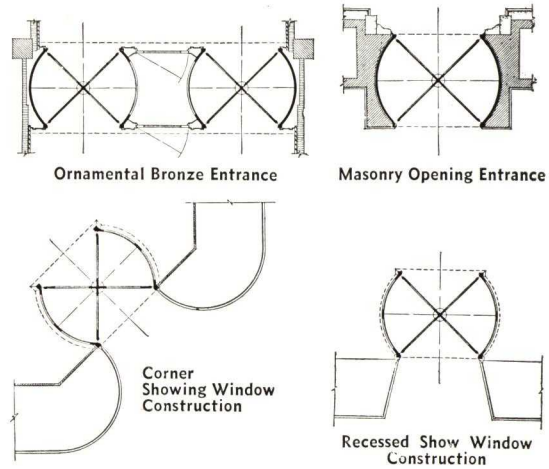


Special Connections for Design U

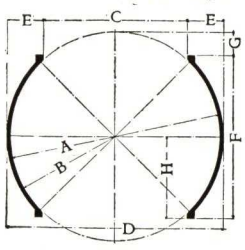


The accompanying four illustrations show walls and ceilings unfinished on the convex sides. No cornice or roof furnished. This construction is generally used when it is desired to enclose the revolving door in a housing to carry out any particular architectural motif.

Diagrams of Special Connections



Door Opening Dimensions



Panic Proof Type Wings—Thickness, 1¼ in., wood; 1 to 1¼ in., metal.

Door Vestibules—5 ft. 6 in. to 7 ft. 6 in. diam., 4 wings.

Normal Diameter Vestibule—6 ft. 6 in.

DIMENSIONS—FT.-IN.

	A	B	C	D	E	F	G	H
	5′– 6″	2′– 9″	3′– 8¾″	5′– 8¾″	0′–11¾″	4′– 4¼″	6⅞″	2′– 2⅛″
	5′– 8″	2′–10″	3′–10½″	5′–10¾″	1′– 0¼″	4′– 5¾″	7⅛″	2′– 2⅞″
	5′–10″	2′–11″	3′–11½″	6′– 0¾″	1′– 0⅝″	4′– 7¼″	7⅜″	2′– 3⅝″
	6′– 0″	3′– 0″	4′– 1″	6′– 2¾″	1′– 0⅞″	4′– 8½″	7¾″	2′– 4¼″
	6′– 2″	3′– 1″	4′– 2½″	6′– 4¾″	1′– 1⅛″	4′–10″	8″	2′– 5″
	6′– 4″	3′– 2″	4′– 4″	6′– 6¾″	1′– 1⅜″	4′–11½″	8¼″	2′– 5¾″
	6′– 6″	3′– 3″	4′– 5¼″	6′– 8¾″	1′– 1⅝″	5′– 0¾″	8⅝″	2′– 6⅜″
	6′– 8″	3′– 4″	4′– 6½″	6′–10¾″	1′– 2⅛″	5′– 2¼″	8⅞″	2′– 7⅛″
	6′–10″	3′– 5″	4′– 8″	7′– 0¾″	1′– 2⅜″	5′– 3½″	9¼″	2′– 7¾″
	7′– 0″	3′– 6″	4′– 9½″	7′– 2¾″	1′– 2⅝″	5′– 5″	9½″	2′– 8½″
	7′– 2″	3′– 7″	4′–10¾″	7′– 4¾″	1′– 3″	5′– 6½″	9¾″	2′– 9¼″
	7′– 4″	3′– 8″	5′– 0″	7′– 6¾″	1′– 3⅜″	5′– 8″	10″	2′–10″
	7′– 6″	3′– 9″	5′– 1½″	7′– 8¾″	1′– 3⅝″	5′– 9¼″	10⅜″	2′–10⅝″
Economy Jr.	5′– 6″	2′– 9″	3′– 9″	5′– 8¾″	0′–11⅞″	4′– 2¼″	7⅞″	2′– 1⅛″
Economy Standard	6′– 0″	3′– 0″	4′– 1″	6′– 2¾″	1′– 0⅞″	4′– 6¾″	8⅝″	2′– 3⅜″
Economy Chief	6′– 6″	3′– 3″	4′– 5¼″	6′– 8¾″	1′– 1¾″	4′–11″	9½″	2′– 5½″
Economy Special	7′– 0″	3′– 6″	4′– 9½″	7′– 2¾″	1′– 2⅝″	5′– 3¼″	10¾″	2′– 7⅝″

Suggested Applications to Various Types of Door Entrances

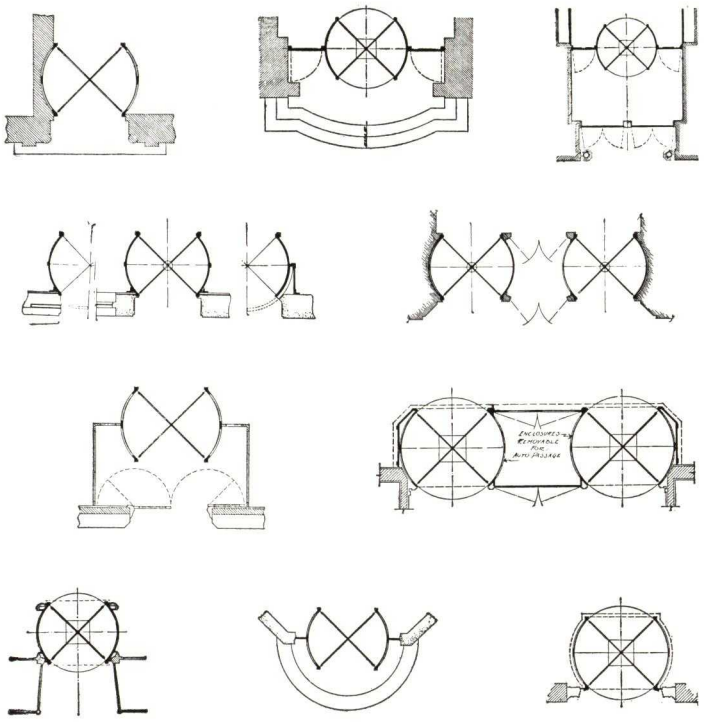
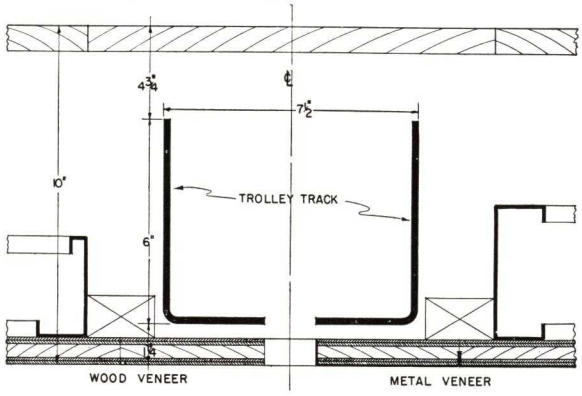
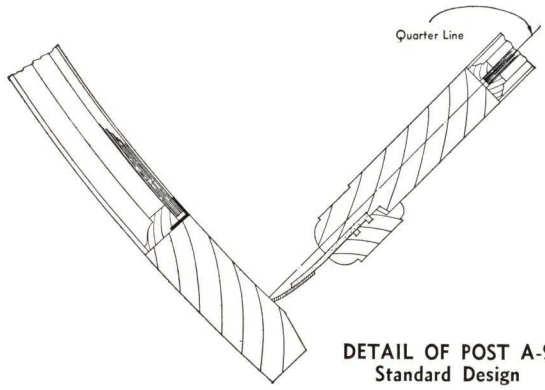


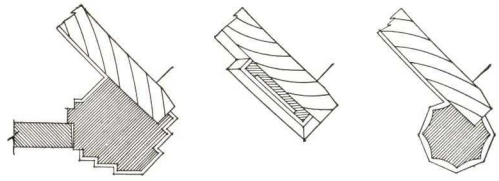
Diagram Showing Overhead Clearances



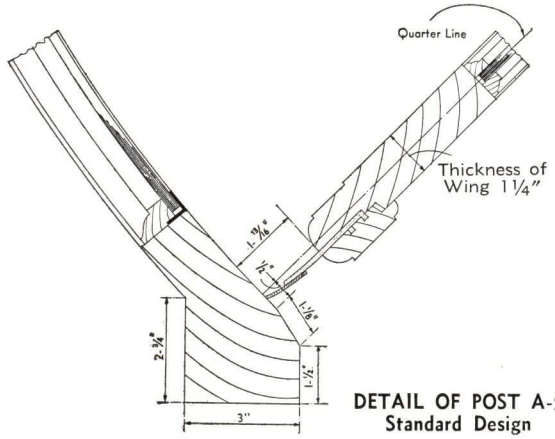
Post Arrangements



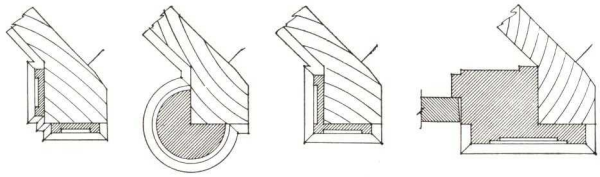
DETAIL OF POST A-9
Standard Design



MODIFICATIONS OF POST A-9

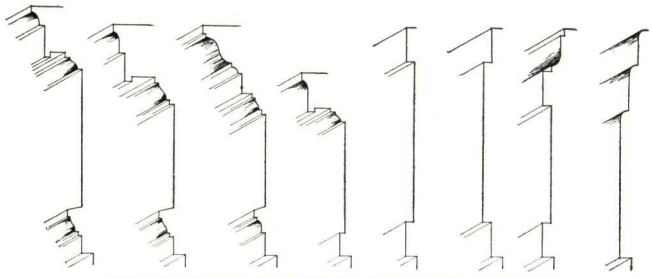


DETAIL OF POST A-5
Standard Design



MODIFICATIONS OF POST A-5

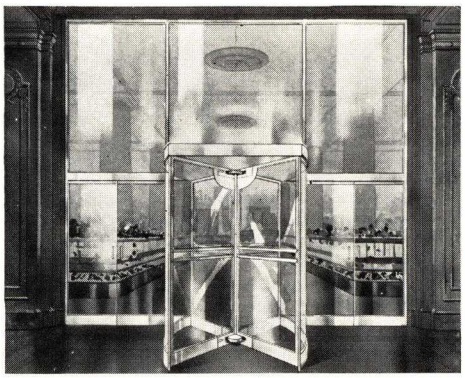
Available Cornice Designs



SILHOUETTES SHOWING CORNICE DESIGNS

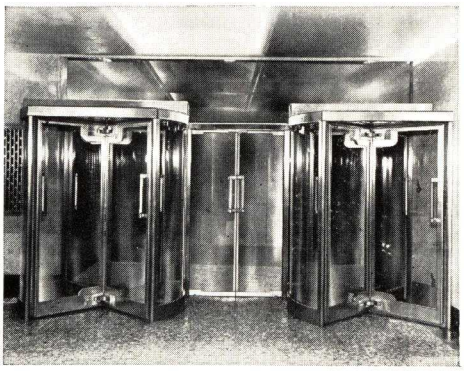
SPECIFICATIONS
for Van Kannel Revolving Doors

Distinctive
DESIGN FEATURES OF VAN KANNEL DOORS



Modern Entrances Demand High Visibility.

The Van Kannel Company have recently specialized in the design of entrances providing for the maximum of visibility. Examples are shown below and our Engineering Department will gladly co-operate in designing special entrances to incorporate this new feature, in a manner that will harmonize with any special architectural treatment.



One of the latest installations of the Van Kannel Company and an excellent example of an entrance providing maximum visibility is afforded by the above installation in the Bank of Manhattan building at 40 Wall Street, New York City.

Four Better Entrances by Van Kannel similar to that above shown are now installed in the Hotel Astor, New York City. Here is another example of revolving door design providing for high visibility.

General Conditions

Revolving door contractor shall furnish and install where specified and shown on plans VAN KANNEL REVOLVING DOORS, TYPE AA and design *(see page 8)* built of (material) to be fully automatic collapsible, panic-proof type, equipped with traffic adapter as hereinafter described. Revolving door contractors shall include circular enclosure, flat ceiling, cornice, revolving wings, hardware, glass and complete mechanism, including traffic adapter.

Erection of Mechanism

The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position instantly when a force somewhat greater than that necessary to revolve the wings is exerted on any two wings. The tension holding the wings in their radial position shall be adjustable to a collapsing pressure of from 60 to 180 pounds when applied at a point 42 in. from the floor on the outer stile of the wing. The mechanism shall also permit the wings to be folded manually in a central position in pairs; in a full open side position in pairs; in a central panic position with the four wings folded like a book. All movable mechanism subject to replacement to be contained in wing hanger, and replaceable without taking down center shaft or dismantling other wings of door.

The wings of the revolving door shall be hung independently of each other by hangers pivoted to the center discs at both the top and bottom of each wing. Each wing shall be held in normal rotating position by self-centering spring engagements contained in the discs and top and bottom hangers—no brace arms, chains or cables between the wings will be permitted. Provision shall be made for adjusting the collapsing tension quickly without disassembling any hardware or fixtures. A simple manual release of the tension holding the wings in radial position shall be provided to permit collapsing or folding of the wings without exerting the pressure needed for automatic collapsing.

A stop shall be provided in one hanger on each wing so that when the collapsing tension is released, the wings when folded in pairs will be held in folded position without the use of separate folding bars.

The center shaft carrying the wings shall be supported overhead in a universal ball bearing mounting carried on a four-wheel trolley which in turn is set on a self-supporting steel track, to permit the wings to be moved to the side of the enclosure when folded. This center shaft shall be held in position by a locking device in the overhead track and by a socket in the floor. The bottom pivot is not to rotate in the floor socket. The raising of the bottom pivot is to release the center shaft at both top and bottom, freeing it for movement to the side of the enclosure.

Door Hardware

The hardware shall include keylocks (state if master-keying required), kick plates, push bars and push plates made of (kind of metal).

Door Glass

All glass in the revolving wings and enclosures shall be ¼ in. American polished plate.

Ceiling Lights and Reflectors

Two flush ceiling lights shall be furnished including reflectors and removable glass covers, but not including any electric fixtures—fixtures and wiring to be included under electrical contract.

Installing Traffic Adapter

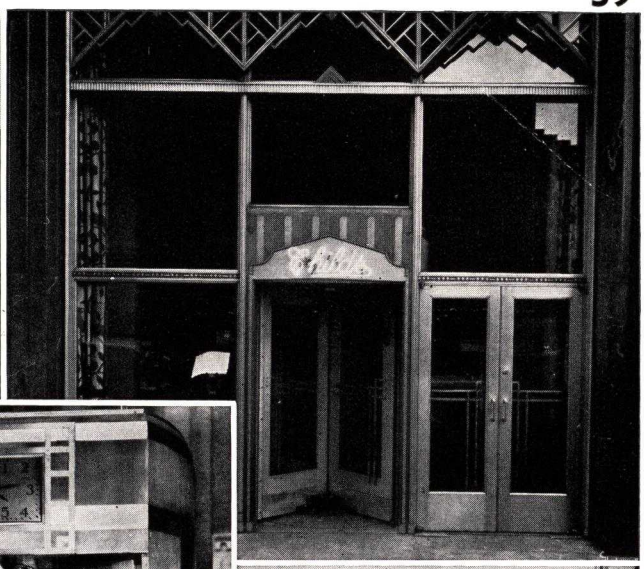
The speed of rotation of the revolving door shall be controlled by a mechanical traffic adapter to be installed in the overhead mechanism. This device shall permit free rotation of the revolving wings up to any predetermined rate of speed, but shall prevent spinning or excessive speed at all times. An adjustment shall be provided to limit the maximum speed to meet the traffic needs of the entrance.

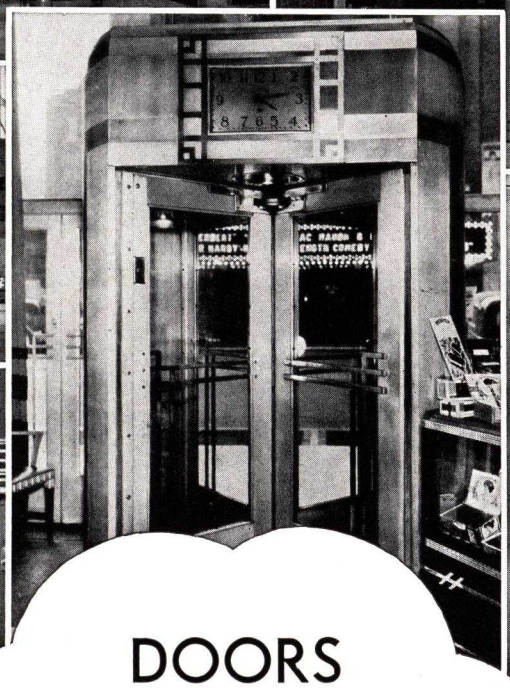
Finish of Wings, Enclosures

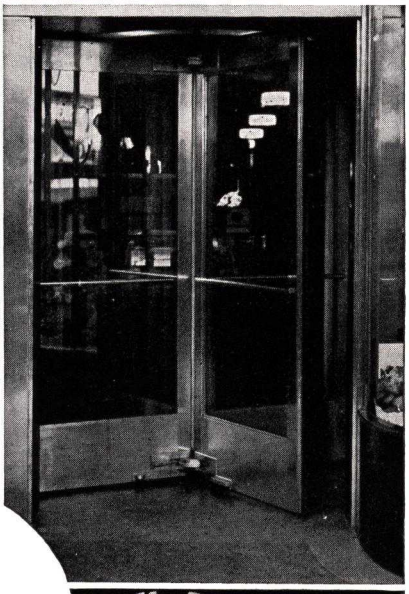
For Wood Doors—Wings and enclosures shall be finished in (kind of wood) veneer applied over laminated wood cores properly constructed for the purpose. Finish veneer shall not be less than ⅛ in. thick. All finished surfaces of the wood shall be given a finish of stain, shellac and three coats of spar varnish. The final coat of varnish shall be rubbed to a dull finish and wiped clean.

For Metal Doors—*(Metal overlay on wood cores)*—Wings and enclosures are to be finished in (gauge) kind of metal) overlay on laminated wood cores—not kalamein. *(Note: Recommend not less than 20 gauge bronze on wood core and not less than 16 gauge aluminum on wood core.)* All joints in metal surfaces shall be battened, riveted and calked so as to be invisible on the finished surface. All mouldings, formed members and edges shall be sharp and clean. All finished surfaces shall be filed, emeried and pumiced to a smooth surface and properly treated to match finished desired.

For Hollow Metal Doors—Wings and enclosures shall be built of (gauge) (kind of metal) on steel frame. *(Note: Recommend not less than 14 gauge bronze or 12 gauge aluminum.)* Walls and ceilings shall be built up on a metal frame. Wings shall be built of rectangular seamless tubing with reinforcements at hangers. All mouldings, formed members and edges shall be sharp, square and clean. All finished surfaces shall be filed, emeried and pumiced to a smooth surface and properly treated to match finish desired.



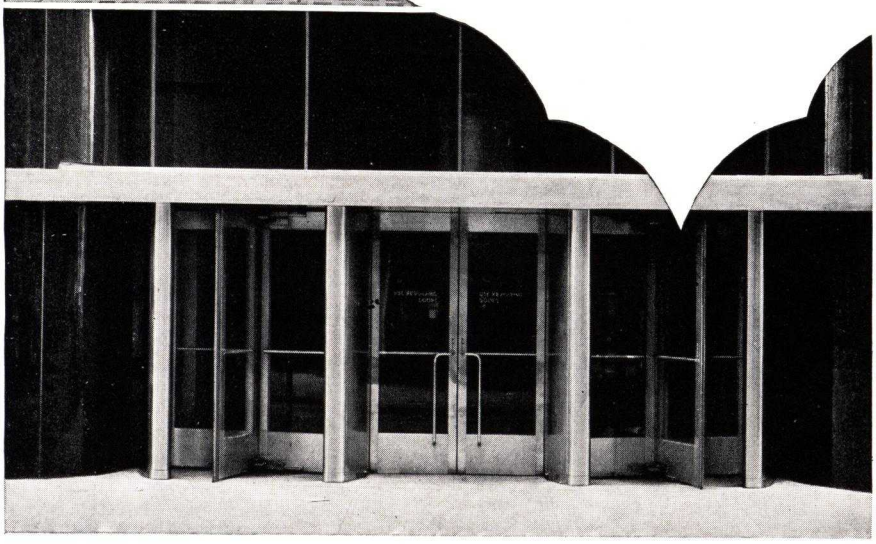


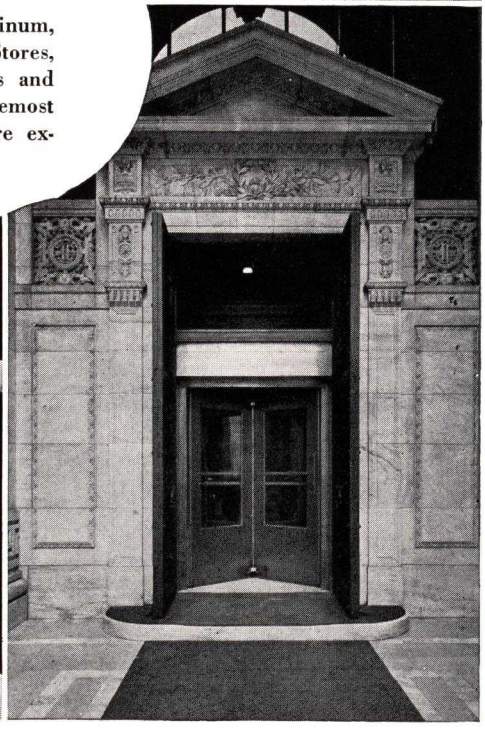


DOORS

by Van Kannel

Made of Formica, Stainless Steel, Aluminum, Bronze and Wood, for the world's leading Stores, Institutions, Banks, Office Buildings, Hotels and Restaurants, installed in the world's foremost cities, where service is a byword and where exacting requirements demand the best.





PROMINENT VAN KANNEL INSTALLATIONS

Name	Location
Baltimore Trust Bldg.	Baltimore
Hochschild, Kohn & Co.	Baltimore
Maryland Trust Co.	Baltimore
Bank of Montreal	Canada
Imperial Bank of Canada	Canada
F. W. Woolworth Co.	Canada
Bankers Bldg.	Chicago
Chicago Daily News	Chicago
Congress Hotel	Chicago
Illinois Bell Telephone	Chicago
Palmer House	Chicago
Peoples Gas Light & Coke	Chicago
Stevens Hotel	Chicago
C & S Bell Telephone Co.	Cincinnati
Carew Tower	Cincinnati
Chamber of Commerce	Cincinnati
Cincinnati Times Star	Cincinnati
City Hall	Cincinnati
Dixie Terminal Bldg.	Cincinnati
Federal Reserve Bank	Cincinnati
First National Bank & Trust	Hamilton, Ohio
May Co.	Cleveland
National City Bank Bldg.	Cleveland
Statler Hotel	Cleveland
Stouffer Rest.	Cleveland
G. Fox Co. Dept. Store	Hartford, Conn.
Travelers Ins. Co.	Hartford, Conn.
Lerner Stores	New Haven, Conn.
Brown Derby Restaurant	Beverly Hills
Hollywood-Plaza Hotel	Hollywood
Hollywood-Roosevelt	Hollywood
Columbian Tower	Memphis
Farnsworth Bldg.	Memphis
National Bank of Commerce	Memphis
Bulletin Bldg.	Philadelphia
Benjamin Franklin Hotel	Philadelphia
Baldwin Locomotive Works	Philadelphia
Du Pont Office Bldg.	Philadelphia
Gimbel Bros.	Philadelphia
Horn & Hardart	Philadelphia
Philadelphia Savings Fund Bldg.	Philadelphia
Public Ledger Bldg.	Philadelphia
Wanamaker Store	Philadelphia
Westward Ho Hotel	Phoenix
Joseph Horne Store	Pittsburgh, Pa.
Mellon Securities Bldg.	Pittsburgh, Pa.
Peoples Gas Bldg.	Pittsburgh, Pa.
University of Pittsburgh (Cathedral of Learning)	Pittsburgh, Pa.
Wm. Penn Hotel	Pittsburgh, Pa.
Federal Bldg.	St. Louis, Mo.
Lennox Hotel	St. Louis, Mo.
Mayfair Hotel	St. Louis, Mo.
Syndicate Trust Bldg.	St. Louis, Mo.
Medical Arts Bldg.	Minneapolis, Minn.
Northern States Power	Minneapolis, Minn.
City Hall and Courthouse	St. Paul, Minn.
Commercial Security Bank	Ogden, Utah
Beneficial Life Insurance	Salt Lake City
Continental National Bank	Salt Lake City
Palace Hotel	San Francisco
San Francisco Furniture Exchange	San Francisco
Keeler's Restaurant	Albany, N. Y.
National Commercial Bank & Trust	Albany, N. Y.
New York State Capital	Albany, N. Y.
New York State Office Bldg.	Albany, N. Y.
City Hall	Saratoga Springs, N. Y.
Carl Co. Dept. Store	Schenectady, N. Y.
Arctic Bldg.	Seattle, Wash.
Davenport Hotel	Spokane, Wash.
Federal Bldg.	Tacoma, Wash.
Security Mutual Fire Insurance	Binghamton, N. Y.
Mark Twain Hotel	Elmira, N. Y.
Child's Restaurant	Syracuse, N. Y.
Keith Theatre Bldg.	Syracuse, N. Y.
Onondaga City Savings Bank	Syracuse, N. Y.
Schrafft's Restaurant	Syracuse, N. Y.
State Tower Bldg.	Syracuse, N. Y.
Utica State Hospital	Syracuse, N. Y.
House of Representatives Office Bldg.	Washington, D. C.
Library of Congress	Washington, D. C.
National Geographic Society	Washington, D. C.
Riggs National Bank	Main Bldg., Washington, D. C.
Senate Office Bldg.	Washington, D. C.
U. S. Capitol	Washington, D. C.
Washington Loan & Trust	Washington, D. C.
Woodward & Lothrop	Washington, D. C.

VAN KANNEL REPRESENTATIVES

ALBANY, N. Y., 110 Wall St., Schnectady—*No. 4-8715*
ATLANTA, GA., Red Rock Building—*Jackson 2284*
BALTIMORE, MD., 514 St. Paul Place—*Vernon 6003*
BOSTON, MASS., 1042 Little Building—*Hancock 9360*
BUFFALO, N. Y., 519 Jackson Building—*Lafayette 8337*
BUTTE, MONT., 51 East Broadway—*No. 3869*
CANTON, OHIO, 715 Short Avenue—*No. 2-9755*
CEDAR RAPIDS, IOWA, 703 Security Building—*No. 2-6617*
CHARLESTON, W. VA., 1114 Lee St.—*No. 34-304*
CHATTANOOGA, TENN., 821 E. 11th Street—*No. 6-2763*
CHICAGO, ILL., 1514 Tribune Tower—*Superior 0330*
CINCINNATI, OHIO, 209 E. 6th Street—*Cherry 7600*
CLEVELAND, OHIO, 9105 Woodland Avenue—*Cedar 4020*
COLUMBIA, S. C., 601 Butler Avenue—*No. 5441*
COLUMBUS, OHIO, 30 E. Broad Street—*Eve 6539*
DALLAS, TEX., Burt Building—*No. 2-3902*
DAYTON, OHIO, 494 Ludlow Arcade—*Fulton 4107*
DENVER, COLO., 812 Twelfth Street—*Main 3637*
DES MOINES, IOWA, 1418 34th Street—*No. 5-5047*
DETROIT, MICH., 250 W. Lafayette Boulevard—*Cadillac 3536*
DUBUQUE, IOWA, 907 Federal Bank Building—*No. 1200*
EL PASO, TEX., Neff Stiles Company—*Main 7 and 8*
ERIE, PA., 11 W. 11th Street
FARGO, N. D., 217 Broadway—*No. 4350*
FORT WAYNE, IND., Taylor Street and Lake Erie Ry.—*No. A-7492*
HAMILTON, ONT., CANADA, 59 Hillyard Street
HARRISBURG, PA., 18th and Mulberry Streets—*No. 3-5400*
HARTFORD, CONN., 108 Whitman Avenue—*No. 3-8519*
INDIANAPOLIS, IND., 115 E. Vermont Street—*Riley 6456*
JACKSONVILLE, FLA., 2716 Main Street—*No. 5-3047*
KNOXVILLE, TENN., 712 So. Gay Street—*No. 2-5727*
LOS ANGELES, CAL., 2071 Laura Avenue, Huntington Park—*Je. 7148*
LOUISVILLE, KY., 1446 Levering Street—*Magnolia 7480*
MEMPHIS, TENN., 202 Falls Building—*No. 8-3472*
MIAMI, FLA., 144 N. E. 21st Street—*No. 2-1794*
MINNEAPOLIS, MINN., 786 Eustis Street, St. Paul—*Nestor 5958*
NEW ORLEANS, LA., 937 Gravier Street—*Main 4488*
NORFOLK, VA., 235 Monticello Arcade Bldg.—*No. 25056*
PHILADELPHIA, PA., 1726 Samson St.—*Rittenhouse 2872*
PHOENIX, ARIZ., P. O. Box 145—*No. 35008*
PITTSBURGH, PA.—1200 Century Building—*Atlantic 8790*
PORTLAND, ORE., 2221 Albina Avenue—*Walnut 7550*
PORTLAND, ME., 53 Pennsylvania Avenue
RICHMOND, VA., 511 Atlantic Life Building—*No. 3-5712*
ROANOKE, VA., 29 Franklin Road
ROCHESTER, N. Y., 135 Spring Street—*Main 6406*
ST. LOUIS, MO., 927 Century Building—*Chestnut 0866*
ST. PAUL, MINN., 786 Eustis Street—*Nestor 5958*
SALT LAKE CITY, UTAH, 204 Dooly Building—*Wasatch 1680*
SAN FRANCISCO, CAL., 55 New Montgomery Street—*Dougla 7899*
SCHENECTADY, N. Y., 110 Wall Street—*No. 4-8715*
SCRANTON, PA., 711 Linden Street—*No. 3-1272*
SEATTLE, WASH., 216-17 Walker Building—*Main 7950*
SHREVEPORT, LA., 503 Giddens Lane Building—*No. 4057*
SIOUX CITY, IOWA, 1st Street and Nebraska Avenue—*No. 8-4595*
SIOUX FALLS, S. D., 213 Paulton Building—*No. 368-W*
SYRACUSE, N. Y., 938 University Block—*No. 2-9621*
TAMPA, FLA., 805 Peninsular Telephone Bldg.—*No. 2868*
TERRE HAUTE, IND., 709 Wabash Avenue—*Crawford 5575*
TOKIO, JAPAN, Marunouchi
WASHINGTON, D. C., 1427 Eye Street N. W.—*Met. 6856*
WINNIPEG, CAN., 608 Gertrude Avenue—*No. 44140*

AGENTS FOR JAPAN AND KOREA: Uchida Trading Co., Ltd., 140 Liberty Street, New York, N. Y.
AGENTS FOR CHINA: Paul I. Fagan & Co., Plaza Hotel, San Francisco, Cal., and 29 Kiangse Road, P. O. Box 592, Shanghai, China

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THE COMPOUND AND PYRONO DOOR COMPANY

650 Arlington Place
CHICAGO, ILL.

Trimount
Sound-Insulated Doors
Patented

Py-ro-no TRADE MARK REGISTERED
Asbestos Interlined
FIRE PROOF DOORS

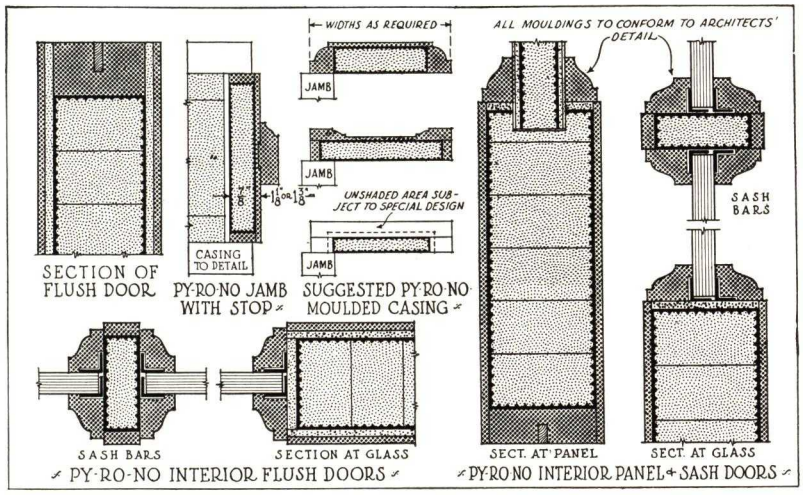
TRADE MARK REGISTERED
Compound
Key-Veneered
DOORS

PYRONO FIREPROOF WOOD DOORS AND TRIM

Process of Construction

The PYRONO process is a mechanical method of fireproofing wood cores in the manufacture of doors and trim.

In PYRONO construction, cores of non-resinous wood are used and these when assembled are covered with pure, long fibre asbestos sheathing mechanically bonded to their surfaces, excluding oxygen, thus preventing ignition and assuring against spread of flame from the place of origin to other parts of a building — the one essential province of a fire door.



Designs—Flush doors with or without inlay. Panel doors, any arrangement of panels. Sash doors with glass lights not exceeding 720 sq. in. PYRONO doors and trim furnished in all cabinet woods used in interior finish.

Appropriate Use in Buildings

PYRONO doors are used for stairways, elevators, corridors and partitions, in office buildings, hotels, hospitals, apartments, schools, dormitories and similar types of fireproof buildings.

Appropriate Use on Ships

The interior partitions, panels and doors of passenger ships and yachts can well be constructed of materials fireproofed by the PYRONO Process thereby securing the maximum protection against fire, consistent with the necessity for light weight and the desired architectural effects only obtainable by the use of wood.

Fully Tested

PYRONO, first introduced in 1910, has fully demonstrated in official tests and actual fires its perfect efficiency as a fire-retardant.

Not one case of failure of a PYRONO door is recorded in the many actual fires which have occurred in buildings, great and small, protected by these doors.

A Few of the Scores of Pyrono Installations and Their Architects

Columbia—Presbyterian Medical Center, New York, N. Y.—James Gamble Rogers
Ohio Bell Telephone Building, Cleveland, Ohio—Hubbell & Benes
Drake Hotel, Chicago, Ill.—Marshall & Fox
Hotel Cleveland, Cleveland, Ohio—Graham, Anderson, Probst & White
Cunard Building, New York, N. Y.—Benjamin W. Morris
Federal Reserve Bank, Chicago, Ill.—Graham, Anderson, Probst & White
Federal Reserve Bank, Kansas City, Mo.—Graham, Anderson, Probst & White
Ohio State University Library, Columbus, Ohio—Allen & Collens
Hotel Statler, St. Louis, Mo.—Geo. B. Post & Sons
Aetna Life Insurance Co., Hartford, Conn.—James Gamble Rogers
Metropolitan Life Insurance Co., New York, N. Y.—D. Everett Waid
First National Bank, Wichita, Kan., Richards, McCarty & Bulford
Roosevelt School, Detroit, Mich.—Malcomson & Higginbotham
Edsel Ford Residence, Detroit, Mich.—Albert Kahn, Inc.
St. Regis Hotel, New York, N. Y.—Sloan & Robertson
McCormick Residence, Chicago, Ill.—John A. Armstrong
Carew Tower, Cincinnati, Ohio—W. W. Alschlager
Columbia Broadcasting Studios, New York, N. Y.—CBS Engineers
Pigott Building, Hamilton, Ont.—B. H. & F. Frack
Morgan Residence, Greenwich, Conn.—F. W. Whiting
Yale University, Timothy Dwight College, New Haven, Conn.—James Gamble Rogers

TRIMOUNT SOUND INSULATING DOORS

The Trimount doors can be built to any conventional or special design and veneered with any wood. For the selection of the proper door we list below the five standard types we manufacture, with the specifications of each. In general, it will be found that the simple requirements of doctors' or executive offices, residential, churches, etc., can be met with Trimount "Regular" or the Trimount "Barrier." The lead lined Trimount "Ideal" is correct for broadcasting studios, music studios, laboratories, or other locations where highest efficiency is imperative. The Trimount "Special" and Trimount "Monarch" need only be considered where conditions require very heavy built-up three-point hardware.

Trimount "Regular"	Trimount "Barrier"	Trimount "Special"	Trimount "Ideal" Lead Lined	Trimount "Monarch" Lead Lined
Turnbuckle hardware Single gaskets Single bottom closer Thickness 2⅝ in. Average weight, 140 lb. Average attenuation 33.30 db.	Turnbuckle hardware Double gaskets Double bottom closer Thickness 3 in. Average weight 160 lb. Avg. attenuation 35.46 db.	3-point built-in hardware Double gaskets Double bottom closers Thickness 3 in. Average weight 175 lb. Avg. attenuation 35.63 db.	Turnbuckle hardware Double bottom closers Double gaskets thickness 3 in. Average weight 320 lb. Average attenuation 39.85 db.	3-point built-in hardware Double bottom closers Double gaskets thickness 3 in. Average weight 335 lb. Average attenuation 40.02 db.

Some Recent Installations of Trimount Sound Insulating Doors

National Broadcasting Co. Studios, Merchandise Mart, Chicago, Ill.—Graham, Anderson, Probst & White
Crosley Radio Broadcasting Studios, Cincinnati, Ohio—Samuel Hannaford & Sons
National Broadcasting Co. Studios, New York, N. Y.—NBC Engineers
Columbia Broadcasting System Studios, Washington, D. C.—CBS Engineers
Lakeside Hospital, Cleveland, Ohio—Coolidge, Shepley, Bulfinch & Abbott
Civic Opera Building, Chicago, Ill.—Graham, Anderson, Probst & White
John Hopkins Hospital, Baltimore, Md.
Dupont Residence, Montchanin, Del.—E. W. Martin
WWJ Studios, Detroit, Mich.—Albert Kahn
School of Music Building, Indiana University, Bloomington, Ind.—Robert Frost Daggett
U. S. Treasury Building, Washington, D. C.

MEMORANDA

ESTABLISHED 1886

W. D. CROOKS & SONS

Manufacturers of Hardwood Veneered Doors and Special Laminated Panels

GENERAL OFFICE AND MILLS

WILLIAMSPORT, PA.

Products

HARDWOOD VENEERED DOORS of every description to architects' specifications and details.
FLUSH DOORS; STOCK DOORS of all designs.
FOLDING PARTITION (ACCORDION) DOORS.
CROOKS' LEAD CENTER X-RAY DOORS.
SPECIAL LAMINATED PANELS.

CROOKS 1886 DOORS
TRADE-MARK

doors to architects' details, which constitute the bulk of its output.

No new door manufacturing equipment, no modern machine, which we approve, is lacking in the Crooks plant. In labor, in equipment, in materials, the company tolerates only the best.

Policy

Limited Quantity—Finest Quality.

For fifty-two years a limited output has been the policy of this organization. The company's heads believe this the only possible means of maintaining its standard on custom-built

Guarantee

W. D. CROOKS & SONS guarantee to replace in the white any Crooks door which proves defective due to material or workmanship. We expect the usual care to protect doors from moisture absorption. Trade-mark stamped on each door.

CONSTRUCTION DATA AND SUGGESTIONS

Construction

Crooks doors are veneered with any domestic or foreign wood specified. All veneer is shrunk in re-drying machines.

Core is "built-up" of narrow chestnut or white pine, kiln-dried strips, which are glued together and kept in retainers in hot rooms until perfect joints are assured. Core is then planed to even thickness and veneers applied under heavy hydraulic pressure. Material is again held in retainers in hot rooms until all moisture accepted from the glue is eliminated.

Succeeding operations are practically identical in all factories, the only difference being in the skill with which the work is performed.

General Specifications

A set of specification sheets covering the best method of construction for paneled and flush designs of veneered doors will be mailed to any architect upon request.

Construction Suggestions

The information given in the following suggestions for special doors is of a practical nature and should be of value to the specification writer.

Use *sawed* veneers on built-up cores of kiln-dried, soft wood strips with square joints.

Exterior and all heavy duty doors, such as used in schools, churches and public buildings should be specified mortise and tenon construction.

Doors with flush or raised moulding should be mortised and tenoned.

Specify and detail one-panel doors at least 1¾-in. thick, with panel not less than ½-in. thick.

Doors veneered with two kinds of wood should be at least 1¾-in. thick.

Doors over 2 ft. 8 in. wide or 7 ft. high should be made 1¾-in. thick.

Flush doors should be at least 1¾ in. thick.

Solid stuck mould should not be detailed wider than ¾-in.

Bars in sash doors should be at least ¼-in. between glass.

All panels, flat or raised, of hard or soft wood, should be laminated.

Specify Casein waterproof glue and standard ¼-in. *sawed* veneers on exterior doors.

Specify hand sanding for special, cabinet and flush doors. The results far exceed the added cost.

All laminated panels should go in plow (not put in on fillet).

CROOKS NON-WARPING FLUSH DOOR

Advantages

The basic principles covered by our flush specification have been used to manufacture thousands of flush doors yearly for more than 25 years. Inspecting numerous installations has proven the superiority of the three-ply construction with *solid framed core,* insuring strength and preventing warping; and the standard ¼-in. *sawed* face veneers, eliminating checking, blistering and sunken faces.

Specifications for Crooks Non-warping Flush Door

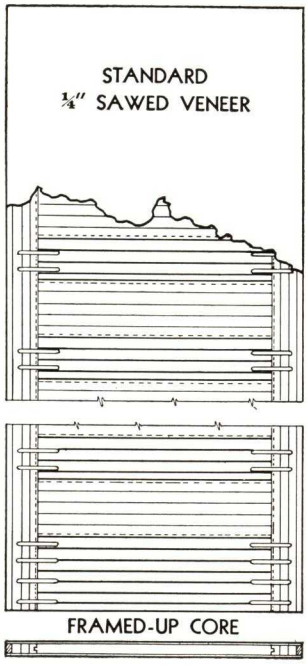
Flush Doors to be Crooks Non-warping Construction as manufactured by W. D. CROOKS & SONS, of Williamsport, Pa.

Core—To be chestnut or white pine, to contain not more than 5% moisture. Stile core to be built up of strips not more than 1⅜-in. by thickness of core, rails and panels to be built up of pieces not over 3 in. wide, glued with waterproof glue under heavy pressure.

Frame—Core of stiles, rails and panels to be *framed* to make five cross panel flush surface. All members well glued and door assembled under heavy pressure.

Core Door—Core door to be sanded smooth, ready for face veneer.

Face Veneer—Face veneer to be *sawed*



FRAMED-UP CORE

(not rotary cut) standard ¼-in. thick, not less than $\frac{3}{16}$-in. when sanded, and to be matched book-leaf. All joints in face veneer to be parallel with edges of door and well glued. Edges same wood as face veneer and at least ¾-in. thick.

Gluing—Face veneer to be glued to core with waterproof glue under heavy hydraulic pressure and held in retainers until glue is set.

Redrying—Doors to be redried after veneering to remove all moisture contained in glue.

Sanding—Face of door to be sanded in such a manner that when varnish is applied, machine or sander marks will not show through finish.

Lead Center X-Ray Door

It is made similar to our Standard Non-warping Flush Door excepting two entirely separate cross banded core doors are made and a single sheet of lead covering the full inner surface is placed between these sections, securing them together with bolts, washers and nuts. Bolts are countersunk and covered with lead —all concealed by face veneer. The thickness of finished door should be not less than 2 in. Full specifications with detail mailed on request.

SPECIAL DOORS TO ARCHITECT'S DESIGNS

Our only claim is that we make good doors. But this claim we feel privileged to amplify with the statement that we believe we are equipped—with tools, with materials, with skilled labor, and executive ability—to faithfully interpret the special veneered door designs of the most exacting architects in America.

All architects are welcome to our services, as consultants, when difficult questions of construction arise, without fear of obligation; and on all other subjects relating to the manufacture of special hardwood veneered doors we gladly extend our facilities.

Sample (Special) Doors

The company welcomes the opportunity to submit full size sample doors at actual cost. This suggestion has found favor with architects on large buildings.

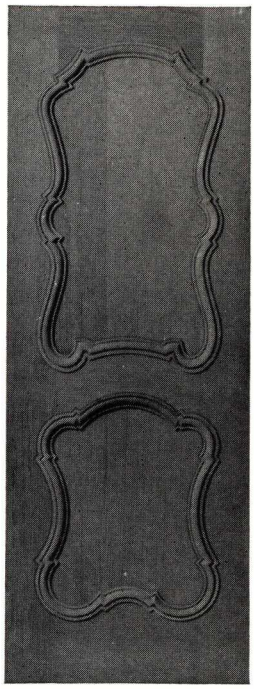
A FEW PROMINENT CROOKS DOOR INSTALLATIONS

Outstanding Buildings Equipped Back Through the Years

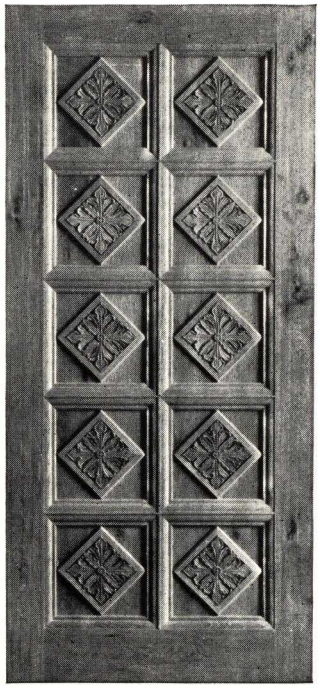
House and Senate Chambers of U. S. Capitol, Washington, D. C.
Pennsylvania State Capitol, Harrisburg, Pa.
West Virginia State Capitol, Charleston, W. Va.
Delaware State Capitol, Dover, Del.
Office Building (Durant) General Motors Corp., Detroit, Mich.
John D. Rockefeller Residence, Pocantico Hills, N. Y.
Mayflower Hotel, Washington, D. C.
Convention Hall, Atlantic City, N. J.
Berkeley College, Yale University, New Haven, Conn.
Yale Graduate School, Yale University, New Haven, Conn.
Home Economics Building, Cornell University, Ithaca, N. Y.
Dormitories, Quadrangle I and IX, Yale University
Eugene duPont Residence, Centerville, Del.
Phillips Academy Buildings, Andover, Mass.
Union League Club, Philadelphia, Pa.
Detroit-Leland Hotel, Detroit, Mich.
Gulf Refining Co., Research Laboratory Bldgs., Harmarville, Pa.
Philadelphia General Hospital, Philadelphia, Pa.
Architects Building, Philadelphia, Pa.
Auditorium and Chapel, Mattewan State Hospital, Beacon, N. Y.
Union Medical College (Rockefeller Foundation), Peking, China
Girard College Buildings, Philadelphia, Pa.
Pennsylvania State College (9 Buildings), State College, Pa.
Union Industrial Building, Flint, Mich.
First Presbyterian Church, Pittsburgh, Pa.
Banco de Bogota, Colombia, South America
Senior High School and 10 Grade Schools, Philadelphia, Pa.
Princeton College Buildings, Princeton, N. J.
Utica State Hospital (7 Buildings), Utica, N. Y.
Delaware State Hospital (7 Buildings), Farnhurst, Del.

More Recent Installations

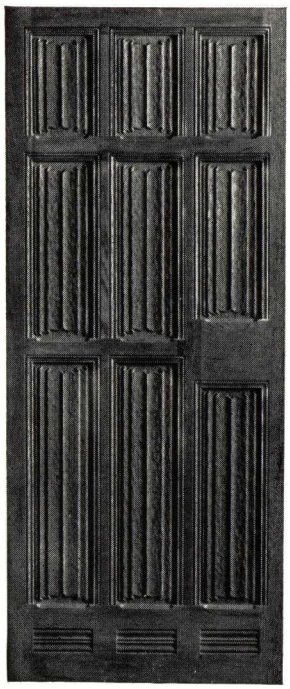
Building	Architect
U. S. Government "Apex" Office Building, Washington, D. C.	Bennett, Parsons & Frost
U. S. Department of Interior Building, Washington, D. C.	L. A. Simon (Supvg)
U. S. Department of Justice Building, Washington, D. C.	Waddy B. Wood L. A. Simon (Supvg)
Sterling Memorial Library, Yale University, New Haven, Conn.	Zantzinger, Borie & Medary
Harvard University (2 Buildings), Cambridge, Mass.	James Gamble Rogers
Payne Whitney Gymnasium, Yale University, New Haven, Conn.	Coolidge, Shepley, Bulfinch & Abbott
Wm. B. Osgood Field Residence, Shrub Oak, N. Y.	John Russell Pope
Duke University (10 Buildings), Durham, N. C.	Cross & Cross Horace Trumbauer
Chemistry Building, Trinity College, Hartford, Conn.	McKim, Mead & White
Cathedral of Learning, University of Pittsburgh, Pa.	Charles Z. Klauder
Gerald M. Livingston Residence, Quitman, Ga.	John Russell Pope
Assembly Hall, Holy Cross College, Worcester, Mass.	Maginnis & Walsh
Eastern High School, Baltimore, Md.	Office of Joseph Evans Sperry
State Prison Buildings, Bordentown, N. J.	Chas. N. Leathem (State)
Hospital Buildings (3) Newark State School, Newark, N. Y.	Wm. E. Haugaard (State)
Saratoga Spa Group (6 Buildings), Saratoga Springs, N. Y.	



French Paneled Door Used in a Fine Residence, Greenwich, Conn.
Frank J. Forster, Architect



Administration Building, Board of Education, Philadelphia, Pa.
I. T. Cathrine, Architect



Payne Whitney Gymnasium, Yale University, New Haven, Conn.
Office of John Russell Pope, Architect

Knotty Oak Door Used in an Office Reception Room
Frank J. Forster, Architect

STOCK DOORS

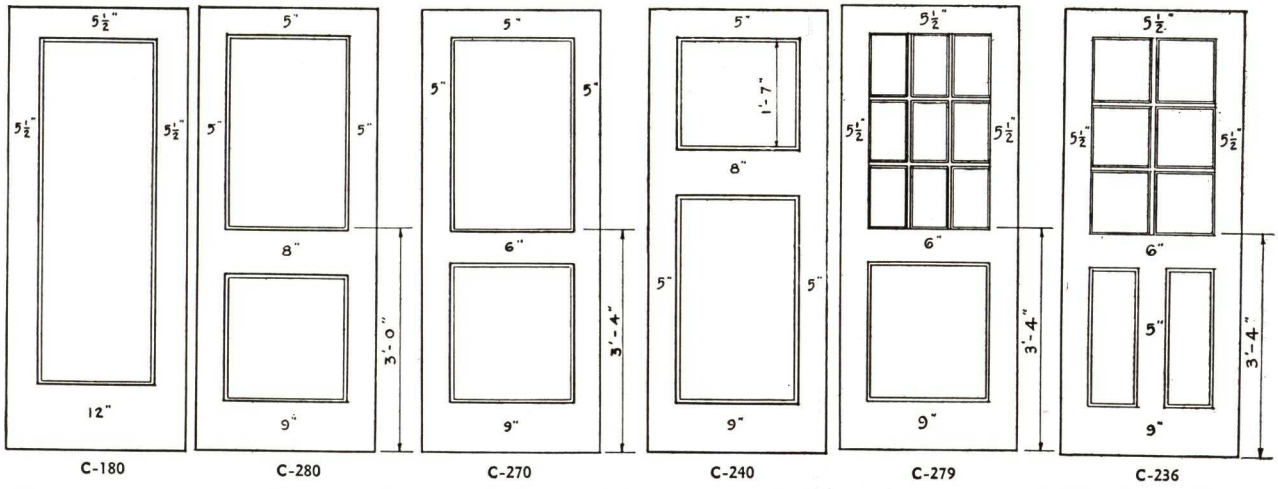
Over 10,000 stock doors are carried ready for immediate shipment. All are hardwood veneered in birch, plain red oak and chestnut. There are Flush and Paneled types for interior and exterior use. Stock list illustrating the designs mailed on request.

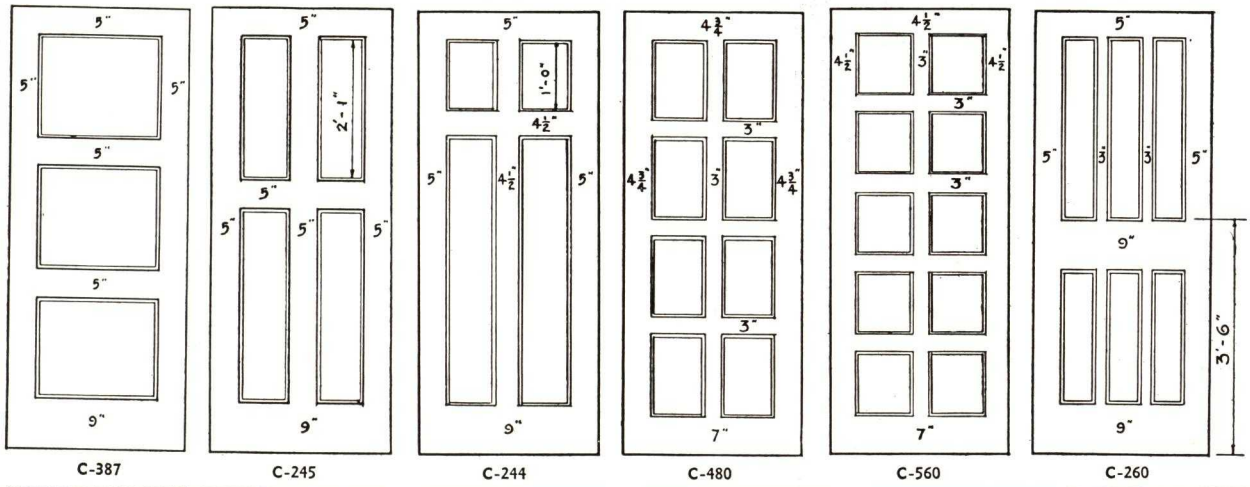
CROOKS STANDARD INTERIOR PANELED DESIGNS

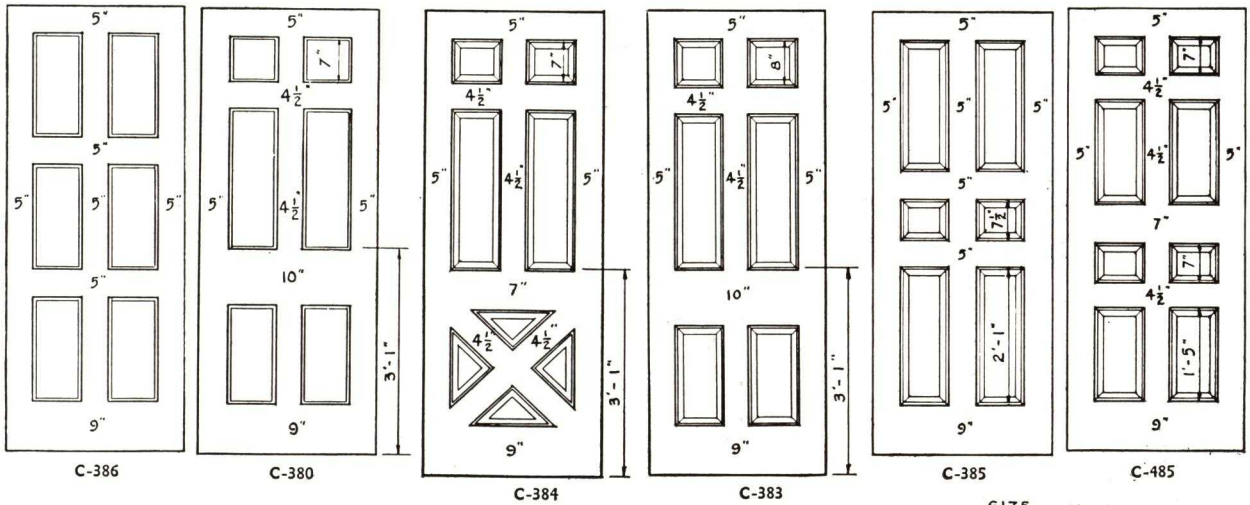
Selected for their simplicity and good design, the illustrations below are taken from our "Stock List and Supplement."

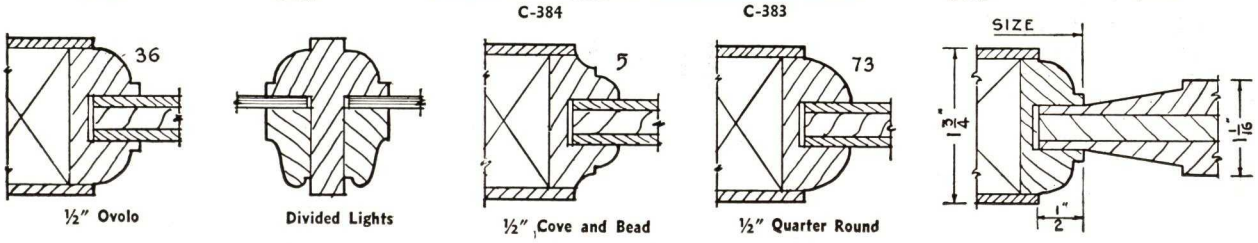
CROOKS 1886 DOORS

This pocket size veneered door book showing more types and miscellaneous details mailed on request.









CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

For Plants and Sales Offices, see the first page of our catalog on Windows
For Silentite Windows, Trim and Kitchen Units, see File Index

Distinctive New Entrance

A masterpiece by Dwight James Baum, A.I.A., this charming entrance will be equally suitable for frame or masonry homes. Your own ideas will find a worthy companion in the new Curtis doorways. This is design C-1787.

The Curtis dealer will show you many more beautiful new doorways by Dwight James Baum

Colonial or Early American Entrance

One of the many new Colonial entrances in the Curtis line. This one, authentic in every detail, is equally pleasing in masonry, brick, or wide siding. There are a number of Curtis exterior doors which harmonize with this entrance, which is design C-1725

1866 CURTIS WOODWORK

Curtis Doors and Woodwork

Good taste, architectural authenticity, quality construction and availability, these are the qualities which for more than 70 years have commended Curtis Doors and Woodwork to architects.

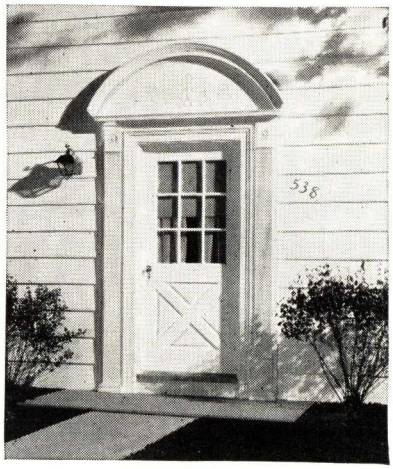
For virtually all Curtis Woodwork is architect designed. Many items in the Curtis line came from the drawing boards of architects of established reputation. For 1938, new entrances, mantels, stairs and cabinetwork, etc., have been developed especially for Curtis by Dwight James Baum, internationally famous architect. These designs are all featured in our 1938 catalog—sent upon request.

There is Curtis Woodwork for every architectural need. A wide range of styles are included—from the simplest and most inexpensive designs to the faithful reproductions of traditional styles suitable for the finest residences.

All Curtis Woodwork is trade-marked for your protection and is available nationally through leading lumber dealers from several large mills and distributing plants.

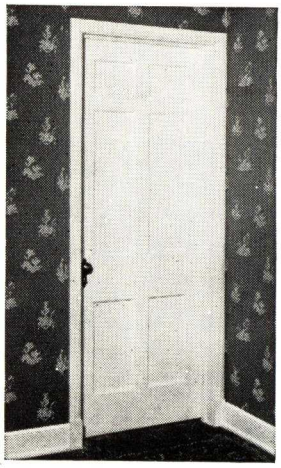
Shown here are but a few selections from the Curtis line of quality woodwork. The line includes exterior and interior doors, entrances, mantels, stairways, china closets, cabinets, molding and trim, screens and storm goods, sectional kitchen cabinets, Silentite double-hung and casement windows, mitertite trim.

For further information, our complete Detail Sheets showing construction and dimensions of each member of every piece are available through your local Curtis dealer. Write for his name.



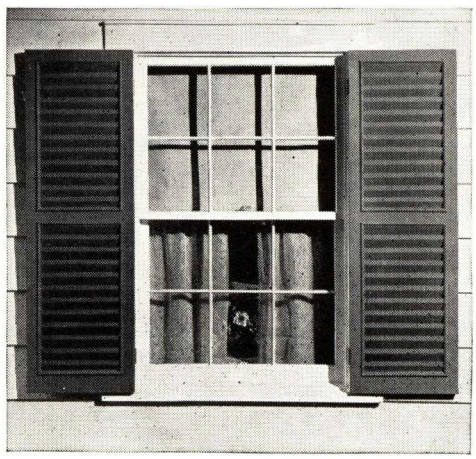
Charming Simplicity

All the artistic advantages of a handmade door but with the economy of Curtis standardized construction. Entrance C-1723 illustrated. The Curtis line includes designs for all architectural styles



Interior Doors

Here is one of the most popular of Curtis interior doors—design C-3030. Note the beautiful new mitertite trim—the work of Dwight James Baum. Curtis standardization and quantity production make trim like this available at very low cost



Shutters

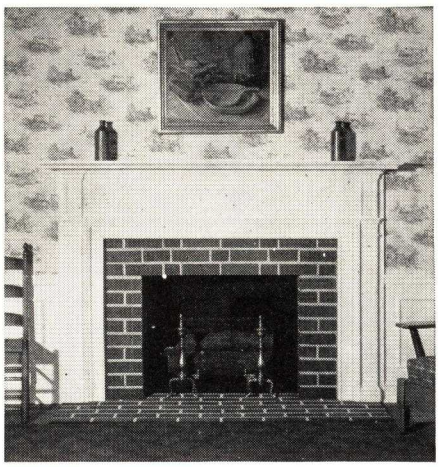
Charming designs with true architectural lines are included in the 1938 line of Curtis Woodwork. See other new attractive shutters in the Curtis Catalog—a book every architect needs for ready reference.

Telephone Cabinet

Curtis makes several interesting cabinets like this for telephones, etc. A Baum creation very popular in modernizing work.

Colonial Mantel

Curtis design makes these mantels beautiful enough to be the heart of any home. This mantel is along Colonial lines, and may be painted or stained. It is Curtis design C-6054.

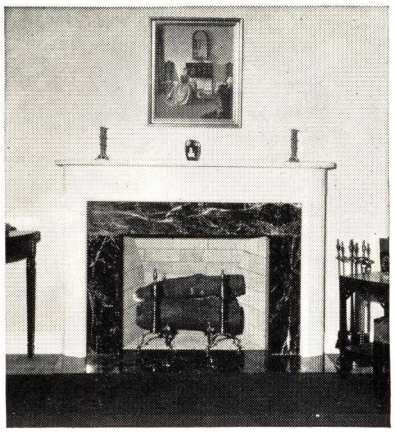


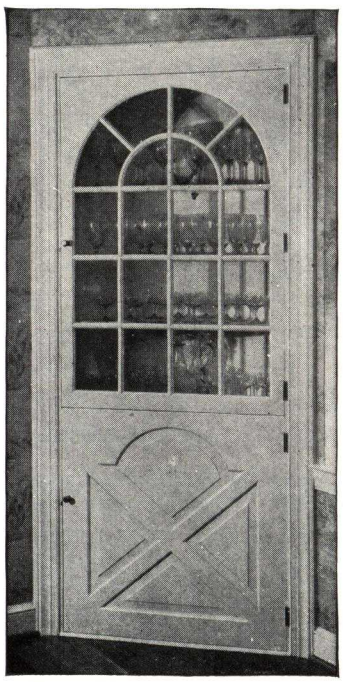
Two Charming Mantels

Dwight James Baum designed these new Curtis Mantels and others to satisfy every plan and pocketbook. Ask your Curtis dealer for complete details on the new 1938 Curtis line, or write us.

(Left) Design C-6070

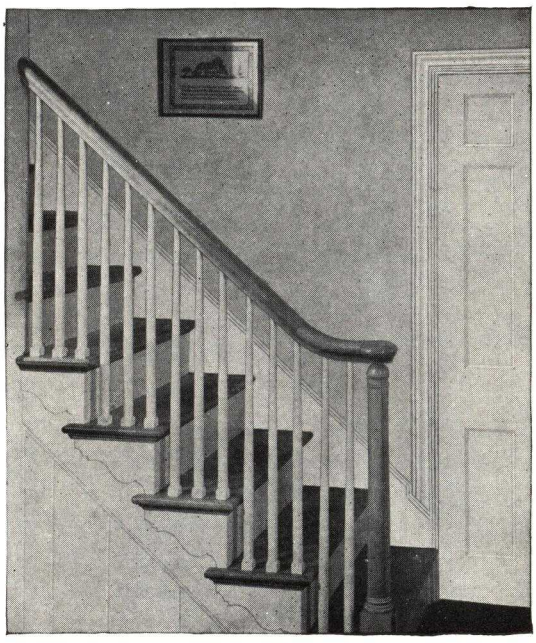
(Right) Design C-6072





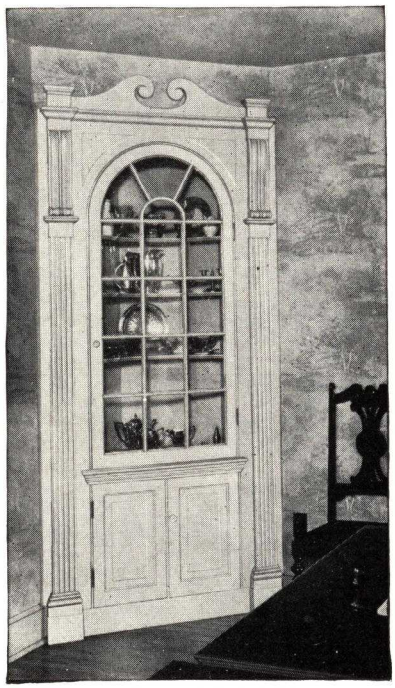
Copy of Museum of Art China Closet

The original of this china closet is in the American Museum of Art in New York City. This is Curtis design C-6503. Many other beautiful cabinets are featured in Curtis catalog.



Curtis Stairway

A Curtis stairway. Curtis has endeavored in all of its woodwork to evolve patterns which look as though they had been specially designed for each installation. Hence architects, specifying Curtis Woodwork, need never feel that they are making any sacrifices of authenticity or of good taste. This Colonial stairway is made from standard parts.



Colonial China Closet

Straight from a Colonial original comes the design for this Curtis china cabinet. Note the graceful pilasters and the refinement of detail. There are Curtis units for the formal dining room and for the cozy dinette—all offering economies of standardized construction. Design C-6500 pictured.

HARDWOOD PRODUCTS CORPORATION

Exclusive Door Manufacturers

NEENAH, WISCONSIN

PRINCIPAL SALES OFFICES

NEW YORK, N. Y.	CHICAGO, ILL.	SAN FRANCISCO, CALIF.	DALLAS, TEX.	WICHITA, KAN.
1730-101 Park Ave.	1805-75 Wacker Dr.	3045 19th St.	Box 4247	4322 E. Kellog St.
Ashland 4-7594	Randolph 7230	Valencia 2241		

For Soundproof Doors see File Index

The Company

The company has been continuously in business for over twenty-five (25) years, specializing in the manufacture of high quality hardwood-veneered and solid-softwood doors.

Guaranty

We Unqualifiedly Guarantee every HARDWOOD PRODUCTS CORPORATION *door, made according to our recommendations, to be free from defects of workmanship and materials, and will replace any doors that prove to be defective within the meaning of our specifications and recommendations.*

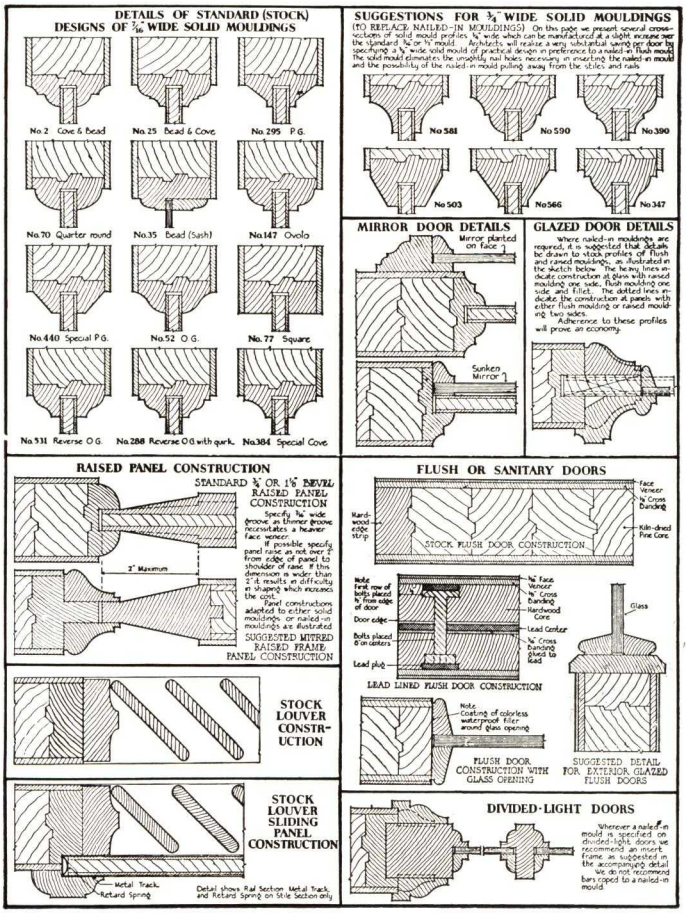
Responsibility

Our rating in R. G. Dun's and Bradstreet's is over $750,000—first grade of credit.

Products

VENEERED DOORS (Panel)
FLUSH VENEERED DOORS
FIRE-RESISTANT WOOD DOORS
X-RAY or LEAD-LINED DOORS
*SOUNDPROOF DOORS
SOLID SOFTWOOD DOORS
PLYWOOD
MILLWORK

*We are exclusive manufacturers of Riverbank Sound Insulating Doors as designed along new and thoroughly scientific lines by the Riverbank Acoustical Laboratories, Geneva, Illinois. These are all wood surfaced inlaid flush doors veneered with any cabinet wood for stain or in plain birch for paint finish. For full details see File Index.



Advantages of Hardwood Products Corporation Doors

(A) Practically all of our doors are made to architects' details, hence a consciousness of better quality pervades our organization.

(B) Only highest paid skilled help is employed.

(C) We pay a premium for better grades of lumber and veneers.

(D) Cores are dried to a specific moisture content in kilns designed especially for core use only.

(E) Every foot of veneer entering into the manufacture of doors is dried and flattened out evenly in special plate driers before gluing.

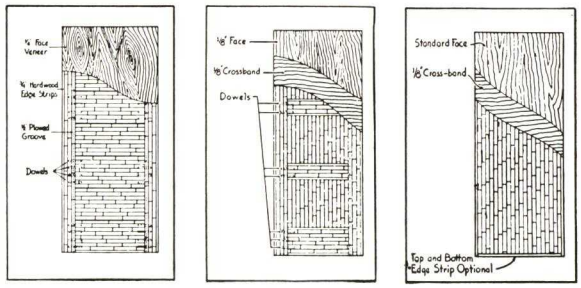
(F) After cores are glued up (either flush or panel doors), they are thoroughly seasoned before crossbanding and face veneer is applied.

(G) Only up-to-date machinery is used.

(H) Rigid inspection of every door before shipment.

Flush or Sanitary Doors

After many years of experience in the manufacture of Flush Doors, we have come to the conclusion that different types of construction are adaptable to varying conditions and usage. We are therefore setting forth below three different specifications which we recommend for varying types of buildings.



"Straight Flush" Doors made with framed core, 1/4 in. sawn veneers and no crossband and with aircraft water-resistant glue. This is an ideal construction and especially adapted for installation in Schools, Dormitories, Asylums, Sanatoriums, Churches, etc.

"Sturdy Flush" Doors made of framed three-panel core, 1/8-in. crossband and standard face veneers, with aircraft water-resistant glue. This construction is recommended for Hotels, high-class Apartments, and Residences, especially where cabinet woods are specified requiring very thin face veneers.

"Standard Flush" Doors made of all vertical core, 1/8 in. crossband and standard face veneers. This construction is recommended for general Hospitals, Residences, and Modern Apartments.

Write for Our Latest "Manual of Veneered Doors."

ESTABLISHED 1865

THE R. McMILLEN CO.

INCORPORATED 1902

Manufacturers of Hardwood Doors, Pine Doors, Sash and Millwork

OSHKOSH, WIS.

SALES OFFICES

BIRMINGHAM, ALA., Comer Building—3-9768
BUFFALO, N. Y., 104 Linden Avenue—University 7230
CHICAGO, ILL., 7942 Green Street—Vincennes 1810
NEW YORK, N. Y., 431 Marlborough Road, Yonkers, N. Y.
PHILADELPHIA, PA., 7117 Wayne Avenue, Upper Darby, Pa.—Boulevard 586
ST. LOUIS, MO., 4533 Tower Grove Place—Prospect 6672

Products and Distribution

VENEERED DOORS of all kinds; PINE DOORS AND SASH; TRIM AND CABINET WORK. We specialize on HARDWOOD VENEERED DOORS. Our products are sold through independent jobbers, wholesale dealers and mills.

Resources and Facilities

A strictly modern plant, equipped with the best of machinery and manned by mechanics of proven skill. Our capacity is in excess of 1200 doors per day.

Our Guarantee

We unconditionally guarantee our product to be of first quality material, carefully seasoned and well manufactured. If made to our specification, we will replace any door or other product which, within two years, is shown to have been defective in either material or workmanship. We ask only the exercise of ordinary care in the storage and installation of our products.

Samples

On orders totalling 500 or more doors, if desired, a full size typical sample door will be furnished gratis for architects' approval before we manufacture the job. On smaller jobs, such sample may be had at actual cost. Sample corner sections, showing construction, gratis at all times.

Catalogs and Literature

A complete series of catalogs and brochures showing a full line of our products and details of construction may be had by writing our Oshkosh, Wisconsin, office. Also available are "Suggestions for the Proper Storage and Installation of Veneered Doors."

STANDARD SPECIFICATIONS FOR VENEERED DOORS

All doors shall be of size, thickness and design as called for on plans.

Interior Doors of Stile and Rail Type

These shall be constructed of thoroughly seasoned materials redried by door manufacturer before assembly to a proper and uniform moisture content suitable for the climate in which the doors are to be used. All core materials shall be of soft pine glued up of blocks not over 2 inches wide on the face and joints in adjacent rows of core well staggered. Unless otherwise stated, exposed edges shall have a ¾-inch thick strip of the same wood as the face veneer. Veneers for stiles and rails shall be ⅛ inch before sanding unless otherwise noted. All glue used in the door construction must be a high grade vegetable or water resistant casein glue, equally distributed over the surface and applied under pressure before "chilling." Panels shall be three or five-ply as noted. Joints shall be assembled with *hardwood* spiral groove dowels not less than ⅝x5 inches, joints 6 inches or less to have two dowels with an additional dowel for each additional 3 inches or fraction in width. All joints must be well fitted and all moulded edges smoothly machined. Unless otherwise noted, all doors shall be smoothly machine sanded with "00" sandpaper.

Interior Doors of Flush Type

These shall have cores constructed of vertical blocks not over 2 inches wide on the face, well glued together with joints well staggered and surrounded with ¾-inch hardwood edge strip on all four edges. All cores shall be of soft pine properly dried and seasoned as described above. Assembled core shall be brought to a uniform surface to which shall be applied a $\frac{1}{16}$-inch horizontal cross banding extending to edges of door and a $\frac{1}{16}$-inch before sanding (or a ⅛-inch before sanding if preferred by Architect) vertical face veneer. All glue shall be a high grade vegetable or water resistant casein product equally distributed and applied under pressure before "chilling." Unless otherwise noted all flush doors shall be smoothly machine sanded with "00" sandpaper.

Note: In lieu of above, Flush Doors may be made with cores of stile and rail construction, assembled with ⅝x5-inch spiral grooved *hardwood* dowels with cross banding concealed on vertical edges and face veneer not less than standard ⅛ inch thick before sanding.

Exterior Doors

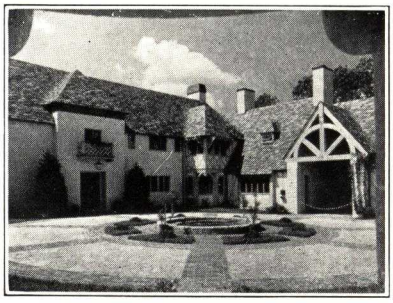
These shall be made to the same specifications, except that veneers for stiles and rails and flush doors shall not be less than ¼ inch before sanding and shall be applied with a high-grade casein water-resistant glue.

The manufacturers' trade-mark or label shall appear on all doors. All doors shall be as manufactured by THE R. MCMILLEN CO., Oshkosh, Wisconsin, or other approved manufacturers.

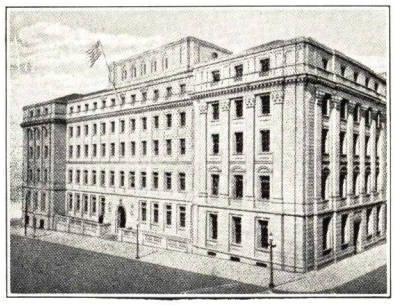
A FEW RECENT AND REPRESENTATIVE INSTALLATIONS OF McMILLEN DOORS

(Architects' name upon request)

Beta Theta Pi Fraternity House, Hanover, N. H.
U. S. Marine Hospital, Baltimore, Md.
Northam Warren Residence, Garden City, L. I.
Colwyn Grade School, Colwyn, Pa.
New York State Hospital, Letchworth Village, N. Y.
Epileptic Hospital, Cambridge, Minn.
E. E. Reed Residence, Deer Isle, Me.
LaRabida Sanitarium, Jackson Park, Chicago, Ill.
Roosevelt Junior High School, Middletown, Ohio.
U. S. Post Office, Trenton, N. J.
U. S. Veterans' Hospital, Augusta, Ga.
Home for Confederate Women, Richmond, Va.
Guggenheim Airship Institute, Akron, Ohio.
Baptist Church, Lake Villa, Ark.
St. Barnabas School, Belmore, L. I., N. Y.
University of Texas (3 Buildings), Austin, Tex.
U. S. Post Office, Fort Worth, Tex.
U. S. Forest Products Laboratory, Madison, Wis.
Ocean Forest Hotel, Myrtle Beach, S. C.
Medical Arts Building, Birmingham, Ala.
U. S. Customs House, Denver, Colo.
Hotel Dempsey, Macon, Ga.
Recital Hall, State College, Bowling Green, Ohio.
Forrest General Hospital, Gadsden, Ala.
U. S. Botanic Gardens, Washington, D. C.
Model Home, Pittsburgh, Pa.
Temple University Hospital, Philadelphia, Pa.
Y. W. C. A. Building, New Haven, Conn.
University of Rochester, Rochester, N. Y.
Christ Church, Winnetka, Ill.
U. S. Veterans' Hospital, Harlencross, Tex.
St. Luke's School, St. Paul, Minn.
Criminal Court House, Chicago, Ill.
King Hotel, Baton Rouge, La.
Albers Residence, Saddle River, N. J.
Bennington College Buildings, Bennington, Vt.
Swedish Covenant Hospital, Chicago, Ill.
Waltham School, Waltham, Mass.
Park Place Hotel, Traverse City, Mich.



Horn Residence, Kansas City, Mo.



U. S. Post Office and Court House, Baltimore, Md.

Stone Hall, Wellesley College, Wellesley, Mass.

PAINE LUMBER CO. LTD.

Manufacturers of Rezo Light Weight Flush Type Doors

OSHKOSH, WIS.

THE NEW STANDARD OF VALUE IN DOORS

The REZO door

TRADE-MARK
(Registered)

The Modern Flush Door

The Paine Rezo Flush door has recently been introduced in America under U. S. Patent No. 1887814 and has already won recognition as a worthy, modern improvement in door construction. It is a flush type door that measures up to every demand for architectural beauty, has practical utility value and is immune from the usual faults caused by extreme temperatures and atmospheric conditions.

The cross and vertical members of the Rezo door core are alternately grooved and then assembled forming a woven-wood structure. Both sides of the cross members have notched air vents, permitting air to circulate throughout the door after plywood faces have been applied.

This patented interlocking ventilated core affords protection against warping, sagging or swelling, therefore the Rezo door will retain its stability under all conditions.

Moderate in Cost

Savings on hardware—hanging—fitting—sanding—finishing time, produces an installed cost that is no more than common doors.

Outstanding Features

Attractive—Modern smooth surfaces enhance any style of architecture. May be routed, striped, sandblasted, inlaid or tooled and offers a wide field for creative effort in designing.

Air Conditioned — Continuous air circulation throughout the full length and width of the door prevents swelling, shrinking or sagging. Also provides added insulation against cold, heat or noise.

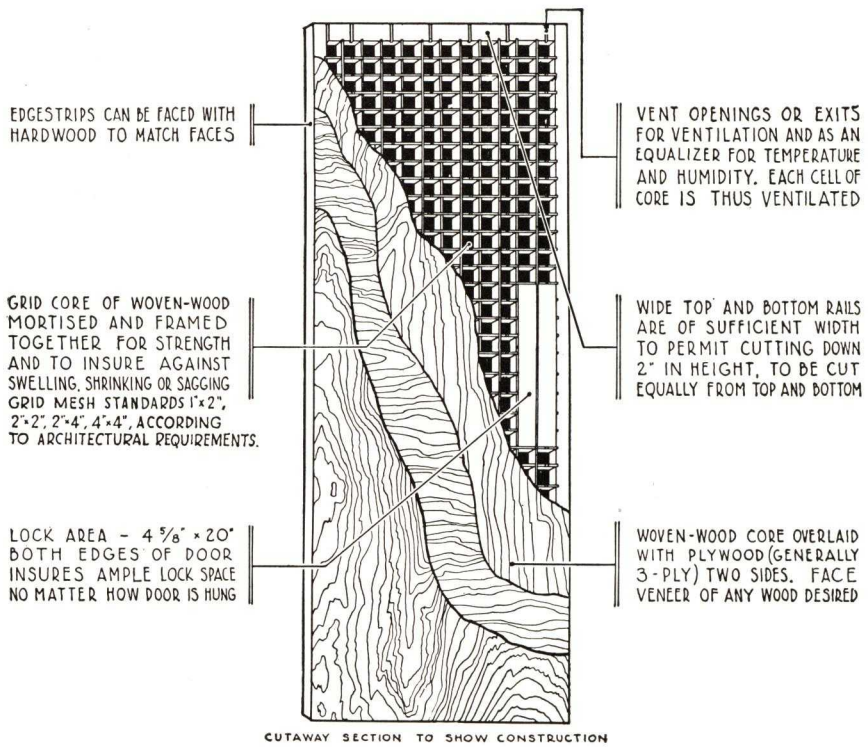
Strong—Its interlocking grid core carefully mortised and framed together, overlaid with plywood, gives the door unusual strength and rigidity.

Light in Weight—Its patented grid core greatly reduces the weight of the doors. A standard 1⅜-in. size weighs approximately 30 lbs. Standard hardware services these doors.

All Woods—Birch, oak, gum, walnut, mahogany, etc., to meet any requirement.

Prefitted—Rezo doors are precision made and squared to exact sizes, thus assuring lower installation costs.

Individually Packed—Each door is paper packaged immediately after sanding operations at factory. This delivers the door, prefitted for the carpenter, sanded ready for the painter, in clean condition and in perfect order.



CUTAWAY SECTION TO SHOW CONSTRUCTION
(U. S. Pat. No. 1,887,814)

How to Specify Paine Rezo Doors

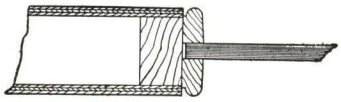
Genuine Rezo Doors are manufactured in America under U. S. Patent No. 1887814 by the PAINE LUMBER CO. LTD., Oshkosh, Wis. To insure getting Rezo doors state kind of wood desired for faces and specify that: "All doors shall be Rezo flush type of doors as manufactured by the PAINE LUMBER CO. LTD., Oshkosh, Wis. All Genuine Rezo doors are metal die stamped, top and bottom edges with "U. S. Patent No. 1887814."

Diversity of Uses of Rezo Construction

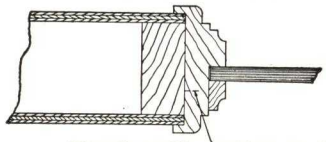
The Rezo construction has unlimited possibilities, and for the building industry can be used for: interior and exterior doors—cupboard doors—fixed and movable partitions—accordion doors—locker doors—fire-resisting doors — panel work, etc.

CONSTRUCTION DETAILS

CONSTRUCTION FOR INTERIOR SASH DOORS



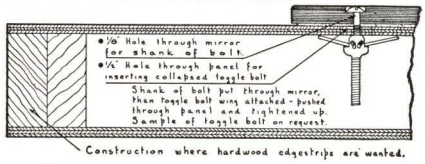
CONSTRUCTION FOR EXTERIOR SASH DOORS



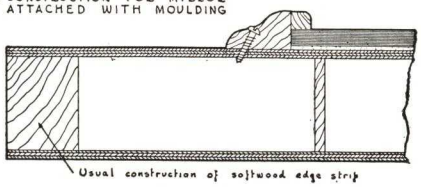
Mitered straddle moulding cut through dotted line then broken and put together from each side so there is no opening.

Sash Doors

• CONSTRUCTION USING SPRING TOGGLE BOLT FOR ATTACHING VENETIAN MIRROR

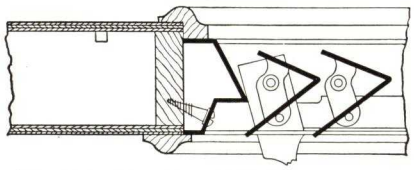


• CONSTRUCTION FOR MIRROR ATTACHED WITH MOULDING

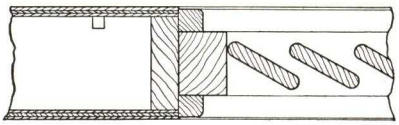


Mirror Doors

• CONSTRUCTION USING A STANDARD METAL LOUVER



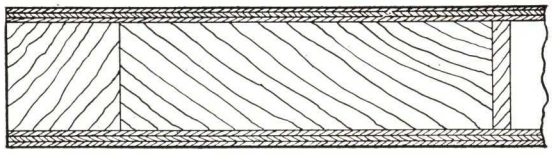
• CONSTRUCTION USING A WOOD LOUVER



• Louvers can be any size and located anywhere in the door

Louver Doors

• Gridwork will accomodate any blocking necessary, so that doors are reversible right or left



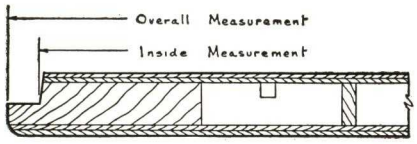
Wardrobe Doors

Rezo Cupboard Door made with framing 2 3/8" to permit cutting down 2" in width and 2" in length

Rezo Core of White Pine or Basswood

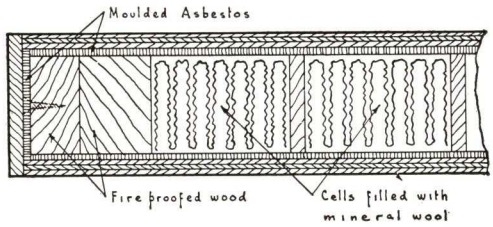
Faces Birch, Oak, Gum, etc

Cupboard Door Thickness 3/4", 13/16", 1", 1 1/16", etc. as required



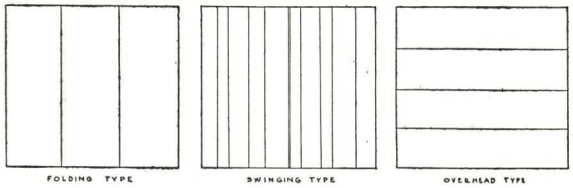
Cupboard Doors

• Detail of Fire Resisting Door on S. S. Normandie according to approved construction of French Underwriters. Details and full particulars upon request.



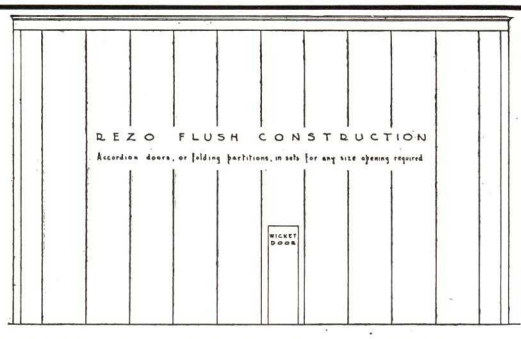
Fire-Resisting Doors

• Garage doors can be furnished in Rezo construction, in single doors, pairs or sets to accommodate ordinary, overhead or folding type hardware. Weight of Rezo construction about 50% less than ordinary garage doors.



• With the Rezo construction, garage doors can now be designed with surface treatment to harmonize with any style exterior.

Garage Doors



• Weight less than one-half of usual doors. Suitable for various types of hardware. Doors can be made any size or thickness and sound proofed to meet any conditions.

Accordion Doors

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BUILDING TECHNOLOGY HERITAGE LIBRARY
https://archive.org/details/buildingtechnologyheritagelibrary

Doors by RODDIS

Guarantee :

Doors made to Roddis specifications are unqualifiedly guaranteed for two years against defective material and workmanship.

Roddis Lumbet and Veneet Company

RODDIS LUMBER AND VENEER COMPANY

Marshfield, Wisconsin

★

RODDIS LUMBER and VENEER COMPANY

MARSHFIELD, WIS.

• • •

EXPERIENCE • FACILITIES • RESPONSIBILITY

EXPERIENCE—Established in 1890, Roddis Lumber and Veneer Company has, during its forty-seven (47) years of door-building experience, achieved an enviable reputation for high quality. The Company has, during this period, made doors of every conceivable type of construction and has pioneered in the development of many outstanding improvements, resulting in today's Roddis Guaranteed, Time-Tested, Standard Construction which permits unrestricted latitude so far as the architectural design is concerned.

FACILITIES—Except for certain foreign cabinet-wood logs, Roddis controls all operations from forest to finished product. Roddis experts and woodsmen select trees from Roddis owned timber land, fell them, and cut the logs. Roddis railroads haul the logs to Roddis mills where all lumber is sawn and fully cured for years before cutting into door stock. Roddis mills, manned by experienced tradesmen, are equipped with every modern facility to produce the highest quality veneered doors and plywood.

RODDIS LUMBER & VENEER CO.

GUARANTEE BOND

Know All Men By These Presents, That the Roddis Lumber & Veneer Co. with office in the city of Marshfield in the State of Wisconsin, is held and firmly bound unto _____ _____(his) (their) heirs or assigns in the penal sum of _____ ($_____) for the payment of which it binds itself, its successors and assigns.

The Condition of the Above Obligation is Such That, Whereas the said _____ _____has purchased of the Roddis Lumber & Veneer Co. _____ doors for _____ of _____, said doors manufactured by the Roddis Lumber & Veneer Co. of Marshfield, Wis., and in consideration of such purchase said company guarantees the said doors for two years from date of delivery against defective material and workmanship, and agrees to repair at its own expense any such defects that may be found in such doors during said period of two years, or furnish new doors to replace such defective doors of which it may have notice within said time.

Now, Therefore, If the said Roddis Lumber & Veneer Co. shall properly repair any defects in material and workmanship that may be found in the said doors or any of them within two years from date of delivery, or shall furnish new doors for any defective doors of which it may be notified before the expiration of the said two years, then this obligation shall be void, otherwise to remain in full force.

In Witness Whereof: The said Roddis Lumber & Veneer Co. has caused these presents to be signed by its president on this_____day of_____193___.

RODDIS LUMBER & VENEER CO.

Per _____
President

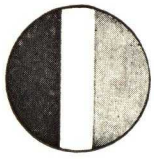
Attest:_____

_____

RESPONSIBILITY—The Roddis Lumber and Veneer Company will assume full responsibility for its products and will furnish its Guarantee Bond where the construction of its doors follows its recommended standards as hereinafter established. This in no sense need be construed as conflicting with the architect's prerogative of design control.

SERVICE—Roddis distributors and experienced representatives are located in all principal cities of the United States. Complete information regarding Roddis products, samples, detail drawings, consultation and advice relative to unusual problems and comparative cost data will be furnished promptly when requested.

IDENTIFICATION — Every Guaranteed Roddis Door is distinctly and permanently marked for identification with the Roddis red, white, and blue hard wood dowel inserted in the edge—a further evidence of Roddis responsibility.



• RODDISCRAFT DOORS •

WATERPROOF FLUSH VENEER CONSTRUCTION

RADICALLY NEW PROCESS OF FABRICATION — Flush door construction has been improved from time to time during the past fifty years. The first flush doors produced were made with animal or vegetable glue. About twenty years ago Roddis Lumber & Veneer Company perfected a waterproof glue for fabricating U. S. Government aircraft plywood and pioneered in the use of this "wet" glue for flush doors—a forward step in improved door construction.

Now, after twenty years' experience with waterproof adhesives, this company is able to announce the perfection of a waterproof "dry glue" film that is the greatest improvement in flush door construction in half a century. The bond is produced by the simultaneous application of heat and pressure without introducing water into the dry lumber and veneers and is known as the Roddiscraft process. The kiln dried, glued-up door core, crossbandings, and face veneers are assembled with thin sheets of dry glue laid between core, crossbandings, and face veneers. The entire assembly is placed in a hot plate press where, under tremendous pressure and heat, the glue films are fused and the five separate plies are literally welded into one solid block with four permanently waterproof films over the entire door area. No moisture has been added to the door, and no moisture can penetrate the waterproof glue film after completion.

THE GLUE—PERMANENTLY WATERPROOF — The "dry-glue" process has proven its practicability and permanently waterproof qualities in Europe over a period of ten years. Only the cost of foreign-made, patented equipment has prevented its more general use in America. It is inert to water or any known chemical solution.

THE CORE—Roddis Cores are of selected, narrow pine strip-blocks **all running in one direction,** waterproof-glued together under pressure, and scientifically kiln-dried to the proper moisture content — a time-tested Roddis Standard Construction.

THE CROSSBANDING — Roddis hardwood crossbanding, $\frac{1}{16}$ inch thick, is cut from Roddis logs in Roddis veneer mills, carefully selected for quality, strength, freedom from imperfections, and machine dried to the proper moisture content before use.

THE FACE VENEERS—Most face veneers for Roddis Doors are cut from specially selected Roddis logs in Roddis veneer mills. For foreign veneers, selected flitches are purchased and the veneers carefully matched in the Roddis mills. All face veneers are scientifically cured and machine dried.

WHY STANDARD THICKNESS FACE VENEERS ARE BEST — Solely in the interest of better construction backed by its forty-six years of door-building experience, the Roddis Company has incorporated standard thickness face veneers (as opposed to ⅛ inch and thicker veneers) as an important element of its Standard Construction carrying its unqualified guarantee. The following factors are salutary: **(1)** The thickness of the face veneers in no way affects the appearance or limits the finish; **(2)** The "dry-glue" fabrication so permanently and inseparably bonds the face veneers to the tough hard wood crossbanding that they function as a unit, resulting in a strong, durable door surface; **(3)** Obviously the less moisture absorbing wood exposed outside the protective waterproof glue film the better; **(4)** Due to the reduced wood thickness, the edges of matched or joining veneers will not shrink, swell or cup; **(5)** More perfect bookleaf matching can be secured with Standard Thickness face veneers than with thicker veneers.

RODDIS FINISHING SERVICE—For more than thirty years the Roddis Company has maintained a high quality finishing department for the convenience of Roddis Woodwork customers. This department is equipped with modern machinery, handled by experts competent to match perfectly the architect's samples. Doors which are dry and properly cleaned and prepared at the Roddis plant for finish should always be protected against moisture absorption and dirt by priming, if to be painted, or by staining, filling, and shellacing before they leave the factory. The work of final painter's finish over the priming coat and varnishing over the shellac should invariably be done at the job. In the case of inlaid doors which are stained, the staining should always be done before inlaying to assure clear, well defined lines. The cost of this protective, preliminary priming and finishing is decidedly moderate.

MAKE YOUR OWN TEST

THE COMPANY WILL FURNISH A SECTION OF RODDISCRAFT FLUSH VENEER DOOR CONSTRUCTION TO ANY ARCHITECT TO DEMONSTRATE ITS PERMANENT WATERPROOF QUALITIES. IMMERSE THE SECTION FOR ANY LENGTH OF TIME IN A RECEPTACLE CONTAINING WATER.

• RODDIS FLUSH VENEER DOORS •

Outstanding Features

WATERPROOF CONSTRUCTION — Roddis five-ply flush veneer doors (core, crossbandings, and face veneers) when made in accordance with RODDIS STANDARD CONSTRUCTION are permanently waterproof and resistant to decay, mildew or fungi. The pine cores are fabricated under pressure with special casein waterproof glue. The exposed top and bottom edges of the soft wood core as well as the sides are sealed with hard wood edge strips. Crossbandings and face veneers are glued to both sides of the kiln dried core by the "dry-glue" process, forming two complete, permanently waterproof glue films over the entire area of each face.

STAVED CORES—The cores are made up from narrow, uniform width, clear pine strips of varying lengths assembled with the grain all running in the same direction (from top to bottom of the door). Hard wood edge strips are provided at top, bottom, and two sides—an exclusive Roddis feature. Core strips and edge strips are glued together under pressure with casein waterproof glue. After gluing, the cores are kiln dried, seasoned to atmospheric conditions and planed smooth to receive the crossbanding.

CROSSBANDINGS — Selected Roddis hard wood crossbandings, $\frac{1}{16}$ inch thick, laid with the grain running at right angles to the core grain, are glued to both sides of the core by the Roddiscraft waterproof "dry-glue" method (pressure and heat).

FACE VENEERS—Standard thickness face veneers (see below), laid with the grain running normally at right angles to the grain of the crossbandings (from top to bottom of the door), are glued over the crossbandings by the Roddiscraft waterproof "dry-glue" method. Face veneers may be of domestic or foreign woods; sliced or rotary cut; plain or figured; matched or in combination patterns; with or without inlays at the designer's discretion. Samples of obtainable plain and figured woods will be submitted for selection.

INTERIOR AND EXTERIOR DOORS—The Roddis Standard Construction 5-ply flush veneer doors as described above are adapted for both exterior and interior use. No special construction is required for exterior exposure to moisture or sun.

TESTS—The Company prefers that the architect conduct his own tests as evidence of the waterproof quality of the Roddis Construction. A sample door section will be sent for this purpose on request. See illustration of suggested water test on page 2.

Specifications

INTERIOR and EXTERIOR FLUSH VENEER DOORS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply, Words in bracketed bold face type are selective.*

(1) GENERAL—All doors **(so indicated on door schedules)** shall be 5-ply Flush Veneer Doors made by Roddis Lumber and Veneer Company, Marshfield, Wisconsin.

(1a) Doors shall be constructed in strict accordance with Roddiscraft Standard Construction covered by their two-year Guarantee Bond.

(1b) Doors shall be of sizes and thicknesses called for **(in door schedules) (on plans).**

(2) CORES—Cores shall be made of clear pine strip-blocks of uniform width assembled with the grain running parallel and vertically (from top to bottom of door). Cores shall be railed on all four edges with ¾ inch wide hard wood strips. Those on side edges to match face veneer. The whole assembly shall be glued under pressure with casein waterproof glue and thoroughly kiln dried, seasoned and planed smooth.

(3) CROSSBANDINGS — Crossbandings of 1/16 inch thick, thoroughly kiln dried, hard wood veneer shall be laid with the grain at right angles to that of the core and glued by the waterproof "dry-glue" process (pressure and heat) to both sides of the core.

(4) FACE VENEERS—Thoroughly kiln dried, standard thickness, **(specify wood)** face veneers **(of woods hereinafter specified),** laid with the grain at right angles to that of the crossbandings, shall be glued by the waterproof "dry-glue" process (pressure and heat) to both faces of the door and belt sanded smooth.

(4a) Face veneers shall be as follows:

Note: *Here describe any special requirements of species, figure, pattern, inlays, etc. If more than one type is required, specify each separately and locate here or by reference to door schedules or special detail drawings.*

(5) GLAZING—(Not by door manufacturer)—All glass for glazed doors shall be **(specify).**

(5a) Glazing shall be accomplished **(in accordance with details),** using removable wood glazing mouldings set in lead or varnish to seal against moisture absorption.

(5b) Where called for **(on door schedules) (on plans),** doors shall be equipped with **(specify grade and type) (specify size)** mirrors in accordance with details.

(6) FINISHING—

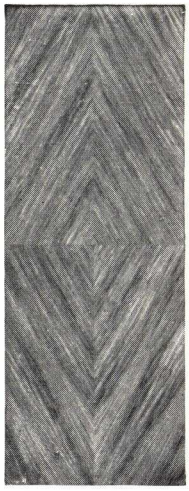
Note: *Here specify preliminary finishing to be applied by the door manufacturer.* *See page 2.*

STANDARD FACE VENEERS

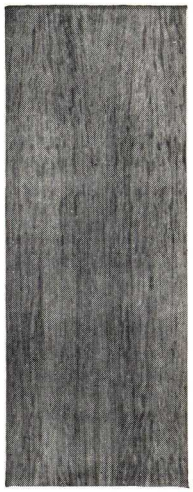
Standard thickness of face veneers before sanding: Rotary cut or Plain Sawn Birch, Oak, or Gum, 1/20 in.; White Pine, 1/16 in.; Quartered Oak, 1/20 in.; Quartered Gum, 1/24 in.; Sliced Walnut, Mahogany, or foreign woods, 1/28 in.

RODDIS FLUSH VENEER DOORS

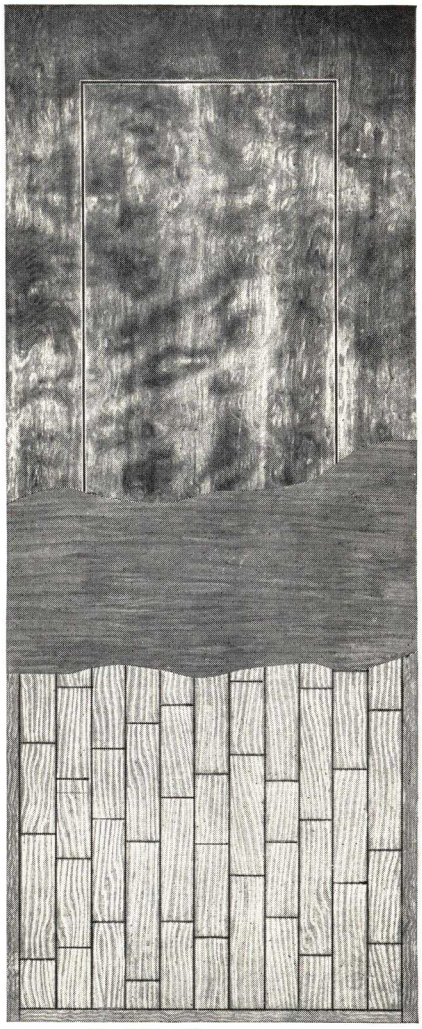
Typical Designs



Prima Vera



Avodire



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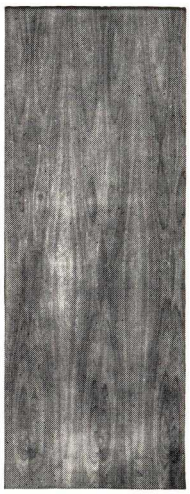

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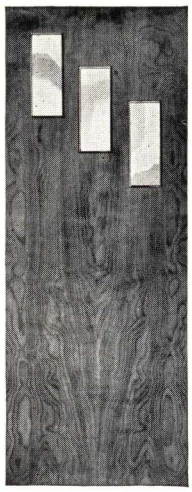

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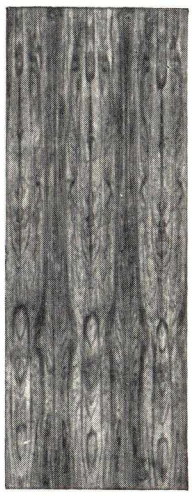
Red Birch



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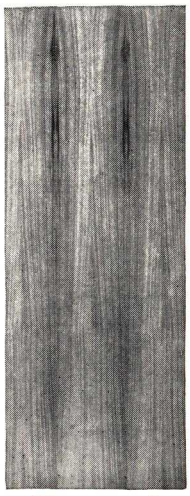

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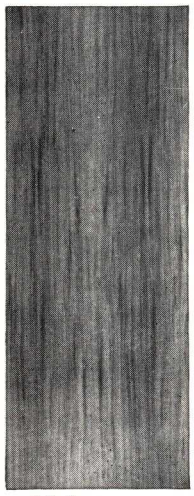

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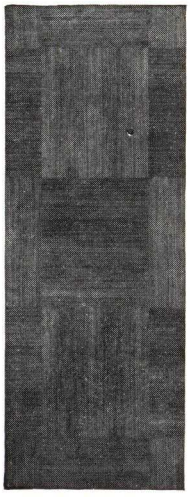

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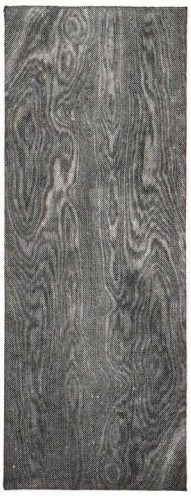

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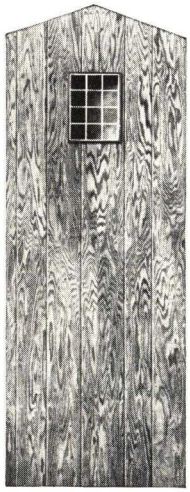

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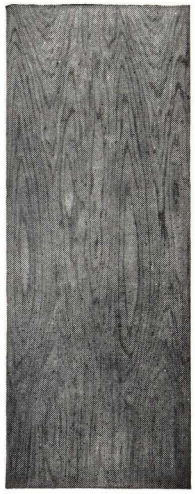
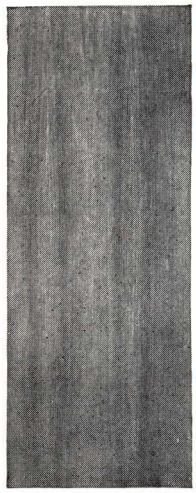


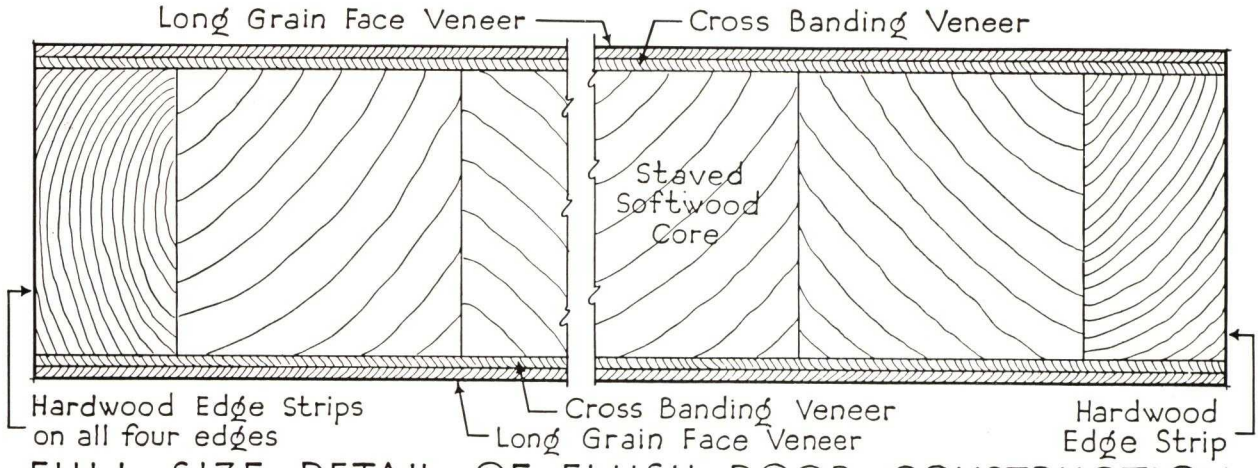
Rotary Elm

Oriental Wood

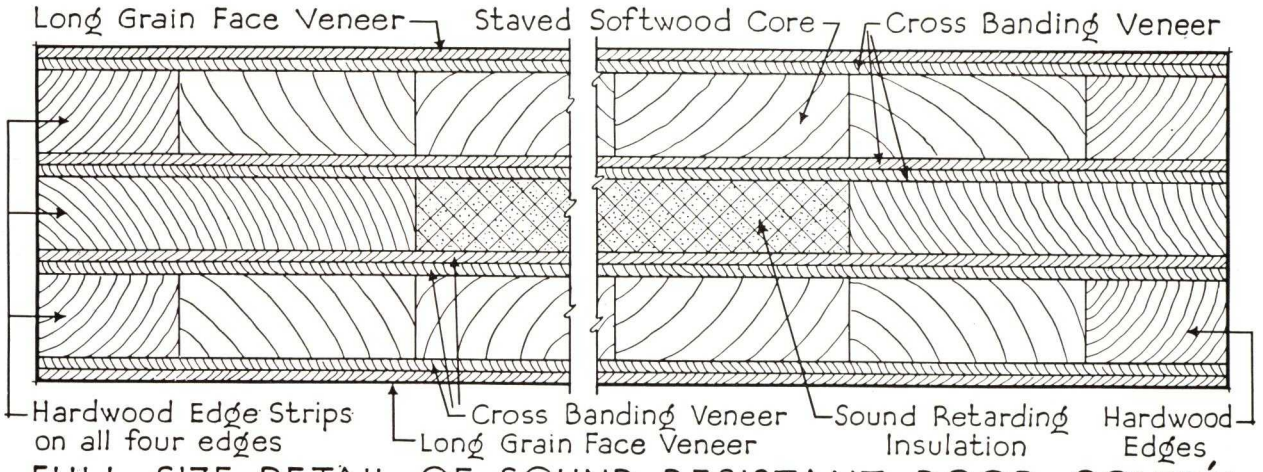


Rift Sw. Oak

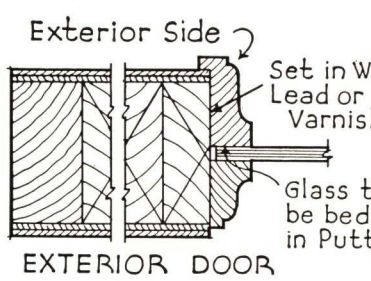
DETAILS OF FLUSH DOORS



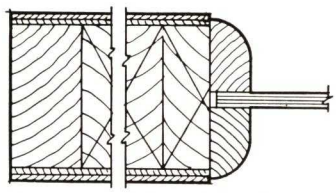
FULL SIZE DETAIL OF FLUSH DOOR CONSTRUCTION



FULL SIZE DETAIL OF SOUND RESISTANT DOOR CONSTN

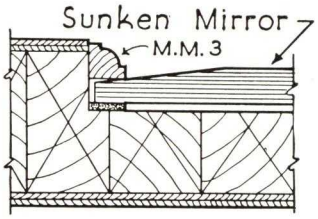


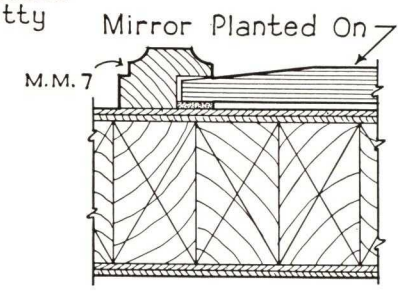
EXTERIOR DOOR



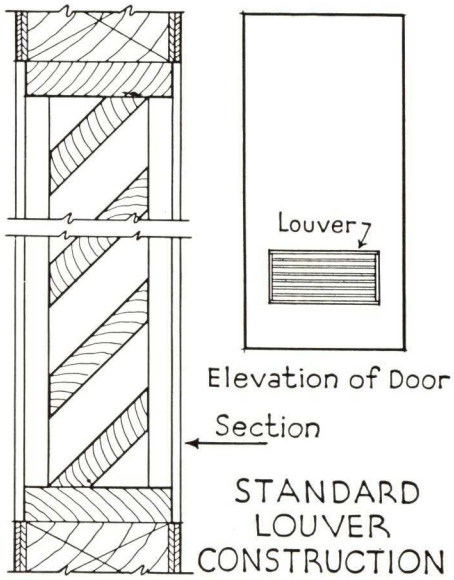
INTERIOR DOOR

LIGHT OPENING DETAILS





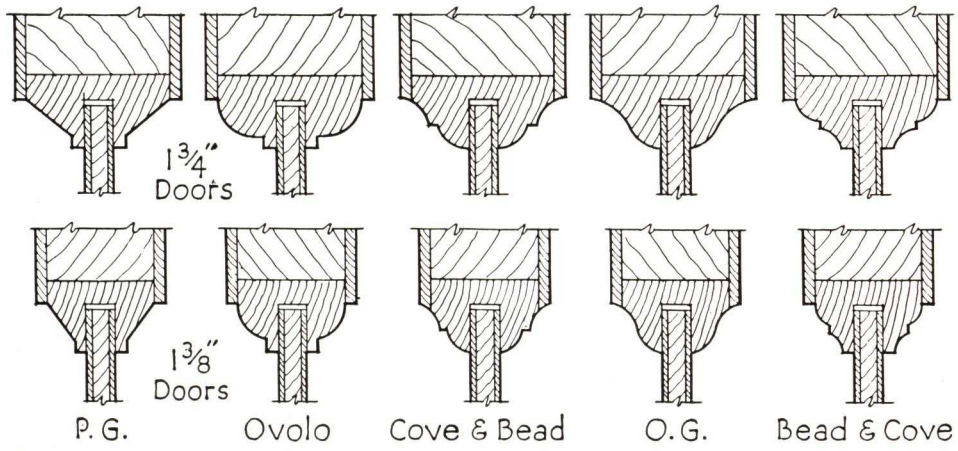
MIRROR DOOR DETAILS



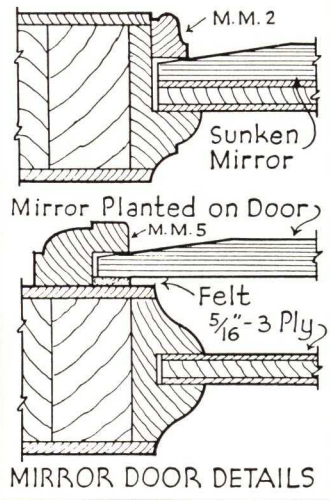
STANDARD LOUVER CONSTRUCTION

A.I.A. File Folder containing Full Size Details will be Furnished on Request

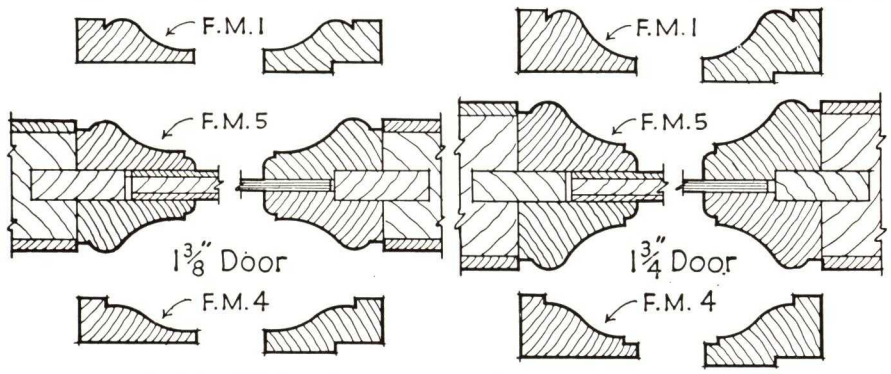
DETAILS OF PANEL DOORS



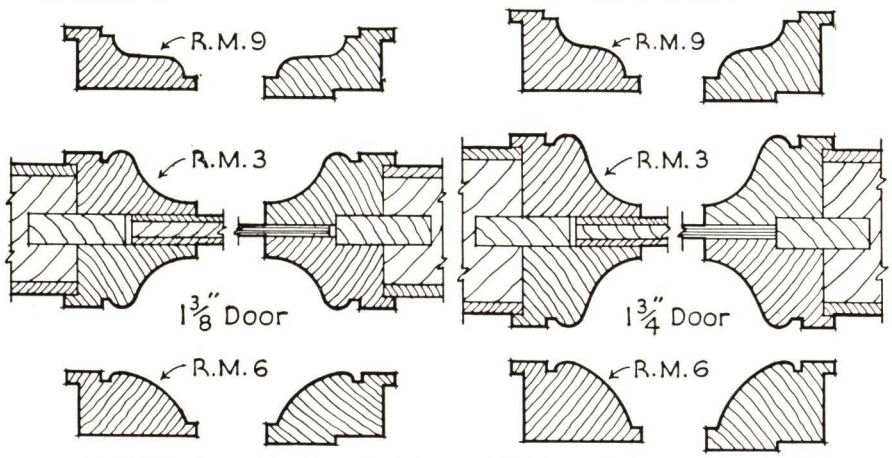
STANDARD SOLID STICKING FOR PANEL DOORS



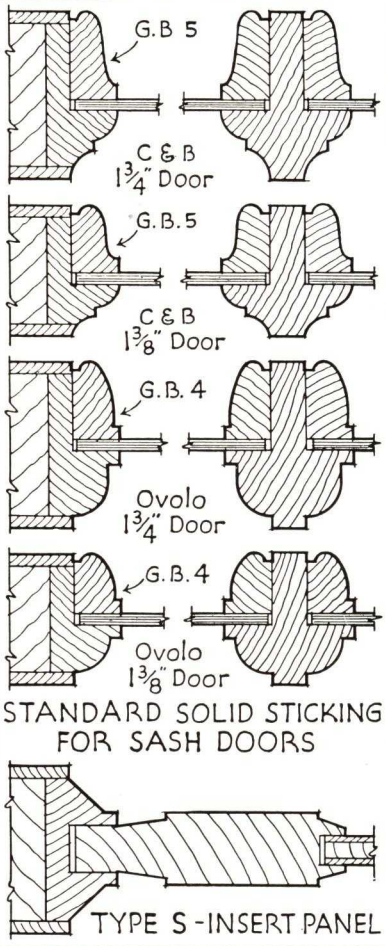
MIRROR DOOR DETAILS



SUGGESTED FLUSH MOULDING DETAILS

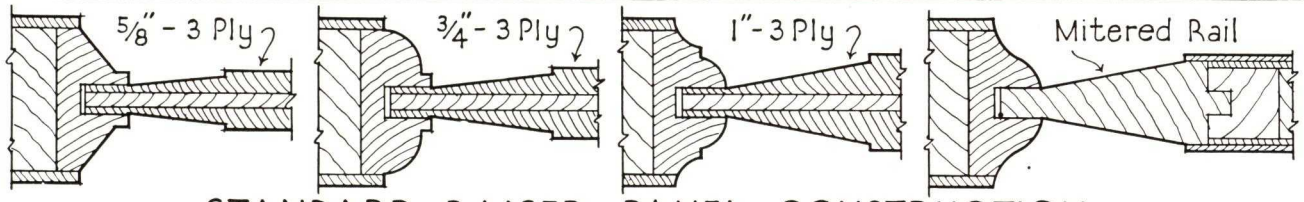


SUGGESTED RAISED MOULDING DETAILS



STANDARD SOLID STICKING FOR SASH DOORS

TYPE S - INSERT PANEL



STANDARD RAISED PANEL CONSTRUCTION

A.I.A. File Folder containing Full Size Details will be Furnished on Request

• RODDIS STILE and RAIL DOORS •

Outstanding Features

CUSTOM BUILT—Roddis Stile and Rail Doors, where desired, are custom built accurately following the architect's special detail. Stile and rail dimensions, panel arrangement and detail, and panel mouldings may all vary from standard. Only major construction features, which in no way affect the design, need follow Roddis Standard Construction to carry the Roddis two-year Guarantee. Obviously, the use of standard dimensions, panel thicknesses, and moulding profiles will effect economies and hasten deliveries.

STILE AND RAIL CONSTRUCTION—Stiles and Rails are 3-ply construction. Cores are identical in material and construction to those described on page 3 for flush veneer doors. The exposed door edges, top, bottom and two sides are edged with hard wood strips (including top and bottom of side stiles on exterior doors). Since there is no crossbanding, ⅛ inch thick face veneers are glued directly over the core (by the Roddiscraft waterproof "dry-glue" process on exterior doors only). Stiles and rails are doweled together.

PANELS—Standard interior door panels are flat 3-ply construction, $\frac{5}{16}$ inch thick. Those for exterior doors are flat 5-ply, ⅜ inch thick. Face veneers for both interior and exterior doors are of standard thicknesses. Special laminated panels of other than standard thicknesses, either flat or raised, are obtainable.

VENEERS—The same choice of domestic or foreign veneers as described on page 3 for flush veneer doors is obtainable for stile and rail doors.

EXTERIOR DOOR WATERPROOF CONSTRUCTION—Cores for stiles and rails are constructed like those for flush veneer doors. Tops, bottoms, and sides of the doors, including the side stile ends, are sealed with hard wood edging strips. Stile and rail face veneers are applied by the waterproof "dry-glue" method (pressure and heat). Panels are five-ply construction glued by the waterproof "dry-glue" process. This recommended waterproof construction costs but slightly more than the customary construction.

Specifications

INTERIOR and EXTERIOR STILE and RAIL DOORS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply. Words in bracketed bold face type are selective.*

(1) GENERAL—All doors **(so indicated on door schedules)** shall be Stile and Rail Doors made by Roddis Lumber and Veneer Company, Marshfield, Wisconsin.

(1a) Doors shall be constructed in strict accordance with Roddis Standard Construction covered by their two-year Guarantee Bond.

(1b) Doors shall be of sizes, thickness, and design called for **(in door schedules) (on plans) (and) (as detailed).**

(1c) All doors shall be belt sanded smooth for finish.

(2) STILES AND RAILS—Cores shall be of clear pine strip-blocks assembled with the grain running parallel and lengthwise of the member. Outside core edges shall be edged with ¾ inch wide hard wood strips, matching face veneer wood, on door side stiles (including tops and bottoms on exterior doors) and on top and bottom rails. The whole core assembly shall be glued under pressure **(with casein waterproof glue for exterior doors)** and thoroughly kiln dried and planed smooth.

(2a) Where the panel and moulding design require it, the panel edge of stiles and rails shall be trimmed with face veneer wood.

(2b) Face veneers shall be glued **(by the waterproof "dry-glue" process on exterior doors)** to both sides of the core.

(2c) For flush or raised moulded doors all stiles and rails shall be plowed and furnished with hard wood panel splines glued to the core construction.

(2d) All stiles and rails shall be set together in glue with 9/16 inch hard wood dowels spaced approximately 3 inches apart on centers.

(3) PANELS—(Except for the cores of Staved-core panels) all flat panels for exterior doors shall be fabricated by the waterproof "dry-glue" process, the grain of alternate plies of veneer crossing in opposite directions.

(3a) Interior door panels shall be flat 3-ply, 5/16 inch thick.

(3b) Exterior door panels shall be flat 5-ply, ⅜ inch thick.

(3c) Panels shall be constructed as follows:

Note: *Here describe and locate special flat or raised panel construction at variance with standards as above in (3a) or (3b).*

(3d) All panels shall be loose and in no way attached to stiles, rails, or mouldings.

(4) VENEERS—Concealed laminated panel veneers shall be of selected, kiln dried hard wood.

Face veneers shall be thoroughly kiln dried of **(woods called for in door schedules) (woods specified hereinafter) (specify wood),** ⅛ inch thick (before sanding) for stiles and rails and standard thickness for flat panels.

(4a) Face Veneers shall be as follows:

Note: *Here specify and locate the various veneers selected. For standard thicknesses see page 3.*

(5) PANEL MOULDINGS—Panel mouldings shall be **(solid stuck) (flush) (raised)** of wood **(to match stile and rail face veneers) (specify) (made in accordance with details).**

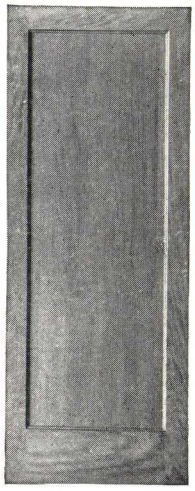
(5a) Panel moulding shall be glued and bradded to the stiles and rails only—not to the panels.

(6) GLAZING—Note: *See paragraph (5), page 3.*

(7) FINISHING—Note: *See paragragh (6), page 3.*

RODDIS STILE and RAIL DOORS

Typical Designs



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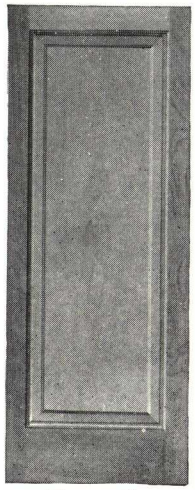

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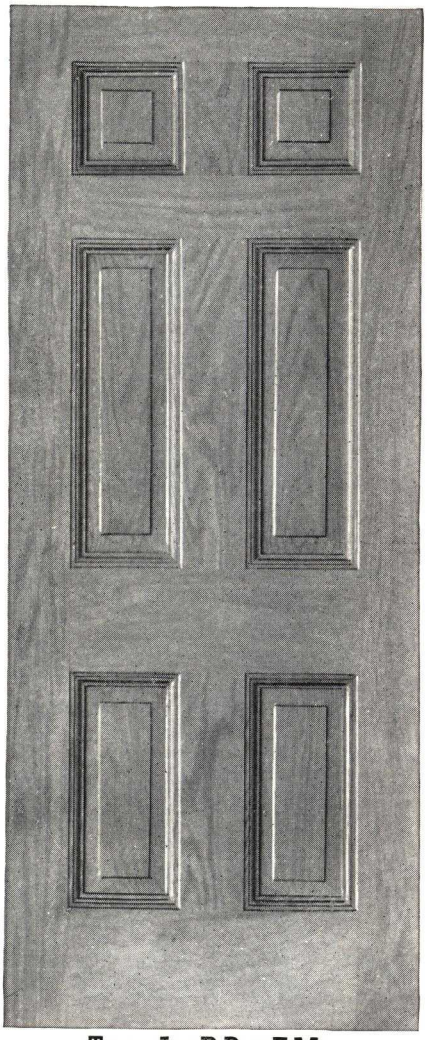
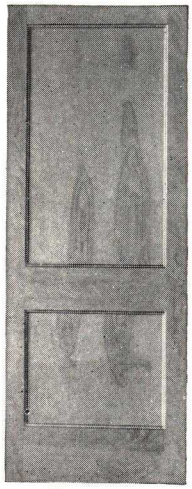


Type L—R.P.—F.M.



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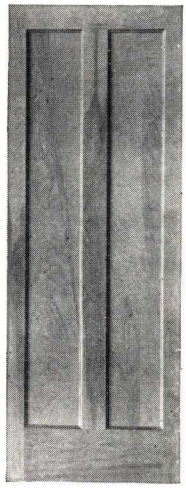

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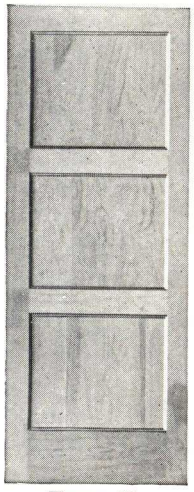

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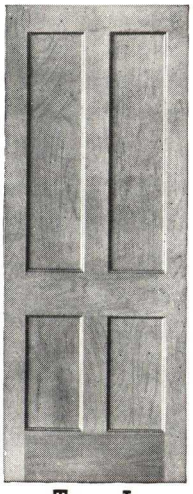

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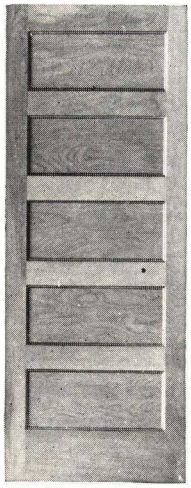

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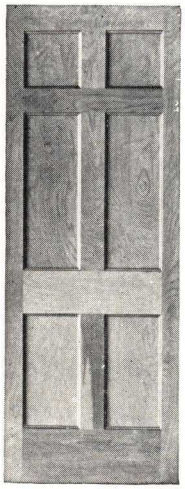

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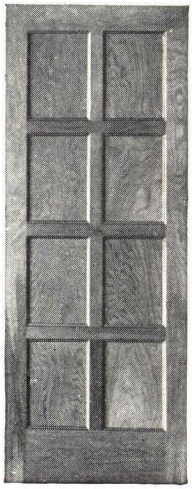

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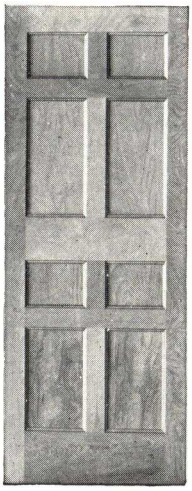

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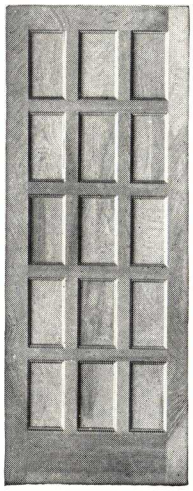

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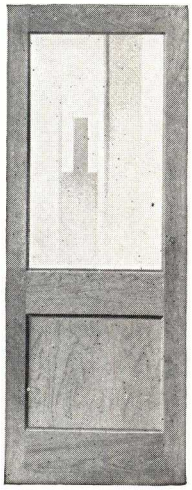

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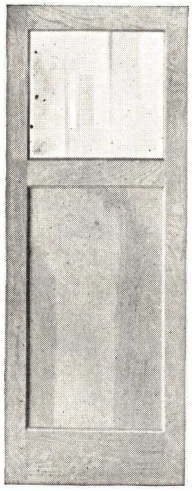

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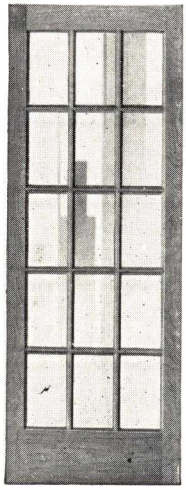
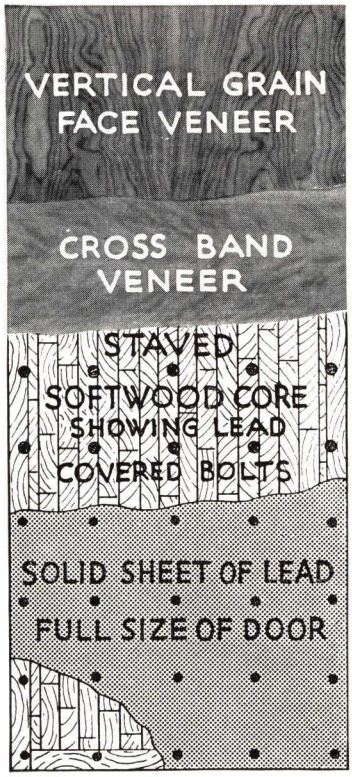
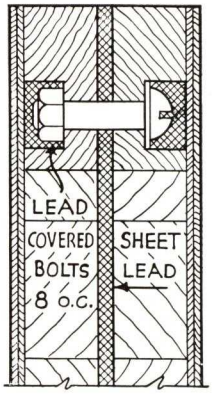


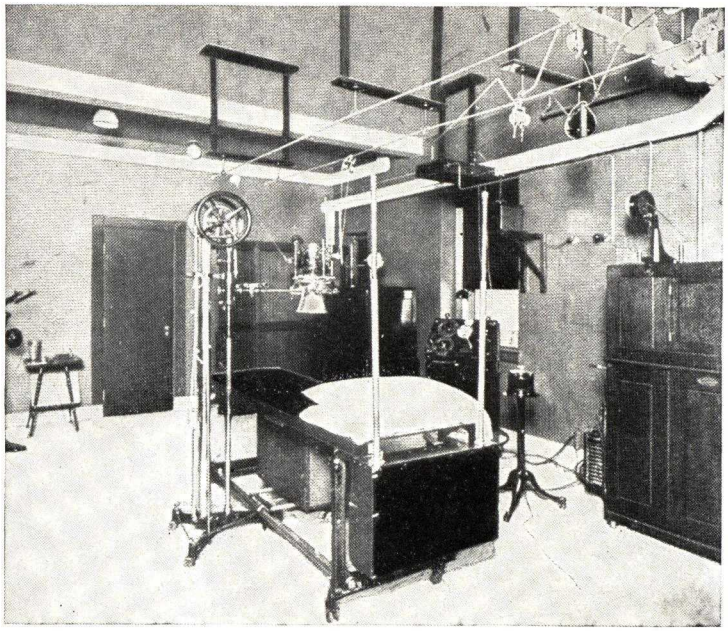
A-A 15 Lt.

RODDIS X·RAY DOOR





The Roddis X-Ray Door is lighter and less cumbersome than the usual door of this type. In appearance and finish it matches the standard Roddis Flush Veneer Door.



The Roddis X-Ray Door was designed for the Roddis Company by a prominent architect specializing in hospital buildings. This door functions like other X-Ray doors but is not as heavy, awkward, and unsightly in appearance as the usual door of this type.

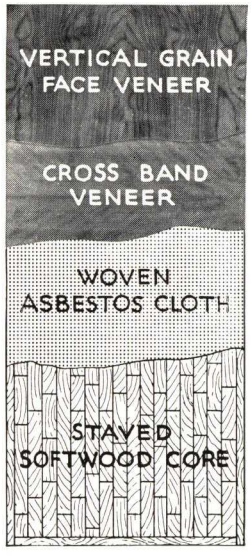
The Roddis X-Ray Door is equipped with a thick, continuous sheet of lead set midway between a divided wood core. The lead is securely held in position with counter-sunk, lead-covered through bolts, spaced 8 inches on center. Otherwise the Roddis X-Ray Door is identical in all respects with the standard Roddis Flush Veneer Door described in detail on page 3 and carries the Roddis two-year Guarantee. The divided pine core, edged on all sides with hard wood edging strips, fabricated with waterproof glue, is the same. Crossbandings and face veneers secured together and to the core by the waterproof "dry-glue" process are the same. Consequently, the X-Ray doors match in appearance and finish the doors used elsewhere in adjoining parts of the building.

The Roddis X-Ray Door has been used in hospitals throughout the United States selected for its efficiency and outstanding construction and appearance features by discriminating architects.

RODDIS FIRE RESISTANT FLUSH DOORS

PROTEX FLUSH DOORS—Roddis Protex Flush Doors are built to order. Over each side of the soft wood core is applied a sheet of woven asbestos cloth. Over these fire-resistant membranes are applied the Roddis standard crossbandings and face veneers. The door construction, other than the introduction of the two layers of woven asbestos cloth between the core and crossbandings, is exactly the same as that described in detail for Roddiscraft Flush Veneer Doors on pages 2 and 3. Their appearance is the same, they take the same finish, and they have the same waterproof qualities. Consequently, they are covered by the same Roddis two-year Guarantee as shown on page 1.

FIREPROOFED WOOD CONSTRUCTION—The Building Codes in some cities require that doors for stairways and similar locations be made of fireproofed wood. In this construction the woven asbestos cloth included in the construction of the Protex Flush Door is not required. Roddis Flush Veneer Doors can be furnished to pass these ordinances with the core, crossbandings, and edge strips treated to make the wood fireproof. Face veneers 1/16 inch thick or thinner, such as are used in Roddiscraft doors, need not be fireproofed. (Where face veneers are over 1/16 inch thick, they too must be fireproofed. They cannot be finished with ordinary stains). The reason these doors are accepted as fireproof is that the chemically treated wood gives off, when heated, a non-inflammable gas which forms a coating excluding the oxygen.



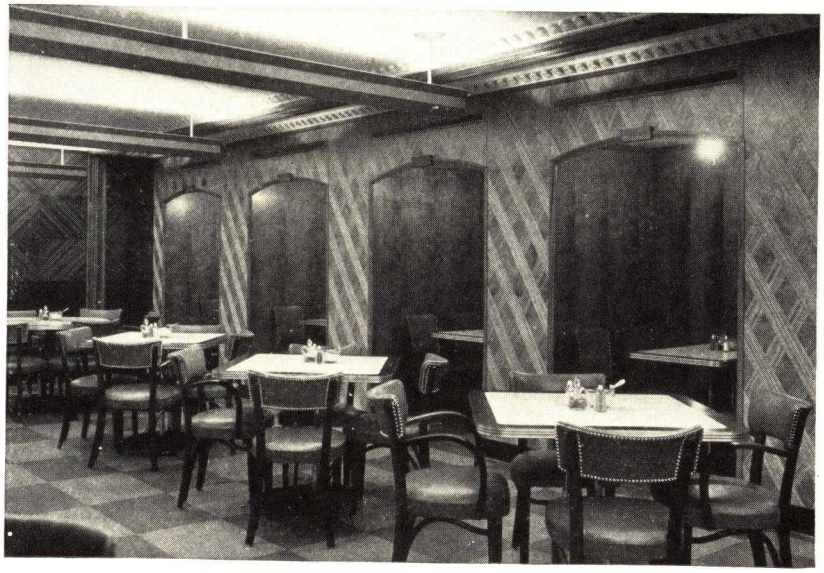
RODDIS WAINSCOTING

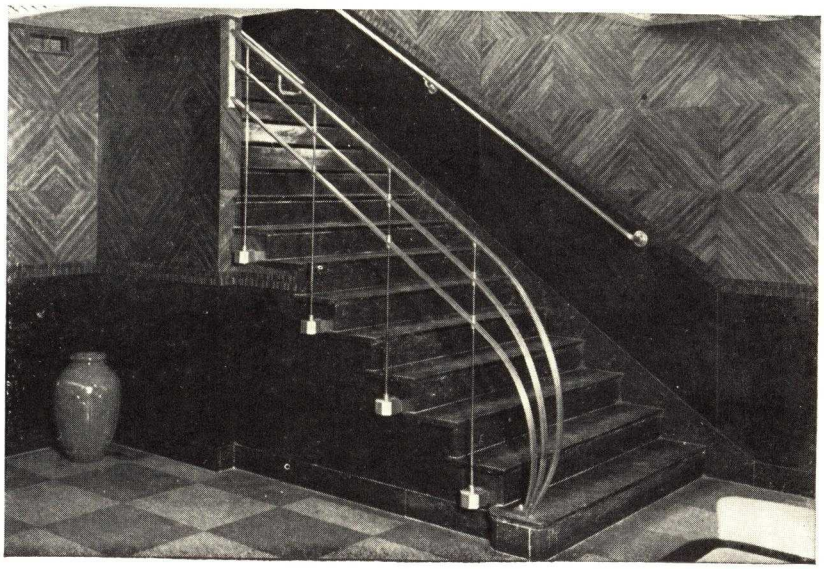
CONSTRUCTION—The fabrication of Roddis Wainscoting follows closely the procedure of Roddis veneered doors. The wainscoting is made by the same experienced craftsmen and from the same selected stocks as Flush Doors. Wainscoting may be obtained in any design made to the architect's details in any wood—domestic or foreign, selected for color, figure, and continuity around the room. Flush doors and adjacent wainscoting can be made with face veneers from the same flitch to insure perfectly matched woodwork.

Cores are built up of seasoned, narrow strip-blocks of Northern Basswood or clear Pine, glued together in clamps and allowed to thoroughly season before being planed to accurate thickness. Crossbandings are of selected, machine-dried hardwood veneers. Face and back veneers applied over crossbandings are of standard thickness (see page 3). Unexposed back veneers are of sound reject veneers. The standard thickness for wainscots is $\frac{13}{16}$ inch.

FABRICATED WAINSCOTING—Roddis experience and facilities are unsurpassed for the production of high quality wainscoting, fabricated and finished at the factory. Trained craftsmen will estimate the cost of the job from the architect's plan and specifications, and, if desired, will recommend and submit samples of face veneers to carry out the architectural design. Each piece of wainscoting can be cut at the factory to exact size and form, rabbeted, beveled, bored for countersunk screw holes, light openings cut in, etc., ready for installation without further fitting at the job.

The backs of panels and all edges can be shellaced to seal the wood against moisture absorption and the faces completely finished except for the final varnish or lacquer coats. This company recommends that the final coat shall always be applied by the painting contractor after the wainscoting is completely installed. Each panel is numbered on the back to show location for continuity of face veneers.





THE GLUE—Roddis wainscoting can be manufactured by either the "wet-glue" process or by the Roddiscraft waterproof "dry-glue" process.

Cores for either process are made up from narrow strips, glued together under pressure with casein waterproof glue. After gluing, the cores are kiln dried, seasoned to atmospheric conditions, and planed smooth to receive the crossbanding. Selected hardwood crossbandings, $\frac{1}{16}$ in. thick, laid with the grain running at right angles to the core grain, are glued to both sides of the core. Standard thickness face veneers (see page 3), laid with the grain running normally at right angles to the grain of the crossbanding, are glued to the crossbanding.

In the "wet-glue" process the crossbandings and face veneers are glued with vegetable or stainless glue, and assembled under pressure in a cold hydraulic press, and the glued up panels are seasoned in a dry kiln. In the Roddiscraft waterproof "dry-glue" process the crossbandings and face veneers are glued with dry glue film and fused together under simultaneous application of heat and pressure.

TO SPECIFY—Follow specifications for Flush Veneer Doors as given on page 3.

Note that cores are railed on only such edges as are exposed. Unexposed back veneers are sound rejects. Exposed face veneers are selected. Standard wainscot thickness is $\frac{13}{16}$ inch.

Specify that wainscots shall be factory fitted in units easily handled and erected. Specify that wainscots shall be factory finished on faces, backs, and edges except for final coat.

Doors by RODDIS

Guarantee:

Doors made to Roddis specifications are unqualifiedly guaranteed for two years against defective material and workmanship.

Roddis Lumber and Veneer Company

RODDIS LUMBER AND VENEER COMPANY

Marshfield, Wisconsin

★

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SECTION 14

CONTINUED ⟶

WHEELER OSGOOD SALES CORPORATION

MANUFACTURERS OF

Doors, Trim, Moulding, Plywood, Wallboard and Plyform

FACTORY

TACOMA, WASHINGTON

GENERAL SALES OFFICES: 122 South Michigan Avenue, CHICAGO, ILL.

Products

LAMINEX DOORS of Douglas Fir; PHILIPPINE LAMINEX DOORS; STREAMLINER DOORS; Woco (Solid) DOORS of Fir; Woco (Solid) GARAGE DOORS of Fir.

Also Trim; Mouldings; Columns; Newels. LAMINEX Plyform for Concrete Form Construction; LAMINEX Plywood, Wallboard.

The Company

Backed by nearly 50 years' experience, Wheeler Osgood pioneered the introduction of laminated products.

The plant is known not only for its capacity but for the finest of equipment and methods. It is located "next door" to the huge Douglas Fir forests, supplying virgin growth timber. The Wheeler Osgood Laboratory for research and development has created many added efficiencies, such as the famous Laminex waterproof glue. The company also has Philippine connections of long standing, assuring an adequate supply of Philippine hardwoods for the complete line of products now offered.

Wheeler Osgood products under the names of "Laminex," "Woco," "Streamliner," "Plyform" and "Philippine Laminex" are sold by leading jobbers in every section of the United States, and in many important countries of the world.

Engineered Doors

Laminex and Woco Doors are scientifically designed and built to give long, trouble-free service. They offer ten definite points of superiority in design and construction. Only the choicest and most carefully selected lumber is used. Lumber stocks are scientifically dried to uniform moisture content, providing maximum protection against warping. Laminex veneered stile and rail construction result in the elimination of loose veneers, sunken cores, warping, twisting and rough sticking. Dowel construction offers maximum protection against opening of joints.

Laminex water-resistant glue provides protection against warping. The finest sanding equipment provides a smooth, polished finish.

Laminex Label

Attached to every Laminex Door, this guarantee label assures trouble-free service. Replacement will be made of any Laminex Door, either Douglas Fir or Philippine Mahogany that fails to serve satisfactorily

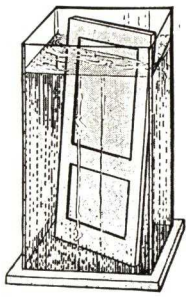
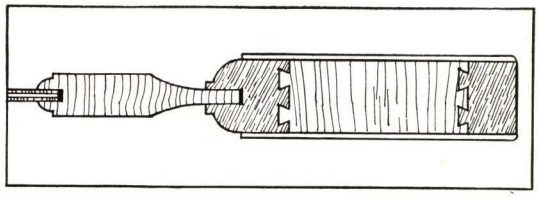


Illustration of the famous Laminex Water Test where a Laminex Door was submerged in water for a period of several days without warping

Woco Label

Every Woco Door bears this guarantee label. This solid construction door gives maximum resistance to warping or sagging. The Woco and Laminex Guarantees are one of the ten points of superiority



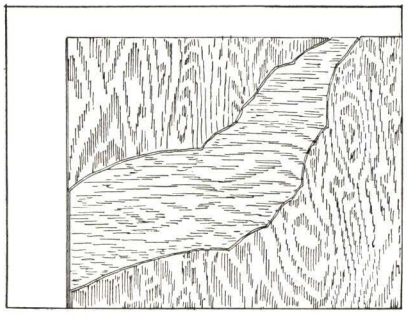
Typical Cross Section Through the Stile or Rail of a Laminex Door

Note the solidity of rail construction. Resistance to shrinkage, swelling, or coming apart is assured

Right:

Panel Construction of Laminex and Woco Doors

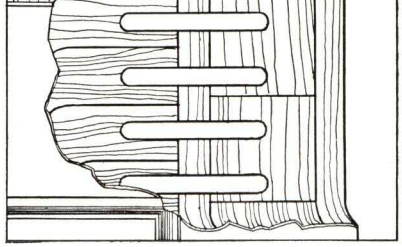
Clear, 3-ply panels with grain crossed. Panels are welded together with Laminex water-resistant cement, forming a bond stronger than the wood itself



Dowel Construction in All Wheeler Osgood Doors

Right:

Four wooden dowels are used in the construction of bottom rail joints and two in top rail joints. All dowels are ⅝" in diameter and 5" long. They give over 50% greater strength and 30% more glue contact area than doors with only half-inch dowels. Special equipment sprays glue to entire surface of dowel hole and also carries glue to mouldings at top of rail and bottom of rail

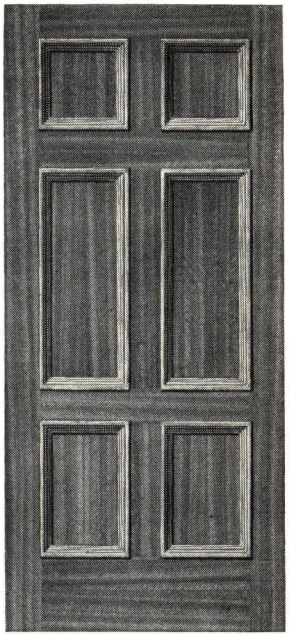


Double inspection assures maintenance of highest quality standards.

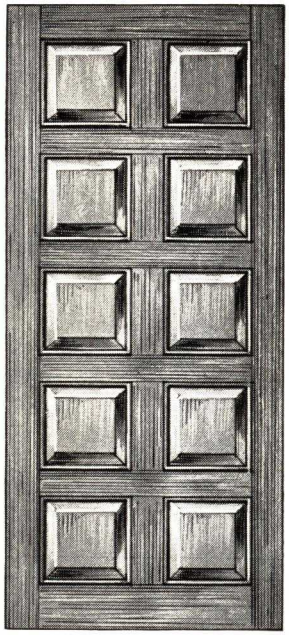
Laminex Doors were tested by the Forest Products Laboratory of the University of Washington, and showed extreme resistance to the usual tendencies to shrink, swell, warp and come apart. The Laminex water test has been conducted throughout the country, where Laminex Fir Doors were immersed in water for days and failed to show injury.

Today, over twenty-five million Laminex and Woco "10-Point" Doors in service offer practical proof of their unusual ability to stand up for years of use. Laminex Doors enjoy the confidence of architects.

Design No. WO107



Design No. WO66



Design No. WO55

Showing three representative Special Type Wheeler Osgood Laminex Doors. Available in Douglas Fir or Philippine Laminex. Any style can be produced to conform to particular requirements

Standard Specifications for Laminex Doors

All doors throughout shall be (Laminex Fir or Philippine Mahogany Laminex) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be built up.

In Laminex Douglas Fir, face veneers shall be (flat) (vertical) grain cemented to cores with Laminex waterproof cement.

In Philippine Mahogany Laminex, face veneers shall be ribbon grain cemented to cores with Laminex waterproof cement.

Door panels shall be Laminex 3-ply, made up with Laminex waterproof cement.

Doors, when delivered, shall bear the Laminex guarantee label and trade-mark.

Woco (Solid) Doors

These doors are built with solid stiles and rails. They are built to rigid standards of workmanship and materials. Woco Doors carry a guarantee of satisfactory service. They are available in a wide range of designs, complete enough to meet virtually any type need for either interior or exterior use. They offer ten definite design and construction advantages.

Construction of Woco Doors

Built of selected old growth Douglas Fir. Stiles and rails are solid. Panels are 3-ply cross-grain. All members of the doors are cemented together with the famous Laminex waterproof cement. Woco Doors have engineered construction—more and larger dowels—giving greatly increased strength over ordinary design. Woco Douglas Fir Doors are furnished with vertical grain stiles and rails.

Standard Specifications for Woco (Solid) Doors

All doors throughout shall be (Woco Fir) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be solid. Door panels shall be Laminex 3-ply, cemented together with Laminex waterproof cement.

The doors, when delivered to the job, shall bear the Woco guarantee label and trade-mark.

Wheeler Osgood Co-operation with Architects

To architects, engineers, contractors, and owners, WHEELER OSGOOD SALES CORPORATION freely offer their services in planning efficient application and use of any of their products. Samples and further details are available on request.

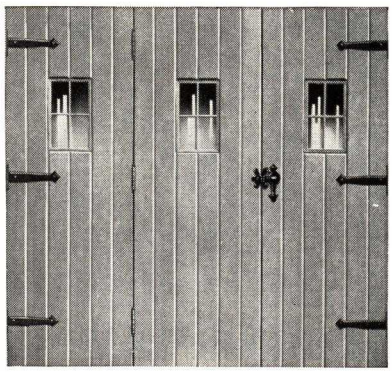
Woco Garage Doors

These doors will withstand the long and hard use of garage service, whether it is for private or public garages.

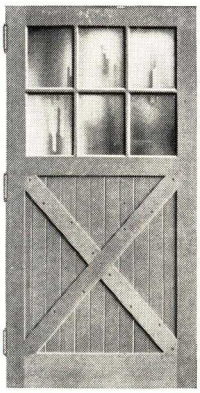
Manufactured from old growth Douglas Fir. The Wheeler Osgood method of construction insures that these doors will hang straight and close without sagging.

Choice of flat grain or solid raised panels. Made throughout of clear lumber. Strongly constructed in every detail. The workmanship is of the finest. The smooth surface of Douglas Fir provides an ideal base for paint.

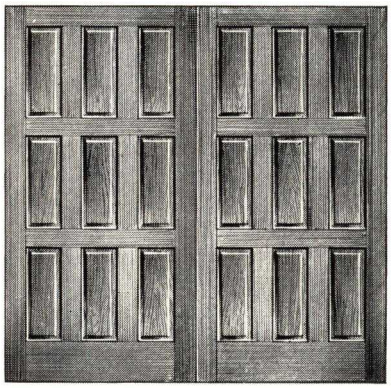
Woco Garage Doors are offered in a wide range of designs to meet virtually any garage need. Furnished in pairs or sets of three. Three of the many designs are shown below.



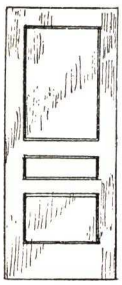
"Aristocrat" Garage Door
Vertical grain Douglas Fir. Furnished with one-light openings ready for variety of designs such as leaded glass. Doors are of hollow type construction to avoid strain on hardware and to provide ease of operation



Design No. WO691
"Sawbuck" Garage Door with Cross Braces. Fir "V" Panels

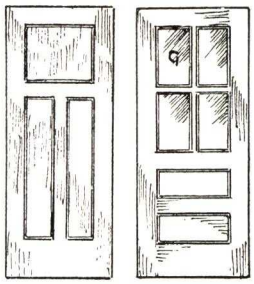


Design No. WO999
Nine-panel, double garage door



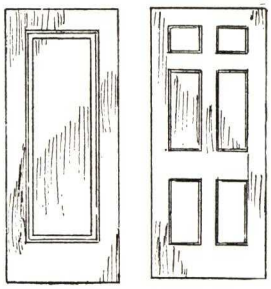
Left:
WO33
Three-panel door

Right:
WO62
Three-panel door with two vertical panels



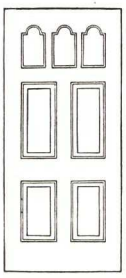
Left:
WO415
Practical door with four lights of equal size

Right:
WO1
Large panel door with heavy moulding around panel



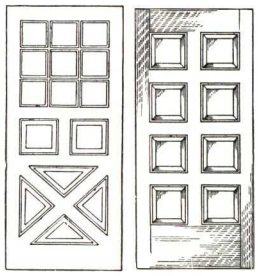
Left:
WO66
Dignified entrance door, 6-panel design

Right:
WO608
Three-light, two-panel and cross buck



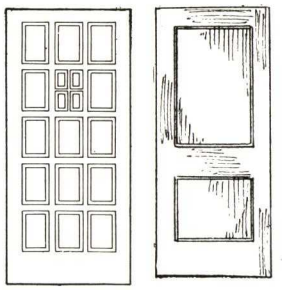
Left:
WO606
Four-panel door with three lights

Right:
WO99
Nine light, two panel and cross buck



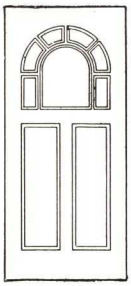
Left:
WO88
Eight panel, English type

Right:
WO605
Fourteen-panel with 4-light opening



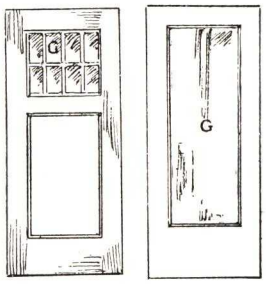
Left:
WO82
Two-panel door with large panel top

Right:
WO1025
Eleven-panel door; one center light



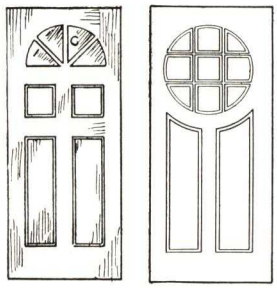
Left:
WO604
Two-panel door with 7 lights

Right:
WO810
One panel door with 8-light opening at top



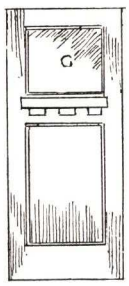
Left:
WO37
Plain full panel glass door—for entrances

Right:
WO600
Four-panel door with 4-light fan at top



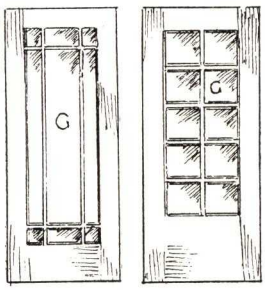
Left:
WO603
Two-panel door with 9-light circle at top

Right:
WO68
Full panel door—flush or raised moulding, knocker block



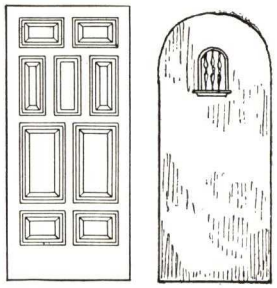
Left:
WO110
One-panel door with large light and water table

Right:
WO936M
Full glass door divided into 9 lights



Left:
WO1037
Practical glass door with 10-light three-quarter glass

Right:
WO1095
Eight-panel door; one center light



Left:
WO106
Curved top, flat surface door, with grille opening

Right:
WO69
One panel door, flush or raised moulding, light at top

A Few Typical Designs

Doors for both interior and entrance service are offered in Laminex and Woco construction. The line is wide to meet virtually any requirement. Twenty-four representative designs are illustrated herewith

THE COUNTRY'S MOST COMPLETE LINE OF DOORS OVER 300 DESIGNS

Laminex Construction

To provide protection against warping, stiles of Laminex Doors are of short, separate core blocks with the grain crossed. Rails are of the same construction. Panels are 3-ply. For absolute rigidity, full-length edge braces are used, dovetailed and wedged to the core blocks. Four wood dowels instead of the usual three connect bottom rail to stile. Dowels are ⅝ in. in diameter and give 50% more strength and 30% more holding surface than the commonly used ½-in. dowels. This rigid construction, together with Laminex waterproof cement, dried under tremendous pressure, provides a virtually waterproof door. Use of cement in this way welds the sections into practically a solid unit, also forms moistureproof protection around core sections. Swelling or shrinking is reduced to the minimum.

Laminex Doors of Douglas Fir

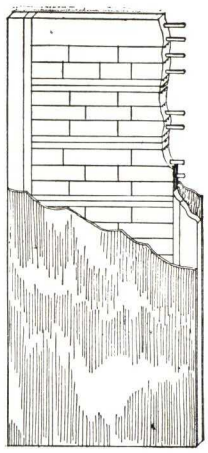
Laminex Doors are constructed of clear, selected old growth Douglas Fir, particularly suited for door construction. It is remarkably free from pitch, easily worked. Durability rating of Douglas Fir is 60% higher than California Sugar Pine, 88% higher than Western Yellow Pine, according to the U. S. Department of Agriculture. Laminex Doors of Douglas Fir come in both the flat and vertical grain. The flat grain takes stain or wax perfectly. The vertical cut is particularly suited for fine enamel work.

Laminex Doors of Philippine Mahogany

Philippine Laminex permits the design of doors with unusual beauty and distinction, at a surprisingly moderate cost. Philippine Mahogany can be finished in all shades from dark red mahogany to light walnut, or in the beautiful natural finishes.

By proper staining and finishing, the various tones of these colors, also dull antique, are obtained.

The close-grained, ribbon effect of Philippine Mahogany is attractive for doors and trim. Modern effects and diamond matchings are used. Wheeler Osgood method of preparation brings out the beauty of this wood. Careful and thorough sanding, resanding, scraping, hand smoothing, result in a door that is equal to the finest custom-built product.



Eastwood Door
Core is of two Lindermanized stiles, wide top, bottom and cross rails jointed together, making a flush solid, built-up core. Any type of light may be cut in

Laminex *Streamliner* Door

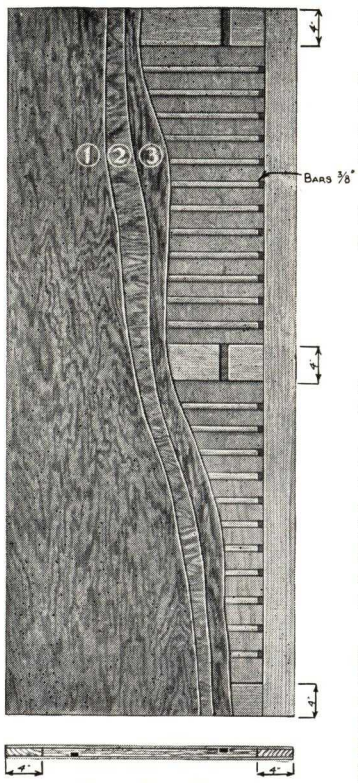
Scientifically designed by Wheeler Osgood engineers, the Laminex Streamliner Door for interior service provides: light weight, rigid strength and distinctive appearance at an economical cost.

Constructed with a hollow core, rigidly braced to avoid sagging or warping, and permitting complete circulation of air to prevent the deleterious effects of temperature changes, dryness and humidity.

Three-ply panels, welded together with Laminex water-resistant cement combine with the hollow core to form a door that scientific tests prove has greater strength than the most rigorous service would ever require.

The Streamliner Door is available in smooth finish, Rotary or Vertical Cut Douglas Fir; Ribbon Grain Philippine Mahogany, strikingly attractive Birch and in the new Rustic Laminex (described below).

The plain panel surface of the Streamliner Door allows a wide range of decorative possibilities — either painted or paneled, in modern or period effects.



Streamliner Door
Cutaway section showing hollow core design and 3-ply panels. Channels in hollow core allow complete air circulation. Openings screened

Wheeler Osgood's resin surface treating assures a glass-smooth surface, eliminating the necessity of a priming or filling coat. The possibility of grain raising and hair checking is minimized.

In Philippine Mahogany, the Streamliner can be finished in any shade from light walnut or mahogany to dark mahogany and the beautiful natural shade. In vertical grain Douglas Fir an ideal surface for painting or enameling is provided. In Rotary Cut Fir an attractive finish in stain or wax is obtained.

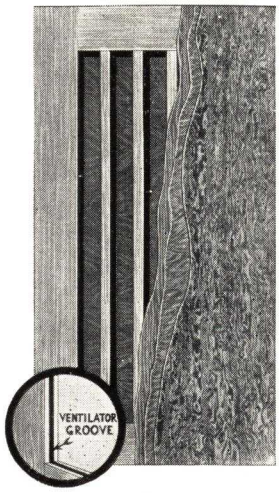
The Streamliner Door is a 10-Point Door, backed by the Laminex Guarantee. It assures good looks, efficiency, and economy.

Streamliner Cupboard Door

A door adapted for cupboard service from the Streamliner design.

The Streamliner Cupboard Door combines light weight with increased strength for easier hanging and operation. The smooth panel surface gives beauty of appearance and freedom from dust-catching mouldings.

Soundly engineered design and construction mean troubleproof service. The hollow core construction provides lightness with strength. Ventilated, the Streamliner Cupboard Door is guaranteed against warping effects of temperature changes, dryness and moisture. It offers scientific design, excellence of workmanship and is moderate in cost.



Streamliner Cupboard Door
With cutaway panel showing hollow core construction and ventilator groove around entire frame

Laminex Plyform

Whenever lumber has been used for the old method of building concrete forms, Laminex Plyform can give a better, more economical job. This light, strong board is designed especially for economical and efficient concrete form construction. Each panel is sanded to perfect smoothness. It can be treated to make it water-repellent when so specified.

Its great strength makes Laminex Plyform usable over and over again. Special Laminex water-resistant cement binds the cross-grained layers, making a joint actually stronger than the board itself. This special cement insures permanent strength. It does not harm cutting edge of saws. Smoother concrete results with the use of Laminex Plyform. Large-sized panels, tight-fitting joints, and accurate cutting to size mean a smoother concrete surface with the minimum of fins.

All the labor of lining forms as well as the cost is saved. 5¢ to 15¢ per square foot in rubbing and grinding can be saved. In general, labor costs can be reduced by 20% to 40%. Since Plyform requires only 1 board foot per square foot of form area, it effects a large saving over the use of sheathing. Bracing is simple, requiring the minimum of carpentry work. Round corners and reverse moulds, battered walls and difficult offsets are easily constructed. The large, lightweight units mean easy stripping and faster handling.

Plyform is furnished in large, clear sheets that help to reduce installation costs, and reduce number of joints

Laminex Plyform is available in intermediate sizes under 4x8 ft. or larger when specified.

Thicknesses are: ½, $\frac{9}{16}$, ⅝ and ¾ in. Weights per thousand sq. ft. are: ½ in., 1525 lbs.; $\frac{9}{16}$ in., 1675 lbs.; ⅝ in., 1825 lbs.; ¾ in., 2225 lbs.

Laminex Plywood Engineered Lumber

Laminex Douglas Fir Plywood is *engineered* lumber, built up of 3 or more layers, each one cross-grained to the next. These layers are scientifically dried to give uniform moisture content. Bonded together by Laminex water-resistant cement a joint stronger than the board itself is provided. Light in weight, Laminex Plywood is tough and strong—actually stronger than steel, pound for pound.

The surface treating of Laminex by the Wheeler Osgood resin process seals the surface and minimizes grain raising and hair checking. A glass-smooth surface is provided which eliminates the necessity of priming or filling, for any finish.

Sizes—All standard stock sizes up to 4x8 ft. available; larger sizes also may be obtained when specified. Thicknesses range from $\frac{3}{16}$ in. up to 1⅛ in.—including: ¼, ⅜, ½, ⅝ and ¾ in.

Laminex Wallboard

Made in three, cross-grained layers by the same process as Plywood, Laminex Wallboard assures walls and ceilings that won't crack, shrink or swell. Fewer joints are necessary due to the large sheets. Labor time and cost are less. Available in 30, 32, 36 and 48 in. widths; 60, 72, 84, 96 in. lengths and intermediate lengths up to 144 in. Thicknesses: $\frac{3}{16}$, ¼, ⅜ and ½ in.

On the working side the surface is smooth and flawless. Every inch is usable. Laminex Wallboard provides insulation against heat, cold, sound. Curved surfaces can be easily formed. Beautiful paneled effects can be obtained—painted, or with the natural wood grain, stained or waxed. Laminex Wallboard forms a base for paper or other wall materials. Plastic paints can be used for distinctive effects. For floors, and subfloors, Laminex Wallboard is practical and economical; does away with high spots which cause extra wear of linoleum and carpenting.

Rustic Laminex Plywood

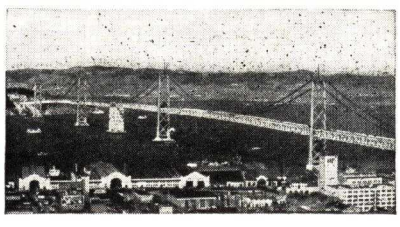
Rustic Laminex is manufactured by a special process from regular Laminex Plywood. The treatment of the surface produces a rough, rustic effect, bringing out the natural pattern of the grain in high relief.

Any desired color scheme may be followed successfully in finishing Rustic Laminex. The indented sections provide a means of obtaining attractive two-tone effects. The standard color finishes most frequently used in addition to the primary colors are: Natural, Light Oak, Walnut, Drift Wood and Antique. Write for a sample of this new material which has unlimited possibilities for use in commercial and residential type buildings, cabins, cottages, taverns, recreation rooms, etc.

San Francisco-Oakland Bay Bridge

CLINTON CONSTRUCTION COMPANY OF CALIFORNIA
Contractors

One of innumerable jobs on which Laminex Plyform economies and efficiencies are realized



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MEMORANDA

ESTABLISHED 1857

THE ADAMS & WESTLAKE COMPANY

HOUSE WINDOW DIVISION

GENERAL OFFICES AND FACTORIES

ELKHART, INDIANA

EXECUTIVE OFFICES, 319 W. Ontario Street, CHICAGO, ILL.

The Adlake Window, Air-Conditioning Windows, Storm Sash, Screens

THE ADLAKE ALUMINUM DOUBLE HUNG WINDOW

Type "A" Medium Weight Sections

Type "A" is a very high quality window, designed for general use and where first cost is important.

It is designed to meet present day conditions as to beauty, efficiency, ease of operation, low rate of air infiltration, low cost of maintenance.

It is a completely self-contained unit designed to fill a certain window opening with the least special preparation of adjoining walls.

It is designed for outside putty glazing.

It has built-in weatherstripping.

No metal to metal contacts of the aluminum moving parts. Thus it is almost noiseless in operation.

It cannot rattle either open or closed.

Unless special requirements are to be met with, such as glass brick or a flat metal or stone lintel, spring type metal tape balances will be standard.

Where required, a spiral type balance is furnished at no extra cost.

Standard sizes are shown but others may be furnished as required.

It comes ready to install screens of either half or full length and storm or air-conditioning sash either at once or at some future time. No changes are needed.

Type "B" Heavy Weight Sections

Type "B" is a window designed to meet the most severe conditions to be met with in such installations as schools, hospitals, hotels, apartment houses, etc., and in any place where an extremely high grade window is needed and first cost is not the prime factor.

In general design it is the same as the Type "A" medium weight, but the aluminum rails, stops, stiles, etc., are of thicker wall and greater depth, adding more than 50% to the strength of those parts.

It comes in sizes up to 6 ft. wide by 8 ft. high.

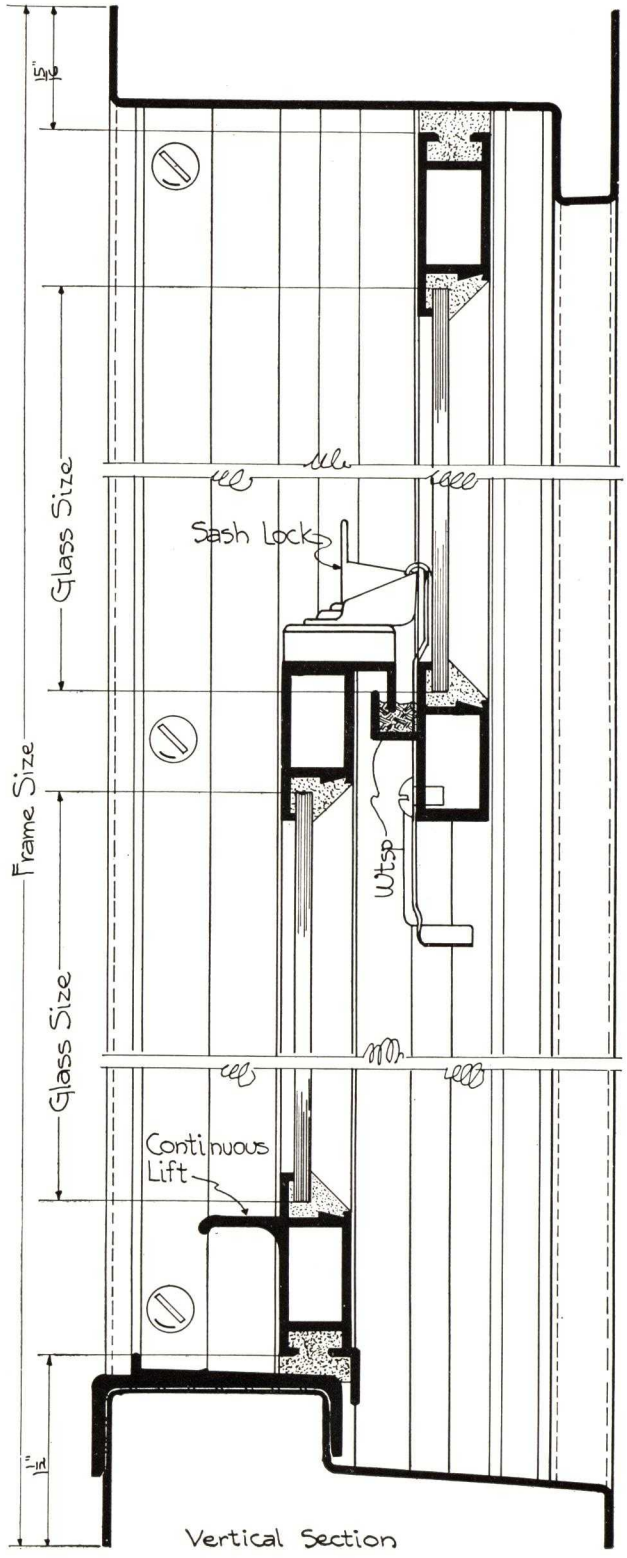
The Type "B" window is inside bead glazed with aluminum glazing strips. These strips are screwed in place by stainless steel button head screws.

Like the Type "A" window, this Type "B" cannot rattle either open or closed. It has no metal parts to rub and scrape.

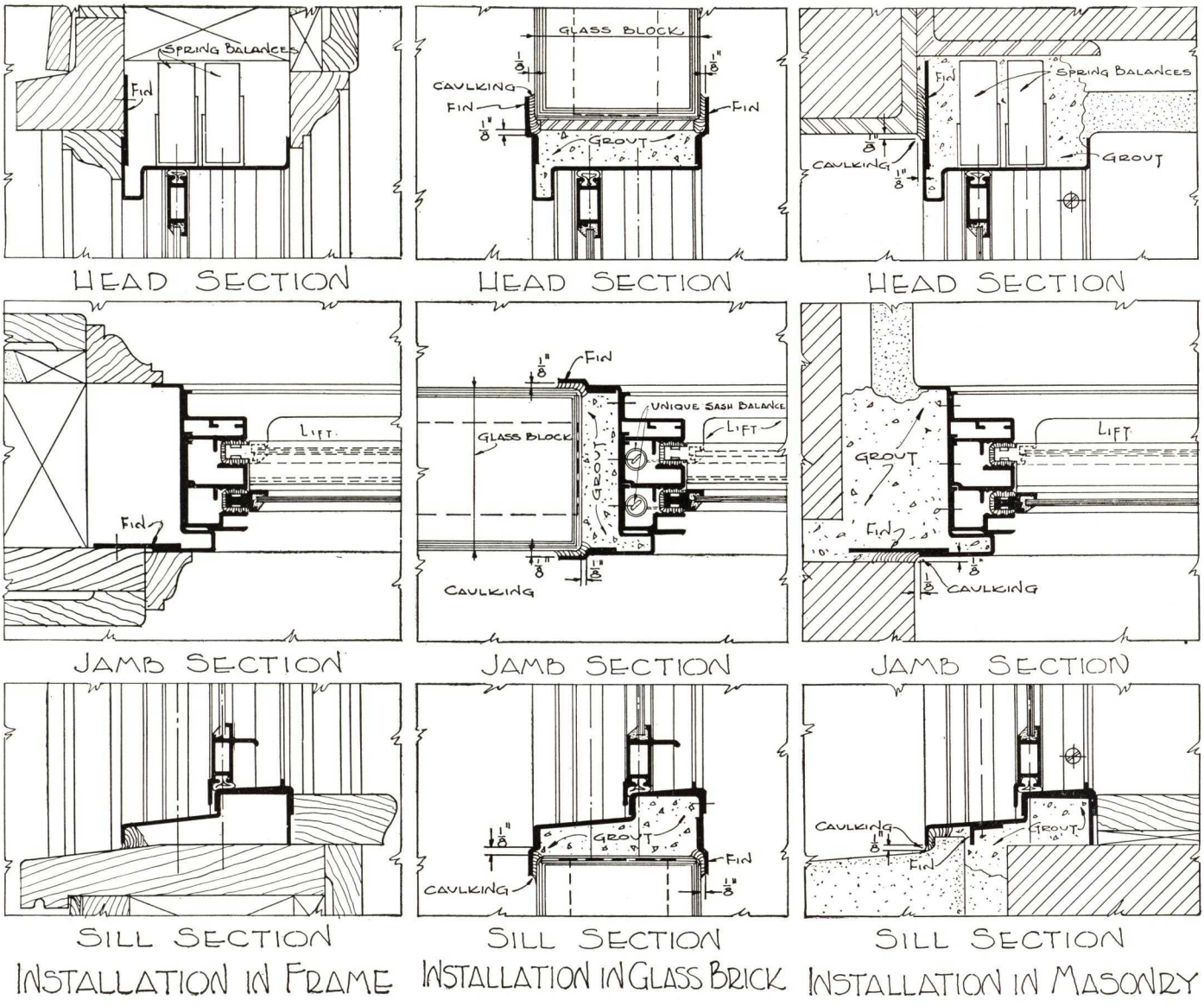
It is almost absolutely silent in operation.

It is extremely weathertight and will meet requirements of most air-conditioning equipment manufacturers without additional sash or additional weatherstrip.

Comes equipped to take either half length or full length screens, storm sash or air-conditioning sash either at once or at some future time. No changes are needed.



Vertical Section



Description of the Adlake Double-Hung Aluminum Window

The Adlake Double-Hung Aluminum Window is the result of twenty-five years' of building quality metal windows for the transportation industries.

We kept in mind the fact that a window of today had to meet the conditions of today.

We therefore designed a window that is remarkably easy to install, to operate and to maintain. It is extremely weathertight, having an air infiltration test far below that required by the government.

Thus it meets most of the requirements of an air-conditioned building without the need of additional glazing or a double window.

An air-conditioning window can be supplied where specifications are extremely rigid or cost is not a prime factor.

The sashes being made of extruded aluminum they add attractiveness and subtract from maintenance cost.

They are made in both medium weight sections and in heavy weight.

The medium weight are normally outside putty glazed. The heavy weight are normally inside bead glazed.

Adlake Windows are furnished either with spring balances or with spiral balances to suit requirements and architects' specifications.

Standard sizes are shown on adjoining sheet. Stock standards are kept at Elkhart for immediate delivery. Variations of sizes by fractions of an inch made at short notice.

Medium sections are furnished up to 3 ft. 6 ins. wide by 5 ft. 6 ins. high.

Heavy sections are furnished up to 6 ft. wide by 8 ft. high.

Muntins may be omitted or may be arranged as desired.

Transoms may be furnished either top or bottom hung to swing in or to swing out.

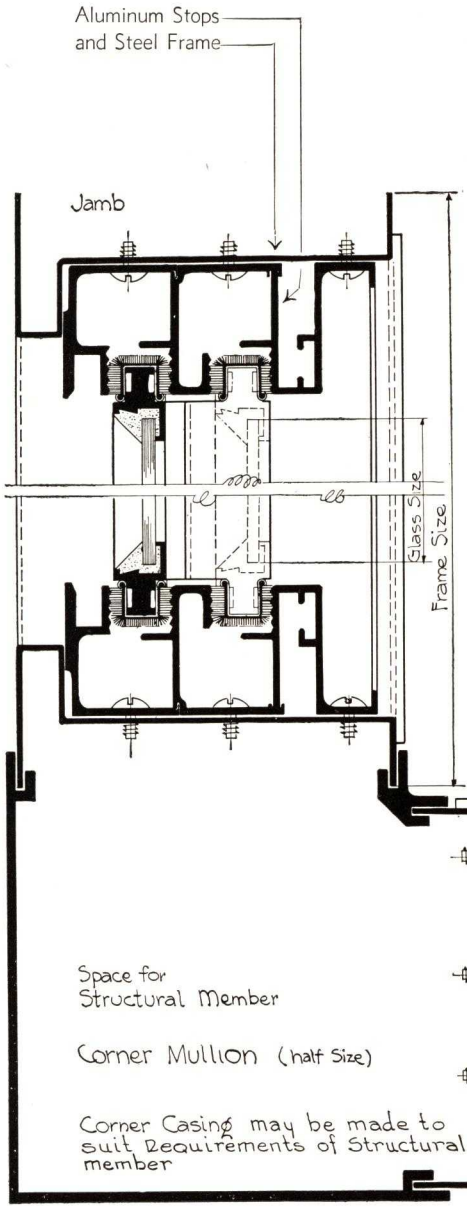
Spiral type balances are always furnished for installation in glass brick.

Adlake Aluminum Double-Hung Windows will not rattle either open or closed.

We maintain a force of engineers and draftsmen at our Elkhart, Indiana, plant to assist in carrying out the ideas and to work with the architect in securing the utmost in windows for the purpose desired.

We solicit your inquiries.

Sash rails, stops, sill covers are of aluminum. Frames and fins are of steel.



WINDOW OPENING WIDTHS

Windows shown are standard. Variations of these may be obtained, either smaller or larger, up to 6'-0" wide × 8'-0" high.

WINDOW OPENING HEIGHTS

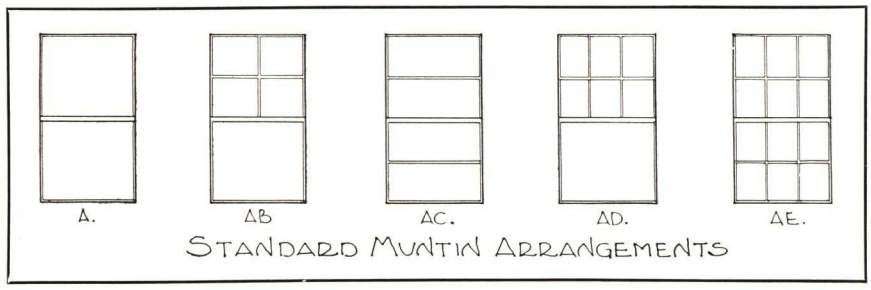
	2'-0"	2'-6"	3'-0"	3'-6"
3'-6"	2036	2636	3036	3636
4'-0"	2040	● 2640	3040	3640
4'-6"	2046	● 2646	● 3046	● 3646
5'-0"	2050	● 2650	● 3050	● 3650
5'-6"	2056	● 2656	● 3056	● 3656

4'-0" × 5'-6" — 4056

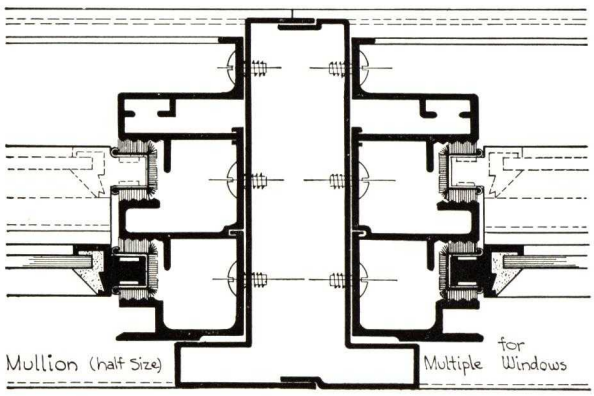
4'-6" × 6'-0" — 4660

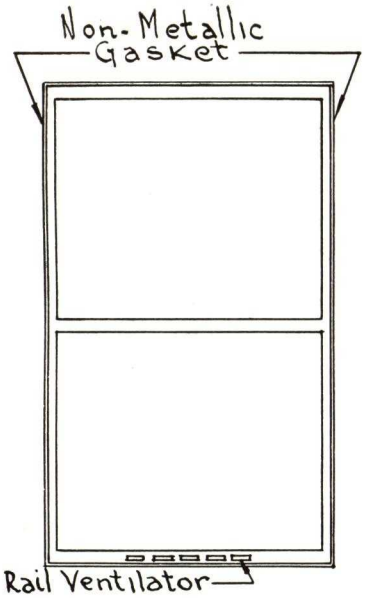
5'-0" × 7'-0" — 5070

● Stock in standard Construction



STANDARD MUNTIN ARRANGEMENTS





ELEVATION
OF
STORM SASH
Storm Sash May
be Provided With
Rail Type Ventilator
or Hinged Stays

DESCRIPTION OF SCREENS, STORM SASH AND AIR CONDITIONING SASH

Screens

Screens are either full length fixed or half length sliding. The half length have a full length track so that they may be either at the bottom of the window and lower sash raised or at the top of the window and upper sash lowered—thus giving excellent ventilation.

Frames may be of steel or of aluminum. Screen cloth is normally of 16-mesh and is furnished in aluminum, bronze or stainless steel.

Screens may be locked in place so that a child or other person cannot accidently raise them.

Storm Sash

Storm sash are furnished with aluminum frames with cross muntin at sight line of check rail. These sash are installed on the outside and may have a rail ventilator in lower rail.

Standard construction is with hinged stays permitting the sash to swing out from the bottom about six in.

Storm sash furnished with handles top and bottom for ease in handling.

Air-Conditioning Sash

Air-conditioning sash are furnished with aluminum frame with cross muntin at sight line of check rail. Air-conditioning sash are installed on the inside. They have a double contact gasket all around, making an air seal that meets all normal requirements for this purpose.

Standard construction shows no provision for ventilators though they may be supplied if required.

ARCHITECT'S SPECIFICATIONS

The Adlake Type "A" Medium Weight Aluminum Double-Hung Window

Windows shall be furnished by THE ADAMS & WESTLAKE COMPANY of Elkhart, Indiana, and shall be those known as The Adlake Type "A" Medium Weight Windows as are shown in their catalog No. 136 and in this issue of SWEET'S FILE.

Windows shall be of the sizes and other details as covered by the architect's drawings and specifications and of the standards of such Adlake Type "A" windows.

These aluminum double-hung windows shall have aluminum rails, stiles, stops, sill covers, full length sash lift on lower sash, stainless steel sash lock, upper sash handle, full length aluminum integral screen track, full length aluminum integral storm sash beading on the outside, full length aluminum integral air-conditioning sash beading on the inside, and integral built-in weatherstripping.

They shall be prepared for outside putty glazing for glass of (SS, DS, 1/8-in. plate) and the glazing contractor shall use a high grade metal sash putty of white or aluminum color.

Frames shall be of steel formed for stiffness and painted one coat bitumastic paint and one coat lead and oil paint at the factory.

The general contractor shall build the frames into the wall square and true and caulk and complete rough work.

The window contractor shall then install the sashes and stops in such frames, attach hardware and attach and adjust sash balances and make the window easy operating and weathertight.

Screens for these windows shall be half sliding or full length fixed. (State which.) Frames of such screens shall be of aluminum or steel. (State which.) The screen cloth shall be of 16-mesh aluminum, bronze or stainless steel. (State which.)

Screens shall operate in the full length screen track made as a part of the window and shall have all necessary hardware and a locking device on the half length sliding screen to prevent accidental lifting and to form a rigid fastening on the full length screens to retain them in place.

The Adlake Type "B" Heavy Weight Aluminum Double-Hung Window

Windows shall be furnished by THE ADAMS & WESTLAKE COMPANY, Elkhart, Indiana, and shall be those known as their Adlake Type "B" Heavy Weight windows as shown in their catalog No. 136 and described in this issue of SWEET'S FILE.

Specifications for windows are the same as for the medium weight given above with the exception that all aluminum rails, stiles, etc., are 50% heavier and that heavy weight windows are aluminum bead glazed on the inside.

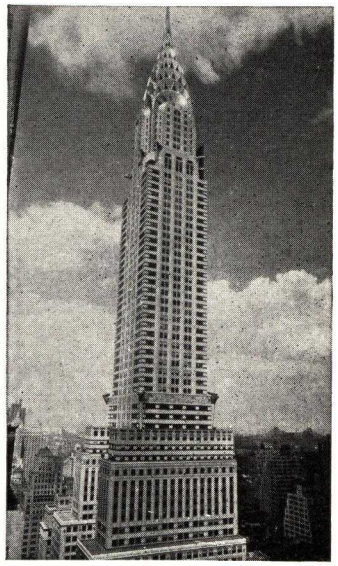
Note

Metal tape spring balances are used in most cases, except where other types are specified. Spiral type balances are always used where a glass brick setting is indicated or where very narrow mullions are needed or where a simple arrangement of head is needed to simplify the setting of steel or stone lintels, or where weight of sash renders a spiral type balance desirable.

ALUMINUM COMPANY OF AMERICA

ALCOA ALUMINUM FOR WINDOW SILLS

Residence of E. W. Romberger, Atlanta, Ga.
OWEN JAMES SOUTHWELL, Architect



Chrysler Building, New York, N. Y.
WILLIAM VAN ALLEN, Architect

Fitting perfectly with modern design and methods of construction, Alcoa Aluminum window sills have several important economic advantages.

The design includes a projecting drip ledge with ample weather stop and calking space which minimizes the danger of drip-stain.

This design also permits a tight fit between these sills and adjoining masonry. Thickness, which does not exceed that of a masonry joint, allows extension of a lug on either end to provide a weatherproof joint.

Their extreme lightness permits easy handling. They can be fully bedded in by the bricklayer prior to the setting of the window frame.

Alcoa Aluminum window sills are furnished in any desired lengths. This eliminates troublesome vertical joints and speeds up erection. Prices, for extruded sills, are generally lower than for sills of any other material offered the building industry.

Method of Installation of Extruded Alcoa Aluminum Sill

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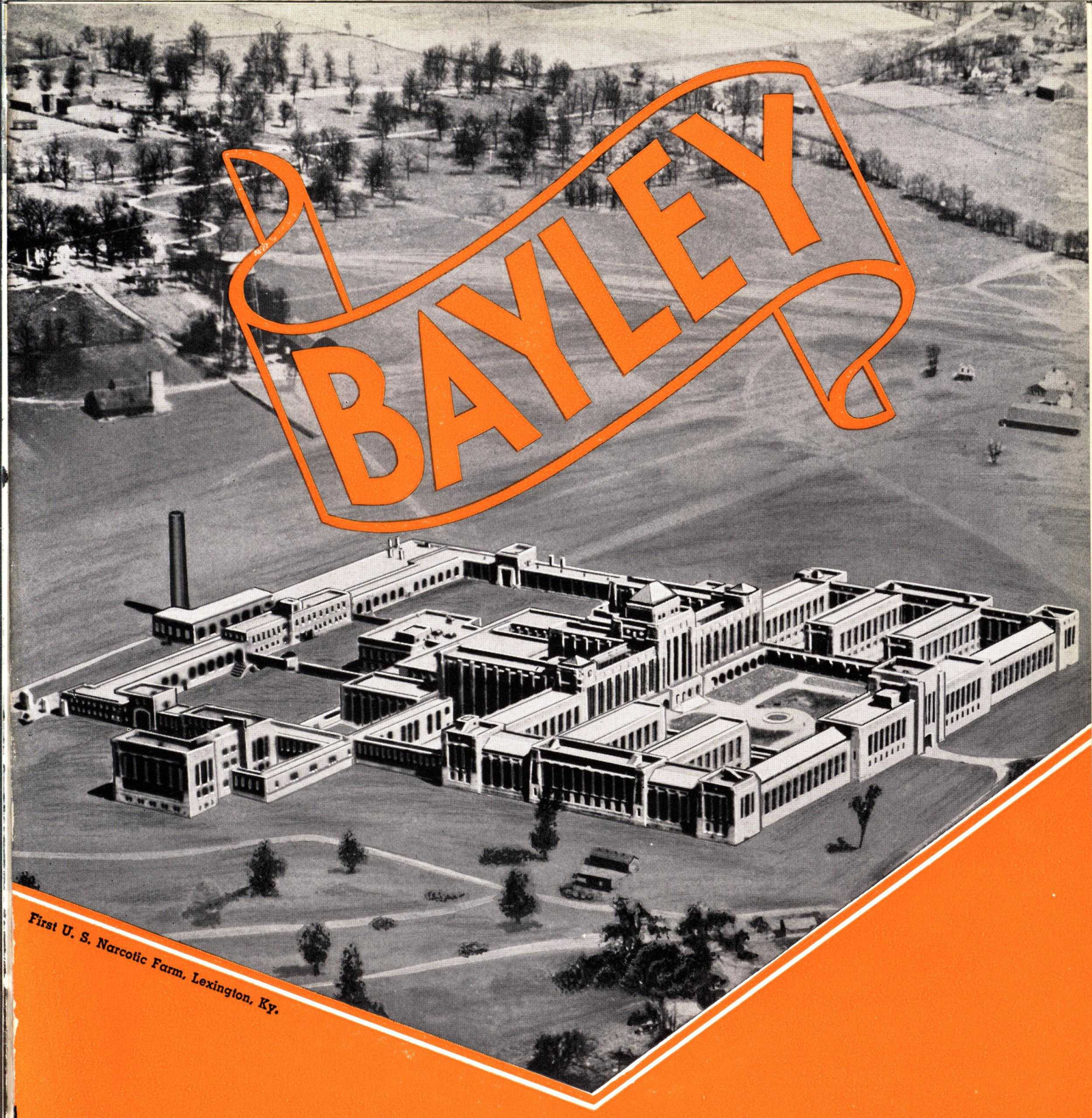


First U. S. Narcotic Farm, Lexington, Ky.

STEEL WINDOWS • STEEL DOORS AND OPERATORS

THE WILLIAM BAYLEY COMPANY

© 1938 The William Bayley Co. G. C. 38

FOR fifty-six years the William Bayley Company has enjoyed the reputation of producing the finest types of metal products. Those years of experience and that reputation provide the strongest possible incentive to the men and management of the modern Bayley organization to maintain the highest standards and produce the best possible windows, doors and operators. A continuous flow of Bayley patents throughout these years indicates the progressiveness of the Bayley Company and forecasts continual leadership.

The features of Bayley Products are built around fundamentals that prompt the most advanced methods of mechanical jointing, riveting, welding, pressing and finishing. Steel, wrought iron, bronze and aluminum are used extensively and all materials, design, workmanship and finish are those best suited to the service requirements of the product.

Bayley engineers will welcome an opportunity to co-operate with architects, engineers and contractors in designing, selecting and specifying windows, doors and operators. The table below indicates the scope of Bayley Products and serves as a guide to the recommended uses of each.

BAYLEY PRODUCTS

PRODUCT	RECOMMENDED USES	PAGES
PIVOTED WINDOWS	Sidewalls of factories, warehouses, garages, lofts and industrial buildings. Sides of monitors and vertical sawtooth construction. Available in steel, wrought iron and aluminum.	3 to 7
PIVOTED WINDOWS—Screened	Same uses as above and elsewhere, when conditions demand insect protection as in bakeries, packing plants, laboratories, printing plants, power houses. Steel or wrought iron.	8-9 (5, 6 and 7)
PROJECTED WINDOWS COMMERCIAL—Screened	For garages, lofts, storage and industrial buildings. Steel, wrought iron or aluminum.	10-11 (5 and 7)
PROJECTED WINDOWS ARCHITECTURAL—Screened	For schools, clubs, offices, public and monumental buildings. Steel or steel hot dip galvanized.	12-13
DETENTION AND PROTECTION WINDOWS	Originated by Bayley. Six types to meet all conditions. For complete description of each type refer to Pgs.	14 to 18
CASEMENTS — Series 30 Inswing, Outswing, Projected and Combination Types	For residences, offices and monumental buildings. Various combinations to meet specific requirements. Steel, bronze or aluminum.	26 to 29
UTILITY WINDOWS	Companion product to Pivoted and Projected Windows. Used on lot lines. May be screened, steel or wrought iron.	19
BASEMENT WINDOWS	Residences and all places where a small economical steel window is needed.	19
ECONOMY INSERTS	Used in concrete construction. Provide mastic sealed recesses for steel windows.	19
CONTINUOUS WINDOWS AND OPERATORS	For monitors and sawtooth roof construction. Steel in 3, 4, 5, 6 foot heights.	24-25
MECHANICAL OPERATORS	For sidewall and continuous windows. Formerly made by the Metallic Sash Operator Co. of St. Louis, acquired outright by Bayley, now manufactured at Springfield, Ohio, offered with or without window products.	25
DOORS, Industrial Tubular, Structural Airplane Hangar	For all purposes. Hinged, sliding, rolling, folding, canopy, bifold, vertical lift and overhead. In tubular or structural steel. Complete with Bayley hardware. Airplane Hangar door shown in separate catalog.	20-23
UNDERWRITERS' LABELS	Available with pivoted, pivoted windows screened, projected commercial and architectural, protection, and security windows.	19

DESIGNED primarily for use in the sidewalls of factories, warehouses, garages, lofts, power houses and similar types of industrial buildings Bayley Pivoted Windows may also be advantageously used in the sides of monitors and in vertical sawtooth construction.

Materials and Features

PIVOTED WINDOWS are of new billet mild steel, wrought iron, or aluminum sections designed for permanence, low cost maintenance and easy fabrication. Their flat surfaces are easily painted and have no sharp edges to encourage corrosion. The deep angle frame is of a size sufficient to provide ½" engagement at head, jambs and sill in all wall constructions. Basic glass size is 12 x 18" and 14 x 20". Glass in ventilator is trimmed 1" at perimeter.

INTERIOR BAR IS T SHAPED, a characteristic Bayley section, and has a flange containing no greater amount of metal than its web and a depth of 1½". This dimension in Bayley windows is the basis of exclusive features such as screening, double glazing, hardware, etc. It provides for a tenon of extra size which makes a tight and permanent joint. It allows space for bed and face putty and either ⅛" or ¼" glass.

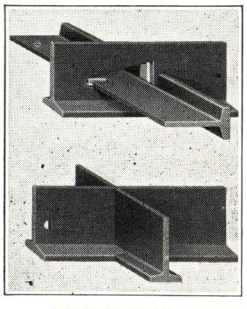
INTERSECTION OF INTERIOR bars is accomplished by threading the vertical through horizontal bar. Horizontal bar is punched in web. Vertical bar is punched in flange. After assembly, a wedge is driven at intersection, making entire construction rigid. Bars are not bent or manipulated in assembly. This construction provides strength almost equal to the original bar. Disinterested, exhaustive laboratory and usage tests prove this construction withstands high wind pressure without permanent deflection.

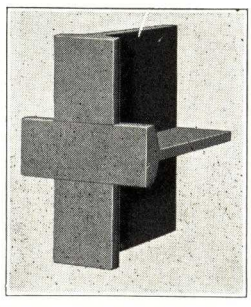
WEATHERING AT HINGE is provided by lapping upper weathering on ventilator over lower weathering on fixed portion of window. Ventilator contacts are close fitting. Vertical contacts are cold rolled. Horizontal contacts are one-piece rolled sections integral to ventilator and unit and are 1⅝" deep.

HINGE PIVOT is 3" above center of ventilator. It is contained within contact members and does not project beyond faces of window, a protection against damage in shipment. Hinge may be adjusted by regulating two substantial bolts.

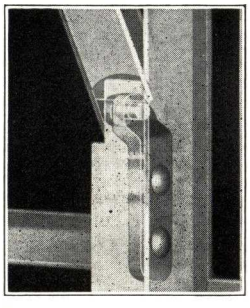
Use wrought iron or hot dip galvanized on steel, or even hot dip galvanized on wrought iron where excessive corrosion hazards exist. Much of the above directly refers to horizontal pivoted windows. Slight modifications cover other methods of ventilating, including vertically center pivoted, bottom and top pivoted, and camber and semi-circular units. Double glazing, underwriters labelled units, and vertical and horizontal mullions apply alike to all windows mentioned in this paragraph.

For Underwriters and Double Glazed Pivoted Windows See Page 19





INTERSECTION OF INTERIOR BARS

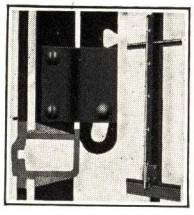


CONCEALED HINGE

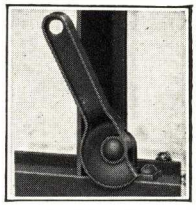
PIVOTED WINDOW WITH LOCK BAR

HARDWARE

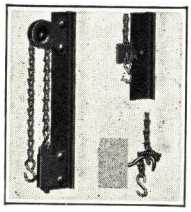
For industrial windows is Bayley design and manufacture. Heavy pressed steel and Malleable iron is generally used. Cams are cast malleable. Center pivoted ventilators may have lock bars, catch and chain, corner cams with push bar, or chain cams.



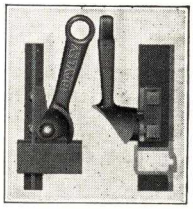
LOCK BAR F



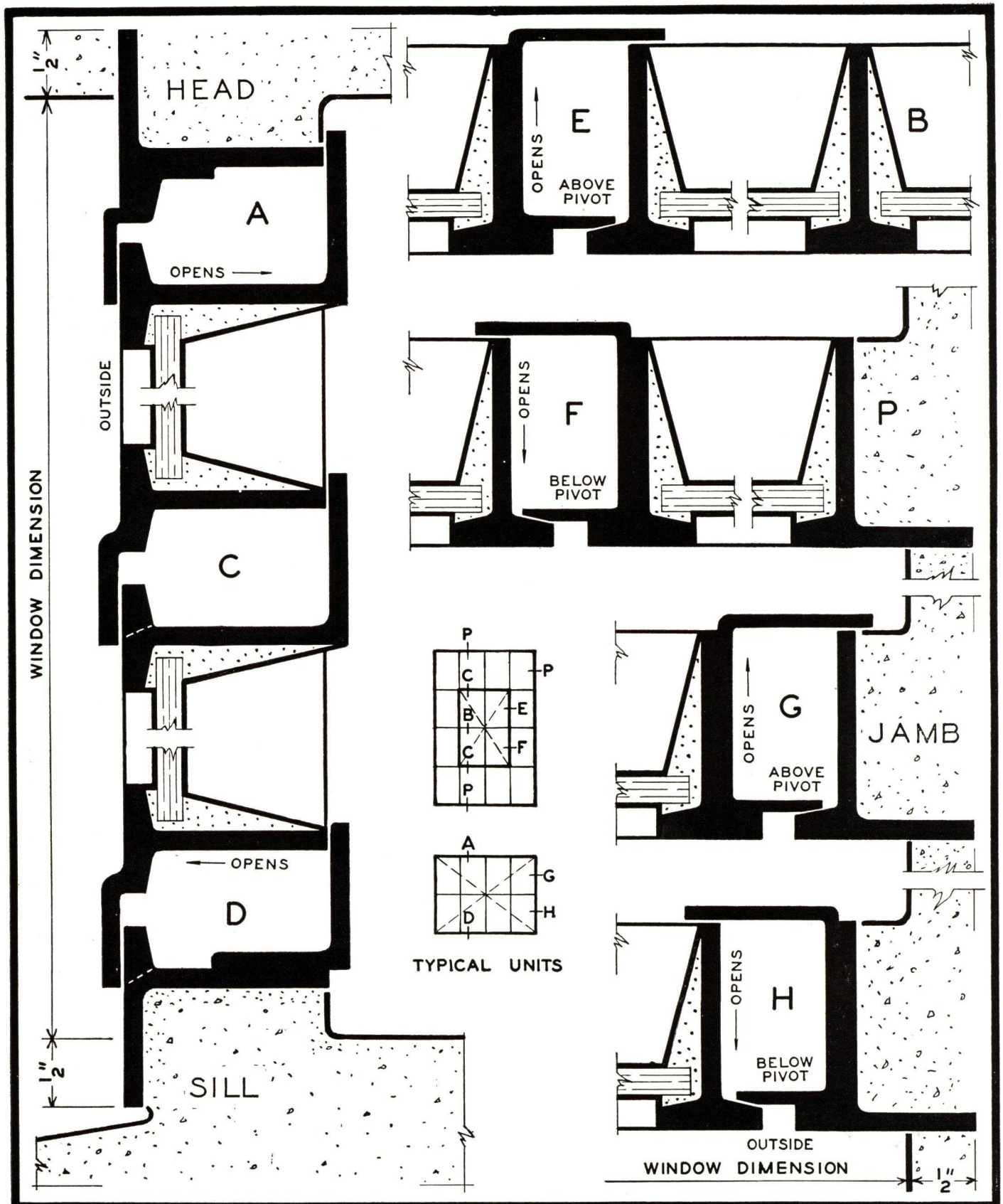
CAM H



CHAIN SET N

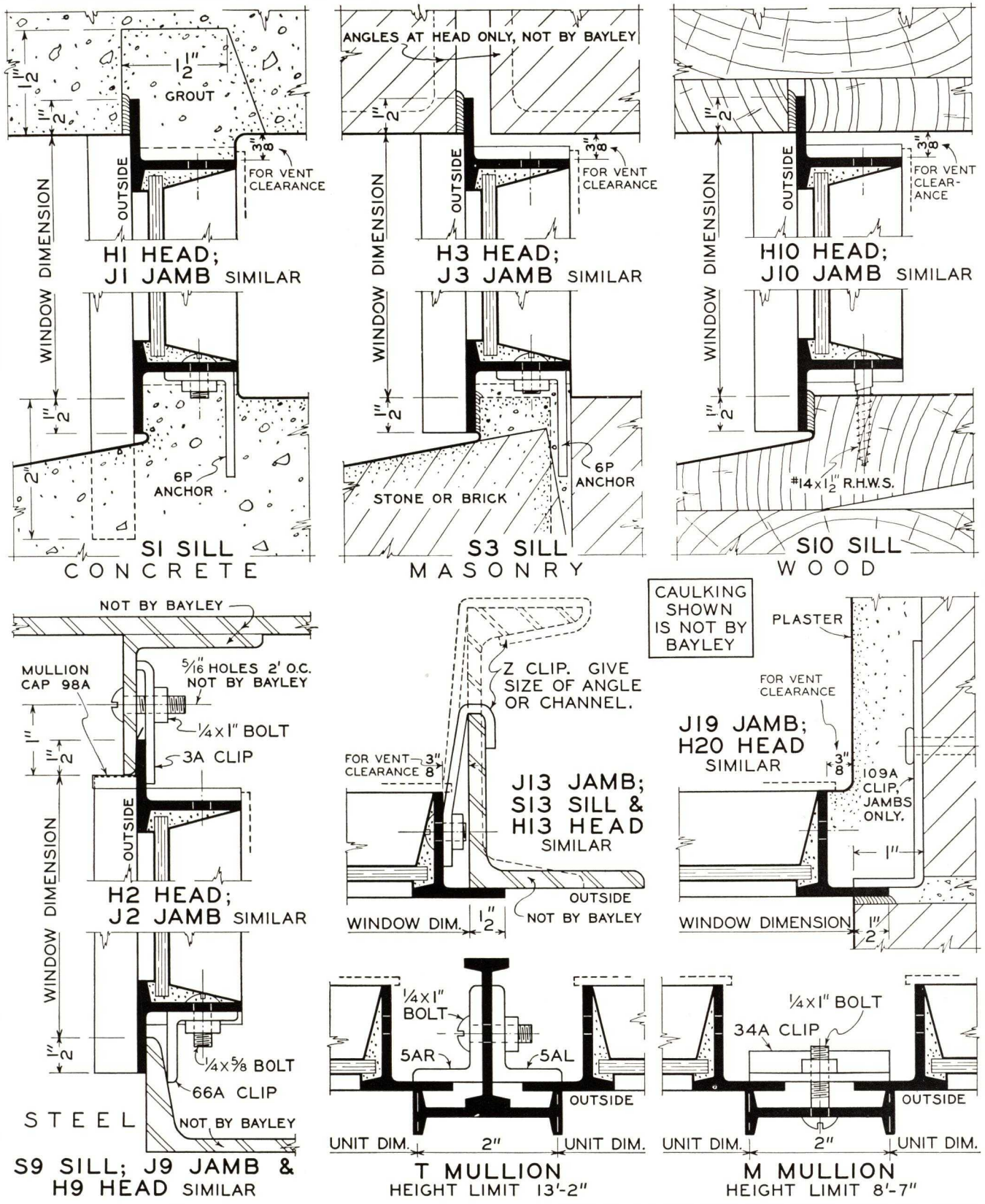


CAM H15



HORIZONTALLY PIVOTED WINDOWS 240

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. FULL SIZE

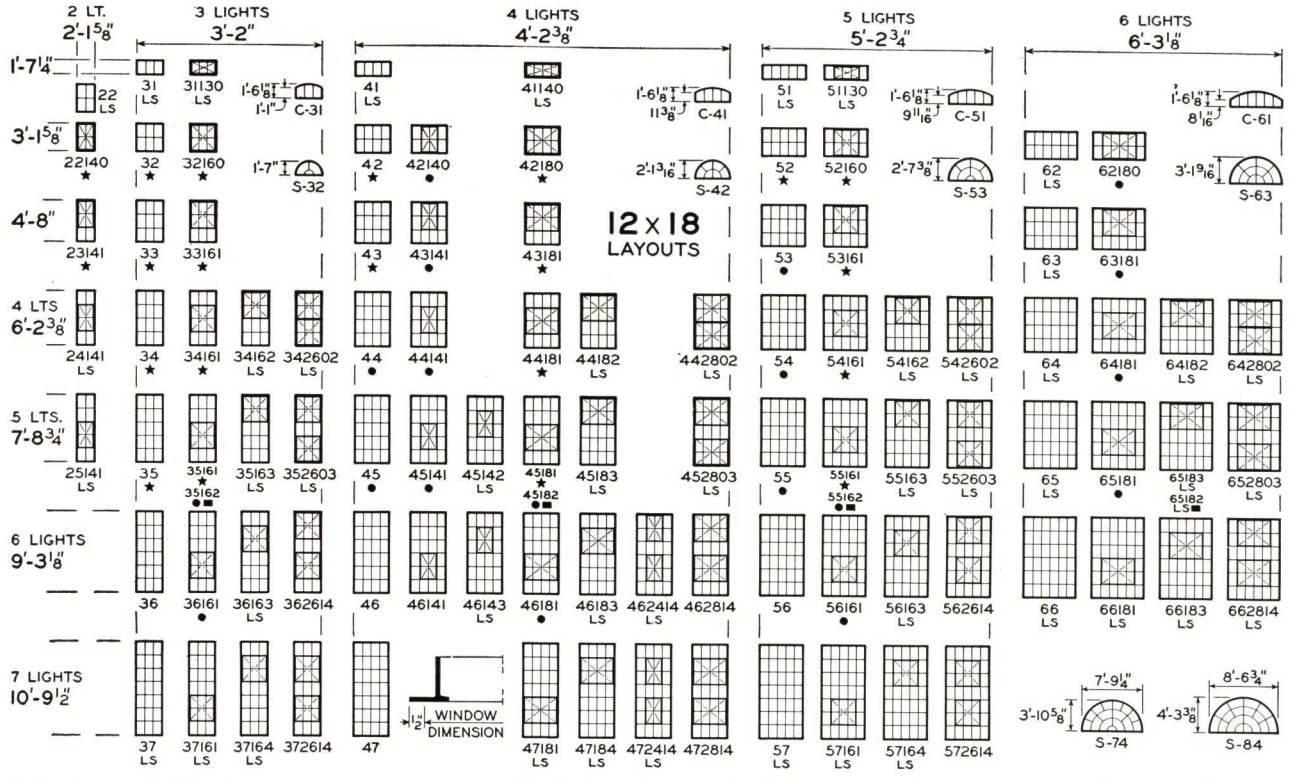


INSTALLATION DETAILS

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

330
HALF SIZE

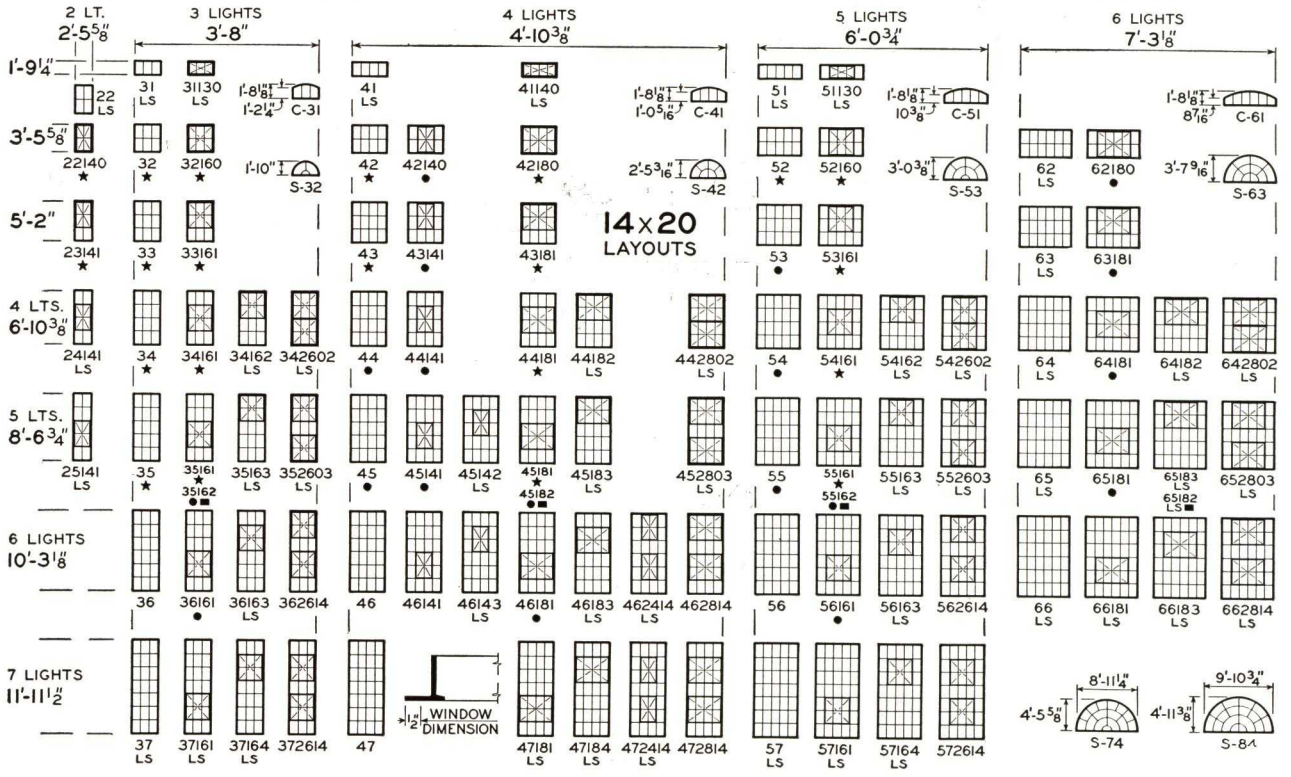
This Plate Applies to Pivoted Windows, Pivoted Windows Screened, and Projected Windows Commercial



★ = STOCKED AT WAREHOUSE;
● = PARTS STOCKED AT FACTORY;
UNMARKED = STANDARDS; LS = LISTED SPECIALS.
■ = VENT LOCATED TWO LIGHTS UP FROM SILL.

SEMI-CIRCULAR UNIT RADIUS = 1/2 WIDTH; CAMBER HEAD RADIUS = WIDTH. UNITS S-74 & S-84 REQUIRE HORIZONTAL MULLION BELOW; ALL OTHER SEMI-CIRCULAR AND CAMBER HEAD UNITS MAY BE ATTACHED DIRECT TO UNITS BELOW (SEE DETAIL F3 WITH MULLION ILLUSTRATIONS).

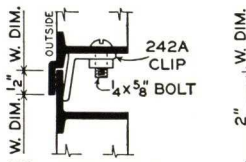
GLASS SIZES GIVEN ARE FOR FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM, AND BOTH SIDES) MUST BE TRIMMED ONE INCH.



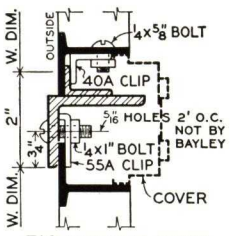
HORIZONTALLY PIVOTED WINDOWS 331

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

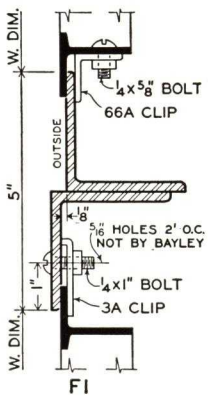
The Above Layouts Also Apply to Pivoted Windows Screened, Shown on Pages 8 and 9



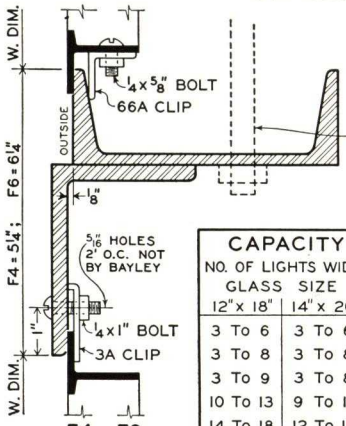
F3 DIRECT ATTACHMENT. FOR SEMI-CIRCULAR AND CAMBER HEAD UNITS, EXCEPT S74 & S84 WHICH REQUIRE F1 (OR F10 IN HEAVIER DESIGN).



F10 WITHOUT COVER
F22 WITH COVER
FOR WINDOWS ONE UNIT WIDE.



F1



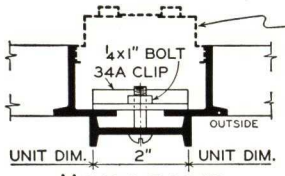
F4, F6

CAPACITY & MATERIAL SCHEDULE

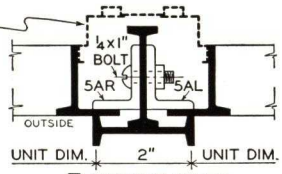
NO. OF LIGHTS WIDE GLASS SIZE 12"x 18"	14" x 20"	MULLION TYPE	SIZE	MATERIAL Γ= ANGLES C= CHANNELS
3 To 6	3 To 6	F3	0½"	
3 To 8	3 To 8	F10	2"	1- 2 x 1½ x 3/16" Γ 1- 1x⅝x⅛" Γ
3 To 9	3 To 8	F1	5"	2- 2½ x 2½ x 3/16 Γ
10 To 13	9 To 11	F4	5¼"	1- 3½ x 2½ x ¼ Γ 1- 4"x 5.4# C
14 To 18	12 To 16	F6	6¼"	1- 4 x 3 x 5/16 Γ 1- 6x 8.2 C

HORIZONTAL MULLIONS

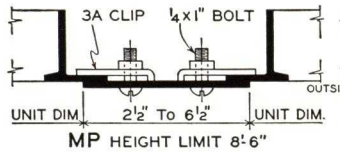
SHOULD EXTEND 4" INTO EACH MASONRY JAMB FOR ANCHORAGE



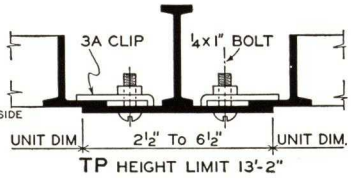
M WITHOUT COVER
M22 WITH COVER
HEIGHT LIMIT 8'-6"



T WITHOUT COVER
T22 WITH COVER
HEIGHT LIMIT 13'-2"

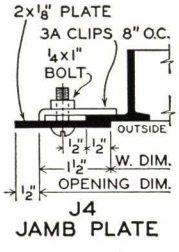


MP HEIGHT LIMIT 8'-6"

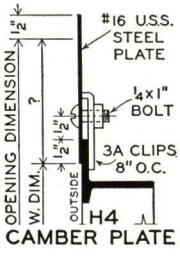


TP HEIGHT LIMIT 13'-2"

VERTICAL MULLIONS

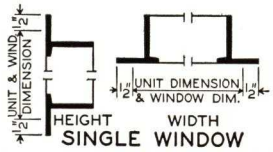


J4
JAMB PLATE

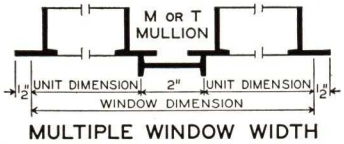


H4
CAMBER PLATE

12"x18" AND 14"x20" GLASS OCCUR ONLY IN FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM, & BOTH SIDES) MUST BE TRIMMED ONE INCH.



SINGLE WINDOW



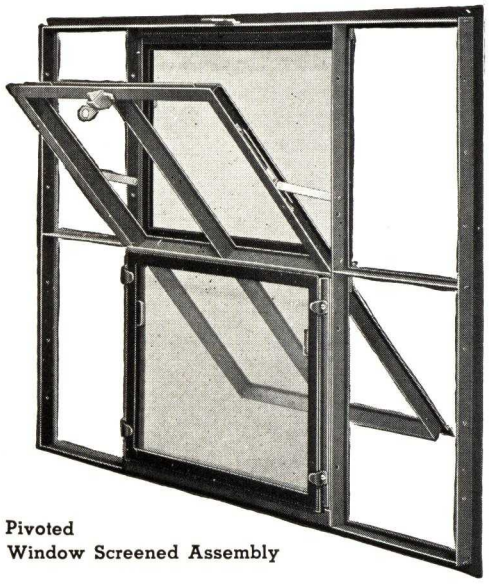
MULTIPLE WINDOW WIDTH

Combine 12" widths with 18" heights, & 14" widths with 20" heights.

12"x18" Glass	14"x20" Glass	No. of Lights	Arrangement of Units	No. of Units	No. of 2" Mullions
SINGLE WINDOW HEIGHTS					
1' 7¼"	1' 9¼"	1		1	
3' 1⅝"	3' 5⅝"	2		1	
4' 8"	5' 2"	3		1	
6' 2⅜"	6' 10⅜"	4		1	
7' 8¾"	8' 6¾"	5		1	
9' 3⅛"	10' 3⅛"	6		1	
10' 9½"	11' 11½"	7		1	
SINGLE WINDOW WIDTHS					
1' 1¼"	1' 3¼"	1		1	
2' 1⅝"	2' 5⅝"	2		1	
3' 2"	3' 8"	3		1	
4' 2⅜"	4' 10⅜"	4		1	
5' 2¾"	6' 0¾"	5		1	
6' 3⅛"	7' 3⅛"	6		1	
MULTIPLE WINDOW WIDTHS					
4' 5¼"	5' 1¼"	4	2-2	2	1
6' 6"	7' 6"	6	3-3	2	1
7' 6⅜"	8' 8⅜"	7	4-3	2	1
7' 9¼"	8' 11¼"	7	2-3-2	3	2
8' 6¾"	9' 10¾"	8	4-4	2	1
8' 9⅝"	10' 1⅝"	8	3-2-3	3	2
9' 10"	11' 4"	9	3-3-3	3	2
10' 7½"	12' 3½"	10	5-5	2	1
10' 10⅜"	12' 6⅜"	10	3-4-3	3	2
11' 10¾"	13' 8¾"	11	3-5-3	3	2
11' 10¾"	13' 8¾"	11	4-3-4	3	2
12' 8¼"	14' 8¼"	12	6-6	2	1
12' 11⅛"	14' 11⅛"	12	4-4-4	3	2
13' 2"	15' 2"	12	3-3-3-3	4	3
13' 11½"	16' 1½"	13	4-5-4	3	2
13' 11½"	16' 1½"	13	5-3-5	3	2
14' 11⅞"	17' 3⅞"	14	4-6-4	3	2
14' 11⅞"	17' 3⅞"	14	5-4-5	3	2
15' 2¾"	17' 6¾"	14	3-4-4-3	4	3
16' 0¼"	18' 6¼"	15	5-5-5	3	2
16' 0¼"	18' 6¼"	15	6-3-6	3	2
16' 6"	19' 0"	15	3-3-3-3-3	5	4
17' 0⅝"	19' 8⅝"	16	5-6-5	3	2
17' 0⅝"	19' 8⅝"	16	6-4-6	3	2
17' 3½"	19' 11½"	16	4-4-4-4	4	3
17' 3½"	19' 11½"	16	3-5-5-3	4	3
17' 6⅜"	20' 2⅜"	16	3-3-4-3-3	5	4
18' 1"	20' 11"	17	6-5-6	3	2
18' 6¾"	21' 4¾"	17	3-4-3-4-3	5	4
19' 1⅜"	22' 1⅜"	18	6-6-6	3	2
19' 4¼"	22' 4¼"	18	4-5-5-4	4	3
19' 7⅛"	22' 7⅛"	18	3-4-4-4-3	5	4
20' 7½"	23' 9½"	19	4-4-3-4-4	5	4
20' 7½"	23' 9½"	19	3-5-3-5-3	5	4
21' 5"	24' 9"	20	5-5-5-5	4	3
21' 5"	24' 9"	20	4-6-6-4	4	3
21' 7⅞"	24' 11⅞"	20	4-4-4-4-4	5	4
22' 8¼"	26' 2¼"	21	3-5-5-5-3	5	4
22' 8¼"	26' 2¼"	21	4-4-5-4-4	5	4
23' 5¾"	27' 1¾"	22	5-6-6-5	4	3
23' 8⅝"	27' 4⅝"	22	4-5-4-5-4	5	4
23' 11½"	27' 7½"	22	3-4-4-4-4-3	6	5
24' 9"	28' 7"	23	4-5-5-5-4	5	4
25' 6½"	29' 6½"	24	6-6-6-6	4	3
25' 9⅜"	29' 9⅜"	24	5-5-4-5-5	5	4

BAYLEY PIVOTED WINDOWS Screened

FOR buildings requiring screen protection in addition to the advantages of pivoted windows. Bayley Pivoted Windows—Screened completely protect materials and processes in all kinds of manufacturing and distributing plants. They should not be confused with ordinary pivoted windows to which screens have been attached as an afterthought. This exclusive Bayley development is backed by thousands of successful installations for many particular owners. These windows are widely used in power houses, chemical plants, tanneries, textile mills and printing plants where protection to materials or machinery is desirable; also in bakeries, packing houses, restaurants, candy factories, hotel kitchens, dairies and other buildings where foods are prepared.



Pivoted
Window Screened Assembly

Materials and Features

This product is made with ventilators having industrial sections, (plate No. 292) available in steel or wrought iron, or Series 30 casement sections, (plate No. 313) available in steel. Both products may be hot dip galvanized. Ventilators and screens are built together but screens are removable.

STANDARD LAYOUTS AND SIZES are 12 x 18 and 14 x 20 inches. Opening dimensions match those of pivoted windows. Refer to Page 6 (Plate 331) for layouts except for one light high, where commercial projected in screened should be used.

SECTIONS duplicate those of standard pivoted windows except some are exclusive to this product. Horizontal muntin bar of ventilator is 1-13/16 inches deep and is shaped to provide continuous close fitting screen contacts, with ventilator in any position.

PIVOTS exclusive to this product are located at exact center of ventilator.

FRICTION ADJUSTERS of non-corrosive metal hold ventilator securely in any position. They are attached within the weathering at each side, properly adjusted in manufacture and protected during shipment and erection.

POLE CATCH H112 IS OF MALLEABLE IRON in cadmium plated finish. Cam H113, optional.

SCREENS made by the William Bayley Co. are an integral part of window. They have solid steel frames in hot dip galvanized finish. Bronze screen cloth, 16 mesh, is standard. Screens are interchangeable and easily removed from inside for cleaning windows or for winter storage. Rewiring may be done by any mechanic without special tools.

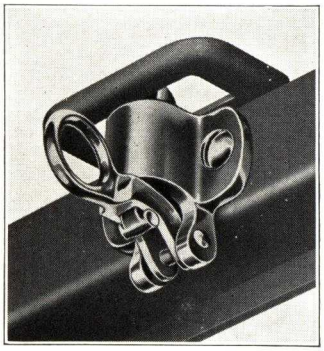
GLAZING is with putty. Industrial section windows, glazed inside; series 30 glazed outside. Double glazing is an exclusive feature which may be specified in this as in other Bayley products. It is specially desirable where uniform temperature and humidity is necessary and where fuel saving is considered.

Ohio Edison Co. Mad River Plant

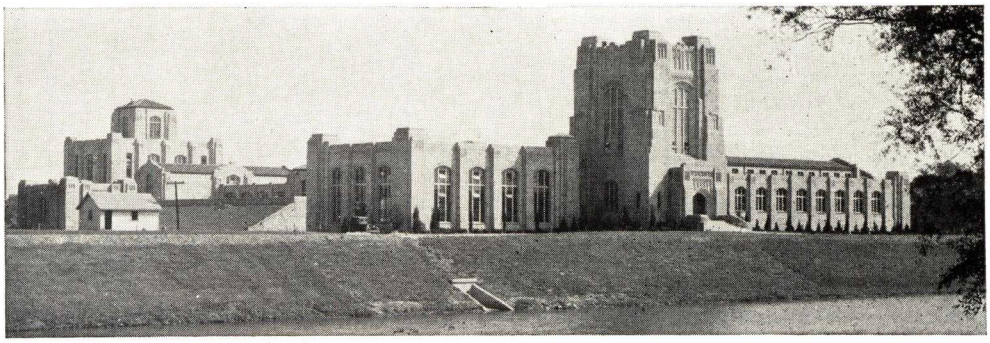
One dip coat of standard red oxide paint is applied to steel before shipment.

MECHANICAL OPERATORS of either manual or electric control may be used for ventilators in long lines and those out of reach.

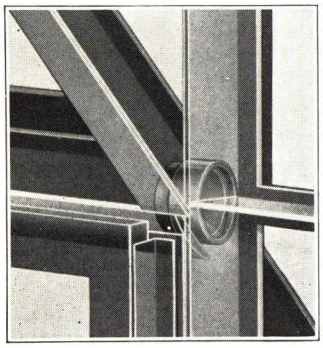
Bayley Pivoted Windows Screened keep out swarms of insects attracted by brilliantly lighted interiors of power houses, water works, and other plants engaged in day and night operation. Sensitive electrical equipment as well as intricate processes of water purification must have screen protection in order that public service may not be interrupted.



Pole Catch H 112



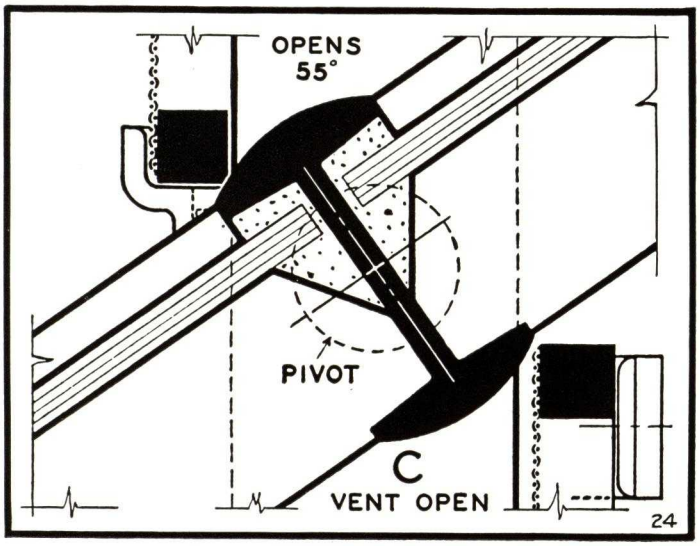
Three Rivers Filtration and Pumping Station, Ft. Wayne, Indiana

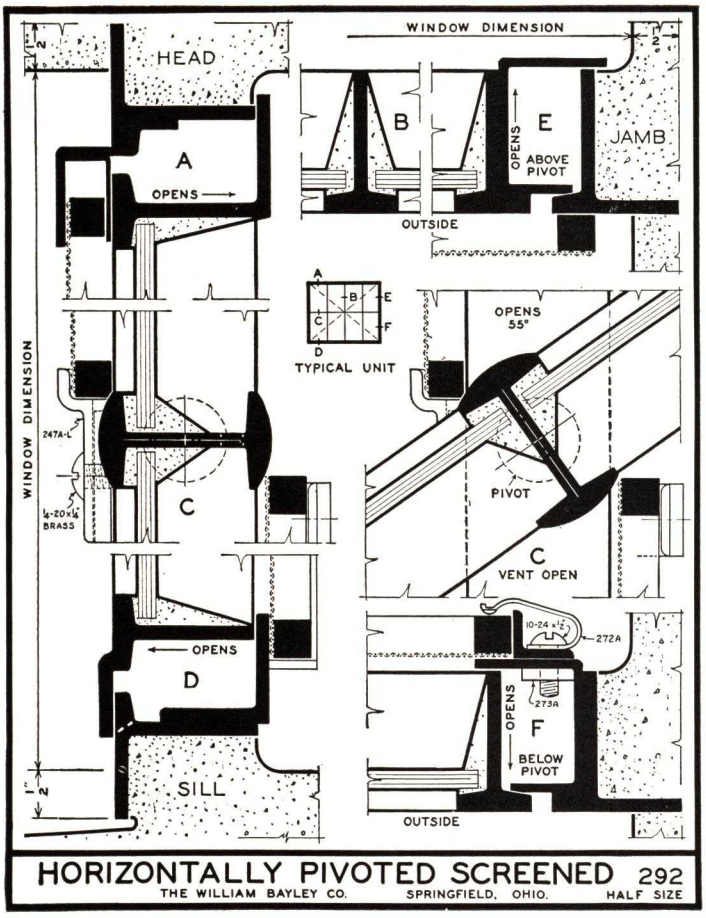


Center Rail and Pivot

BAYLEY PIVOTED WINDOWS Screened INDUSTRIAL SECTIONS — GLAZED INSIDE—(Patented)

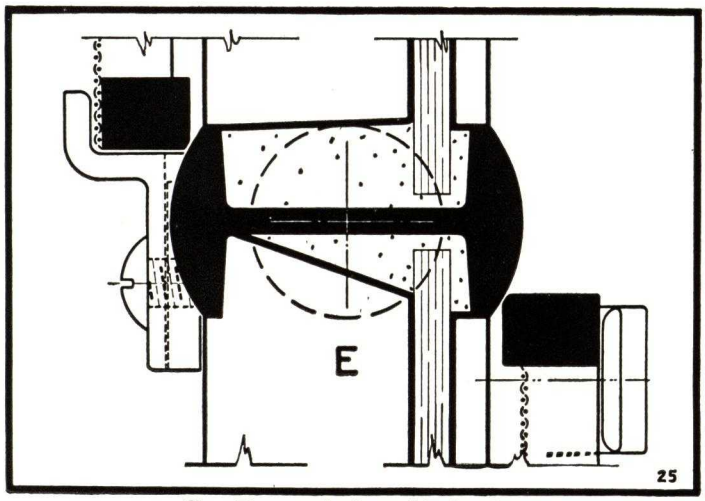
Bayley center rail contact and pivot arrangement with Fixed Flat screens is the key to these special "keep out insects" center pivoted ventilators. Illustrations show ventilators in the open and closed positions with horizontal screen frame members always in contact with curved center rail and the perimeter of the opening.

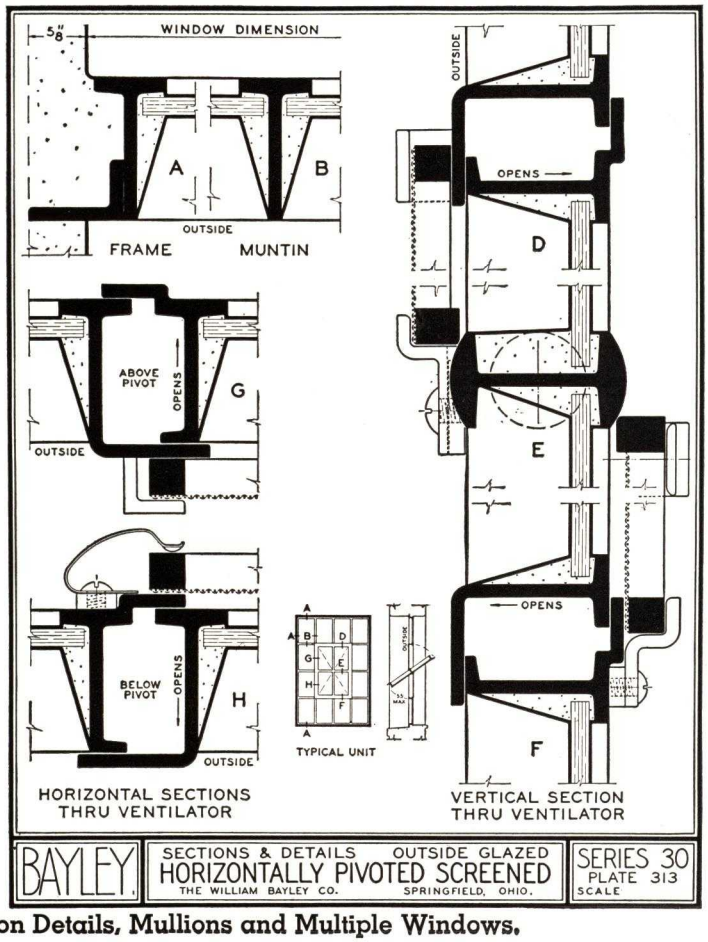




BAYLEY PIVOTED WINDOWS Screened SERIES 30 CASEMENT SECTIONS GLAZED OUTSIDE—(Patented)

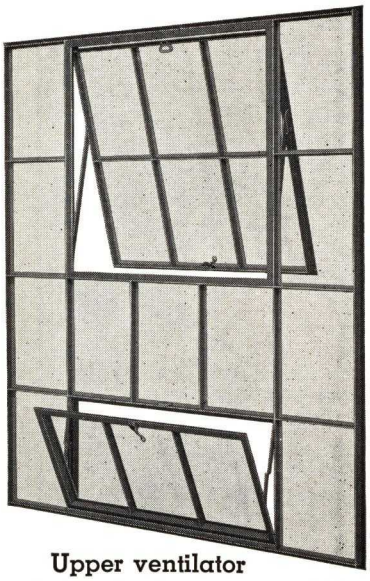
The application of Series 30 casement sections to pivoted ventilators is another long step forward by Bayley. This product has sections 1/8" thick and carries casement workmanship which assure better weathering and permanency since the complete window unit is most rigid and less subject to corrosion.





See Pages 5, 6 and 7 for Layouts, Installation Details, Mullions and Multiple Windows.

BAYLEY PROJECTED WINDOWS Commercial Screened



Upper ventilator projected out, screen inside

Lower ventilator projected in, screen outside

BAYLEY PROJECTED WINDOWS COMMERCIAL Screened, Inside Glazed (Plate 223) are designed for garages, lofts, storage and industrial buildings; Outside Glazed (Plates 333 and 334) for schools, offices and better commercial buildings.

Materials and Features

The windows are manufactured in steel, or wrought iron and may also be hot dip galvanized.

INDUSTRIAL SECTIONS 1½" and 1⅝" deep arranged for inside putty glazing or for outside glazing upon request.

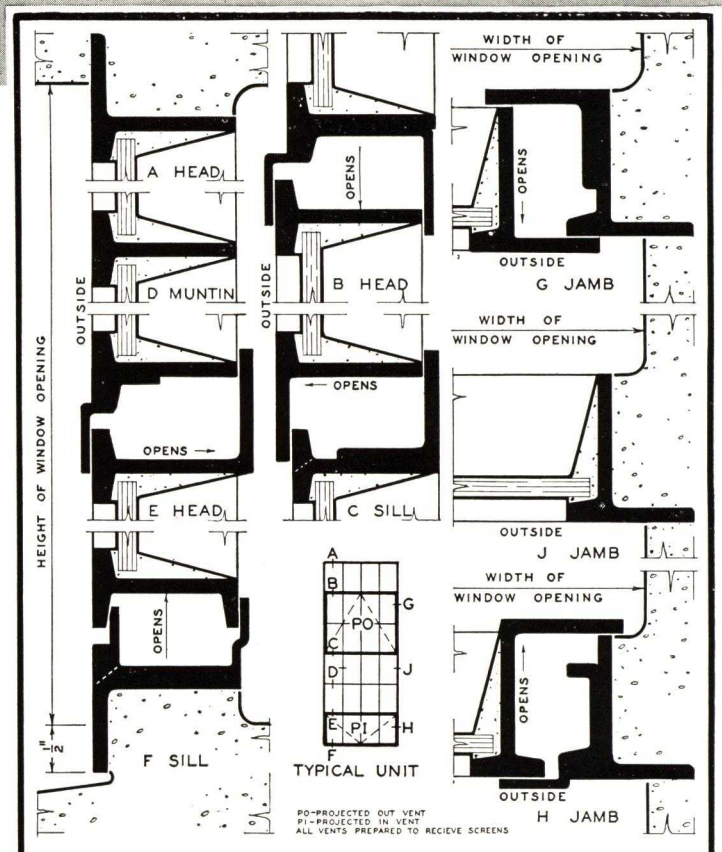
LAYOUTS are for basic glass sizes 12x18" and 14x20". Opening dimensions match those of pivoted windows.

VENTILATORS and openings for ventilators have corners coped, tenoned and riveted, and welded where necessary for strength. Ventilators balance on heavy steel friction arms with friction increasing as the movement nears the closing point. They slide on bronze pivots; at top when projected out, and at bottom when projected in.

Awning-like protection during showers is a feature. Outside washing can be done from the inside when ventilators are open.

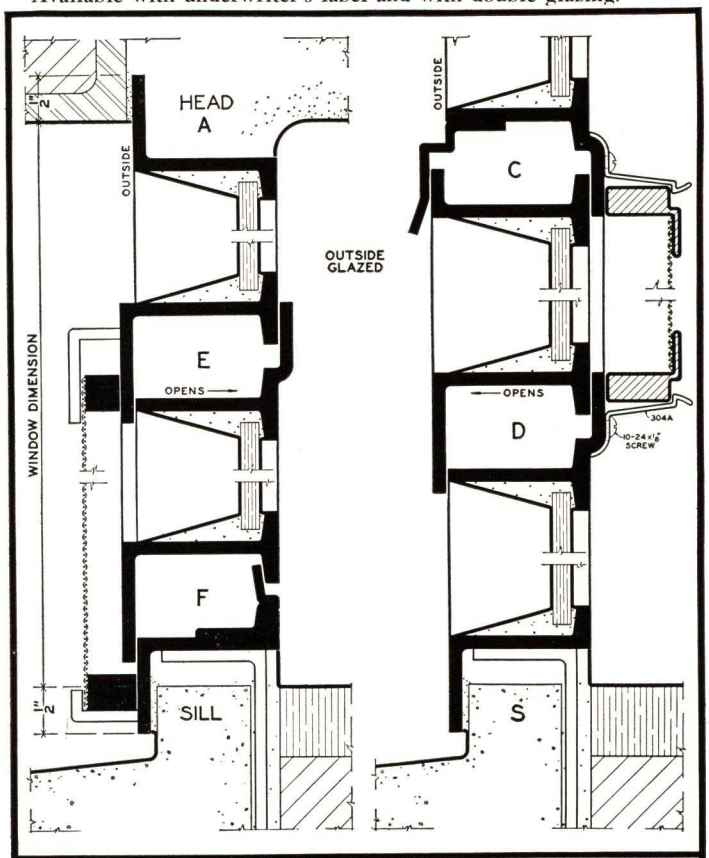
SCREENS fit flat against weathering. Bayley's section depth provides for secure attachment of hardware and its coverage by screens. All windows are prepared to receive screens ⅜" thick.

Available with underwriter's label and with double glazing.

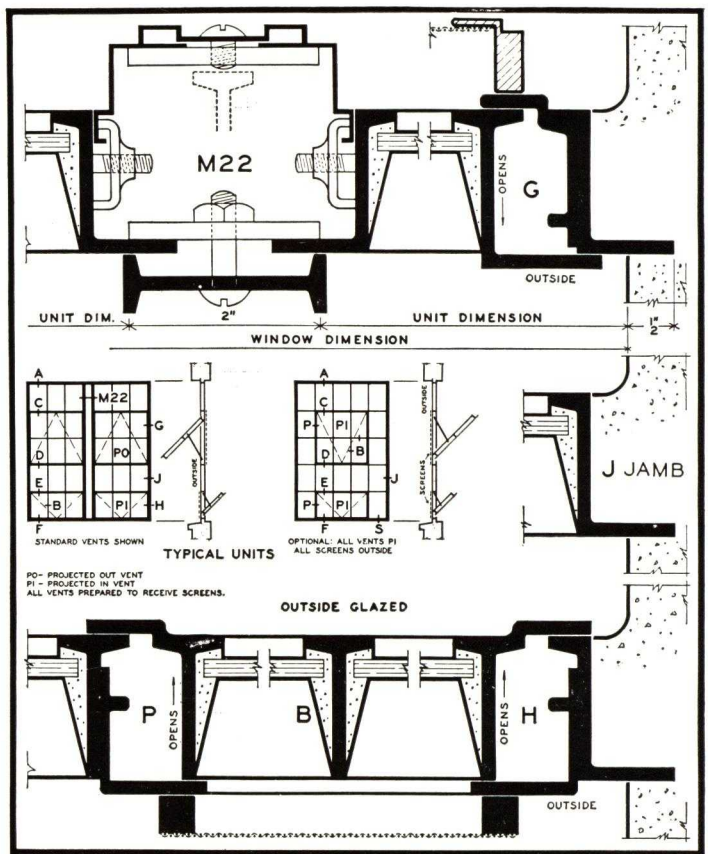


COMMERCIAL PROJECTED WINDOWS 223
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE

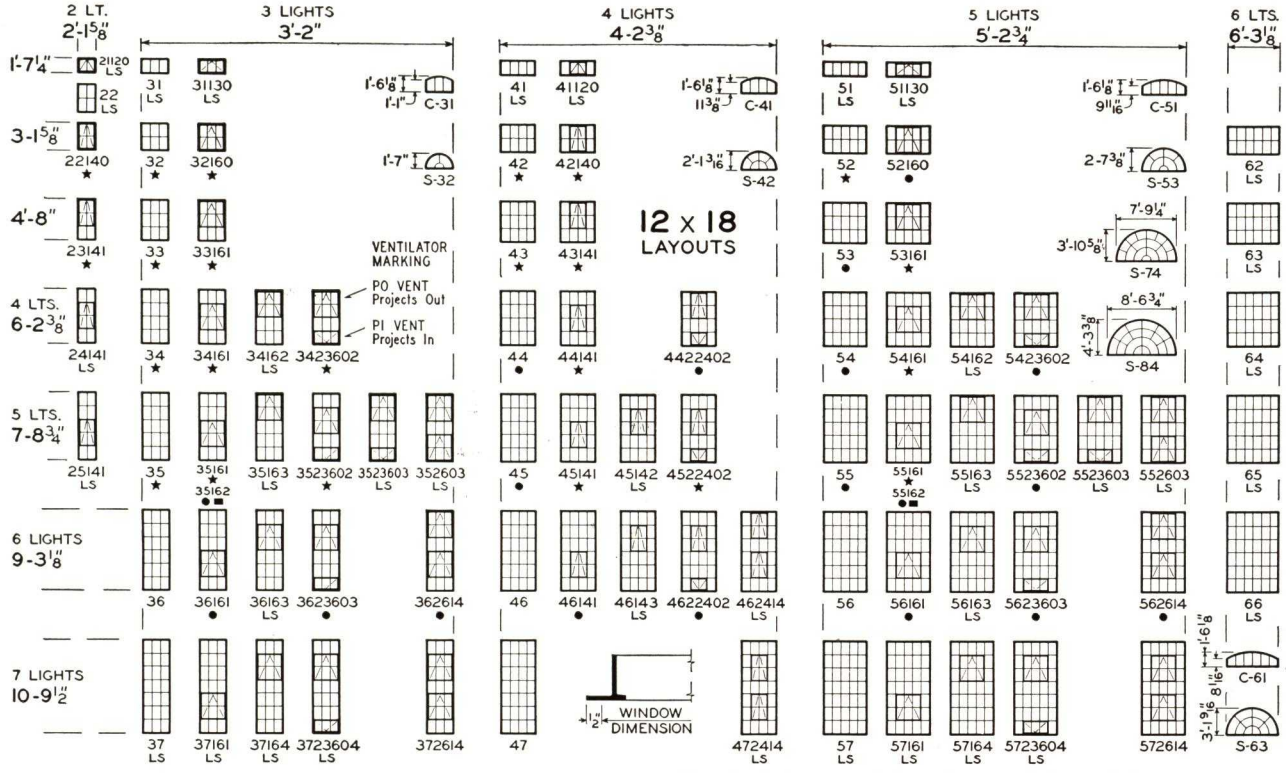
Hardware for Commercial & Architectural Projected is the same design



COMMERCIAL PROJECTED WINDOWS 333
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE



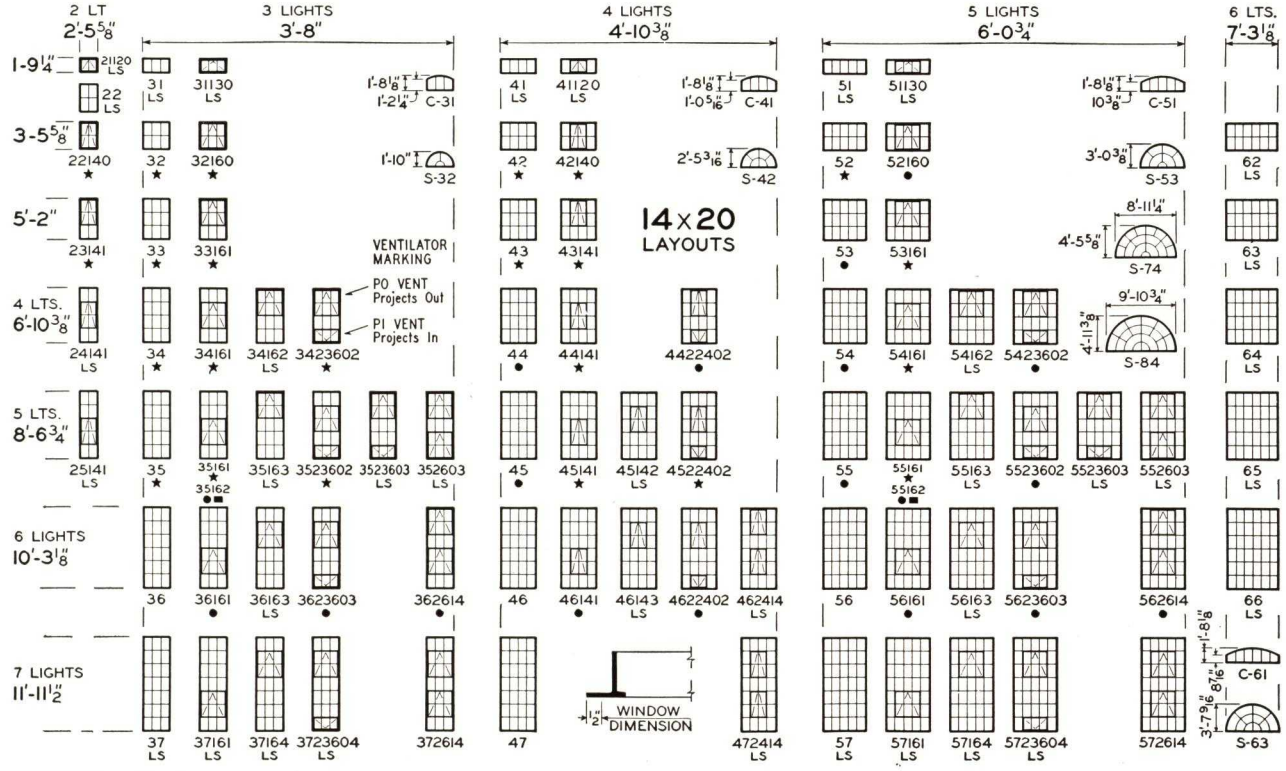
COMMERCIAL PROJECTED WINDOWS 334
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO HALF SIZE



★ = STOCKED AT WAREHOUSE;
● = PARTS STOCKED AT FACTORY;
UNMARKED = STANDARDS; LS = LISTED SPECIALS.
■ = VENT LOCATED TWO LIGHTS UP FROM SILL.

SEMI-CIRCULAR UNIT RADIUS = 1/2 WIDTH, CAMBER HEAD RADIUS = WIDTH. UNITS S-74 & S-84 REQUIRE HORIZONTAL MULLION BELOW; ALL OTHER SEMI-CIRCULAR AND CAMBER HEAD UNITS MAY BE ATTACHED DIRECT TO UNITS BELOW (SEE DETAIL F3 WITH MULLION ILLUSTRATIONS).

GLASS SIZES GIVEN ARE FOR FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM, AND BOTH SIDES) MUST BE TRIMMED ONE INCH.

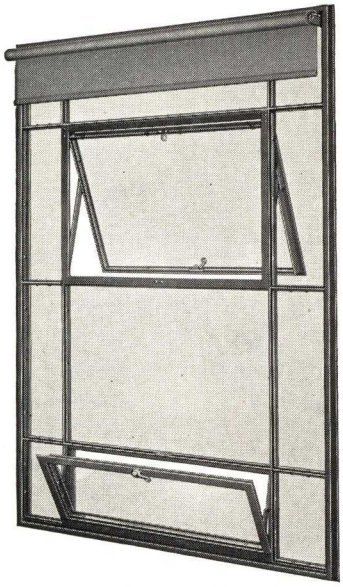


COMMERCIAL PROJECTED WINDOWS 332

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO

Layouts Show Standard Projected Out and Projected In Ventilation. Windows Having All Ventilators Projected In May Be Furnished If Specified *(Not Stocked at Warehouse).* **See Pages 5 and 7 for Installation Details and Mullions**

BAYLEY PROJECTED WINDOWS Architectural Screened



Projected Out Ventilator above permits use of screens and shades without interference
Projected In Ventilator below controls ventilation

Materials and Features

The windows are manufactured in steel, or steel hot dip galvanized.

Ventilator sections, welding, weathering, and working parts are similar to those used in commercial projected but workmanship is stepped up for this more finished window.

SECTIONS 1½" and 1⅝" deep enclosed within an outside frame of extra heavy deep flanged channel welded at corners. This increased width stiffens the product and improves appearance.

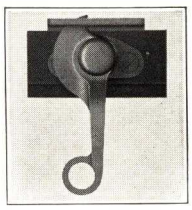
GLAZING is inside with bed putty and steel beads, or with putty, and outside with putty when requested.

HARDWARE is of heavy pressed steel, cast malleable and bronze. The cam so often found on Bayley windows is the most effective draw-up-tight attachment. As in all Bayley windows the depth of sections and their shape provides for secure fastening, another outstanding Bayley feature.

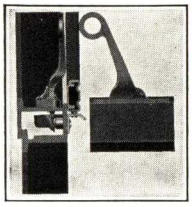
SCREENS manufactured by Bayley fit flat against the weathering and cover cam hardware.

Available with underwriter's label and with double glazing.

Recognizing value, careful designers rate this Bayley window as today's best buy, for they know the sections, workmanship, and trim, place its usefulness equal to that of more expensive products.

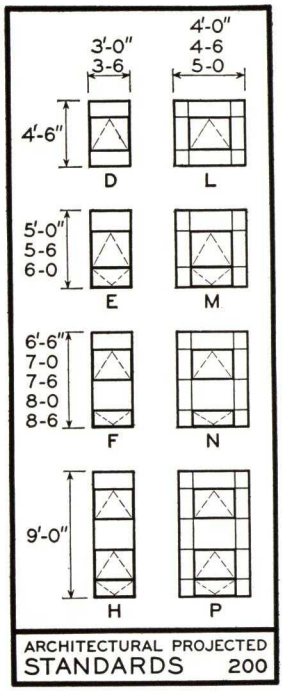


H113 Cam for Projected In Vents Within Reach



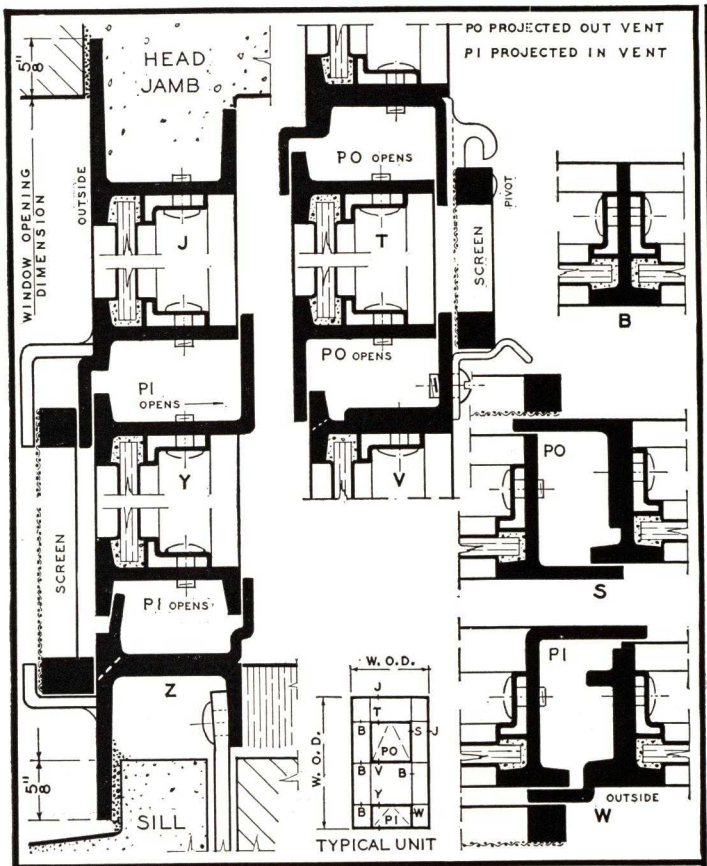
H20 Cam for Projected Out Located Within Ventilator Operates Through Sill

H112 Pole Catch for Projected In Vents Out of Reach



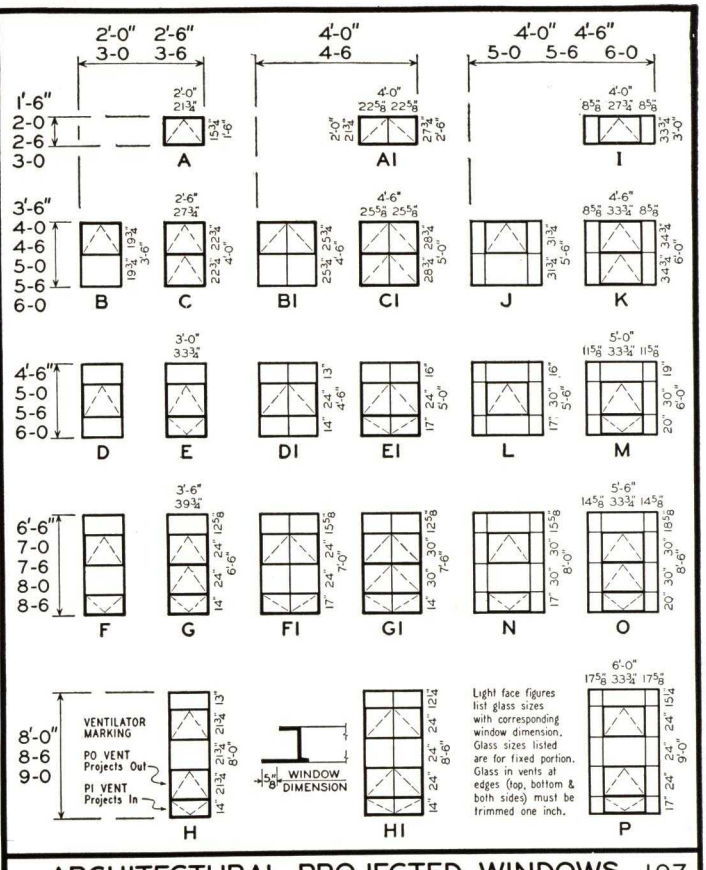
ARCHITECTURAL PROJECTED STANDARDS 200

Standard layouts above. Standards and listed specials below.



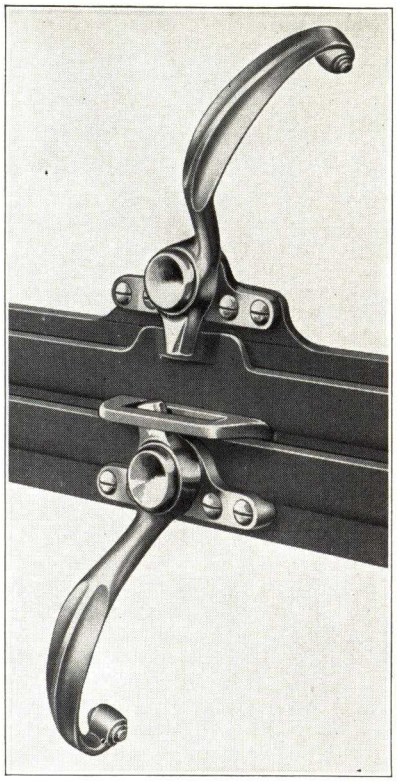
ARCHITECTURAL PROJECTED WINDOWS 195

Inside Glazed (Flat Surface Outside).

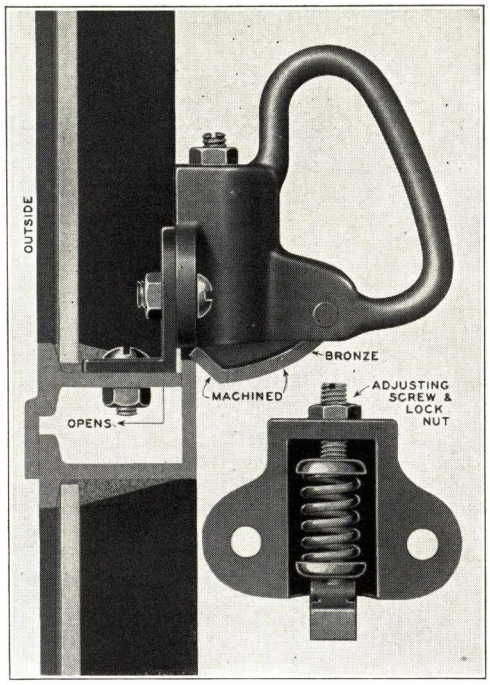


ARCHITECTURAL PROJECTED WINDOWS 197
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO

Layouts are for Inside or Outside Glazed.

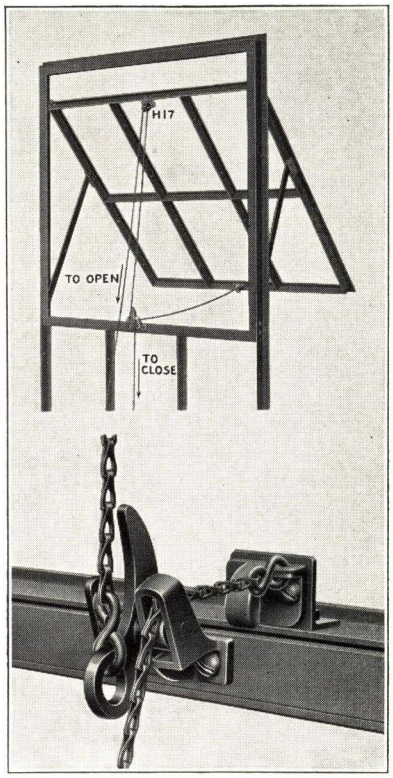


Bronze handle H126 for Projected Out and **H127** for Projected In ventilators, when windows are glazed from inside. Bronze handle **H128** for Projected Out and **H129** for Projected In ventilators when windows are glazed from outside.

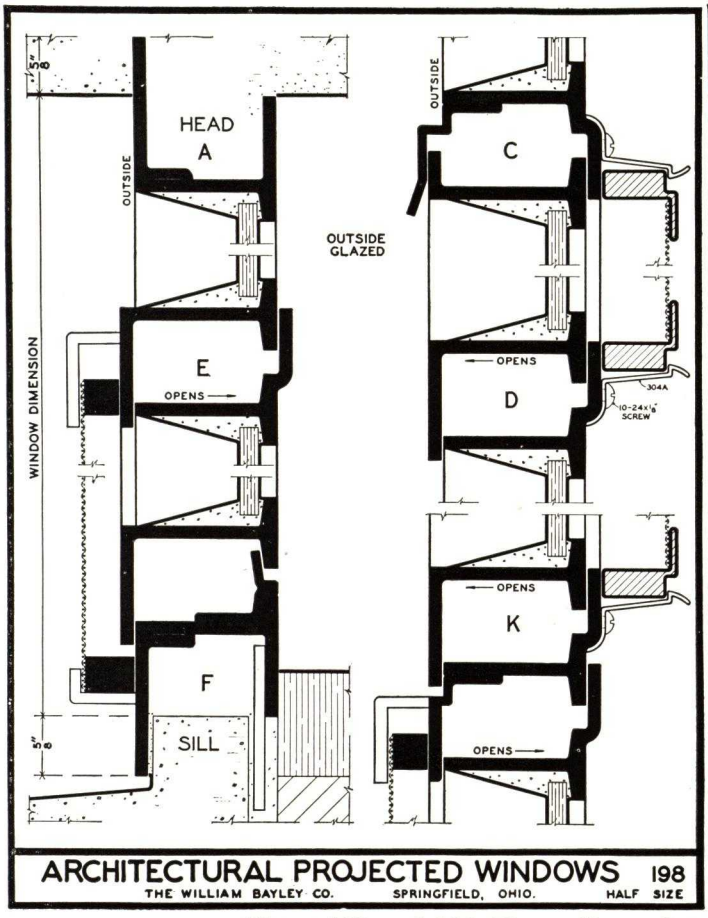


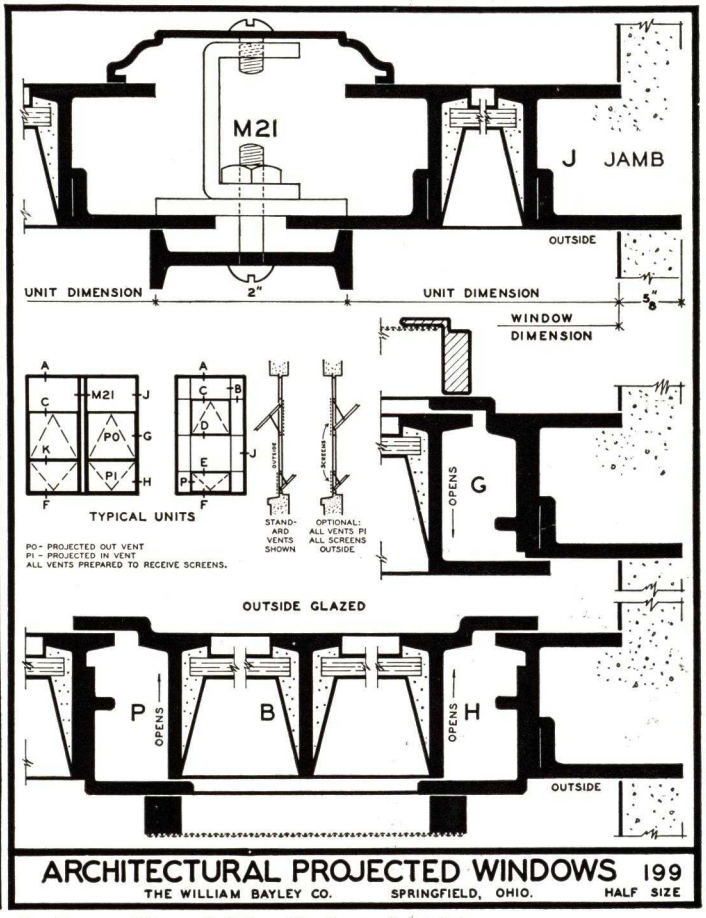
PRESSURE RELEASE LATCH H64

Developed by Bayley for use on Projected Outswinging and also ventilators pivoted horizontally near top, to release ventilators and relieve pressure caused by explosion. May be adjusted to release at any pressure. H64 Pressure Release Latch is approved by the Underwriters' Laboratories Inc., Chicago, and by the Associated Factory Mutual Fire Insurance Companies, Boston, as a means of holding ventilators closed for fire protection and prevention.



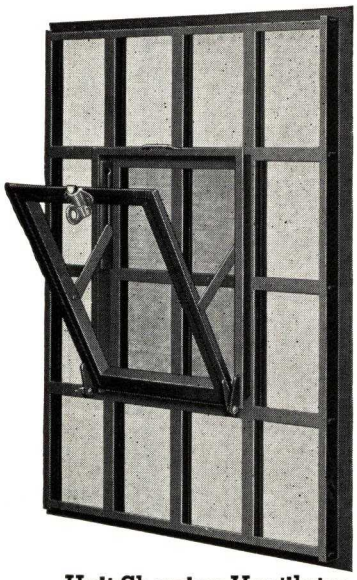
Chain Catch H121 for operating Projected Out ventilators which are out of reach of floor. May be chain or pole operated. Mechanical Operators are recommended for groups of ventilators in long lines or when they are high above the floor.





Plates 198 and 199 Above Show Outside Putty Glazed (Flat Surface Inside)

BAYLEY DETENTION WINDOWS
Screened



Unit Showing Ventilator and Screen

Bayley Detention Windows — Screened — as shown and described on this and the following pages were originated by Bayley. Their adoption by Federal, State, County and Municipal authorities, and the thousands of these windows which have been installed prove the suitability of the design and construction to meet all requirements for such a window.

The use of these windows not only provides absolute protection but discourages tampering with the ventilators since even if they are damaged or completely removed the detention value of the window is in no way lessened. It is the only detention window wherein the factor of security remains constant irrespective of the location or number of ventilators used.

These Detention Windows consist of three parts namely: the grille for detention, the ventilator and the screen. The construction and assembly of these parts is described as follows:

THE GRILLE FOR DETENTION — Note in the illustration that the grille is composed of horizontal and vertical bars continuous between jambs and from head to sill, interlocked mechanically, and in addition, deep welded at these intersections and ends. Bars are shaped and spaced to provide for the insertion of glass approximately six inches by nine inches with outside putty glazing in all spaces except those to be covered by ventilators. Welding is ground only where necessary to provide a smooth surface for ventilator attachment.

THE VENTILATOR — One or more ventilators are *superimposed* on each grille. Each ventilator is a frame and movable section fabricated separate from the grille and complete within itself. Bayley Series 30 casement sections, 1⅝″ deep, provide stiffness to withstand rough usage, double flat weathering contacts and space for glass sometimes as large as one light to the ventilator. Corners are mitred and butt welded. The movable section with hardware is attached to the frame which is later bolted or welded to the grille. Ventilators which swing in at the top from heavy hinges welded to bottom corners of frame and ventilator are standard construction and are recommended. The less rigid projected in movement may be substituted if desired. Heavy side friction stays 1 x ¼″, the minimum essential for prison usage, fold within the weathering.

THE SCREENS — These have solid steel hot galvanized frames butt welded at corners. Bronze wire insect cloth is securely fastened to this frame. Rewiring may be done by any mechanic without special tools. If ventilators are bolted to the detention grille, screens may be placed between the ventilator and the grille. This is Bayley's latest improvement. Screens may also be placed on the outside of the grille.

SECURITY REQUIREMENTS DETERMINE TYPE OF BAR

Penologists usually classify detention as maximum, medium, or minimum. Bayley has followed this lead and by varying the value of the security element — the fixed grille of the guard window — all these requirements may be met. Note especially its value for maximum and medium detention.

Maximum Security Demands Grilles of Super-Bars

Three choices are offered to designers to meet the more serious problems that develop in this division. As shown on Plate 328 opposite page, the fixed grilles may be made of —

1—Bayley super-bar (1¾″ deep weighing 2 lb. per lin. ft.) structural grade steel reinforced with continuous non-machined horizontal and vertical members which are tool resisting, interlocked with and welded to the super-bars. This construction combines the highest development of structural strength with tool resisting non-annealable features. It is accepted as affording maximum security.

2—Bayley super-bar having the tool resisting and non-annealable elements rolled directly into the bar. Heavy tonnage and ample time for fabrication is a condition when this special material is specified.

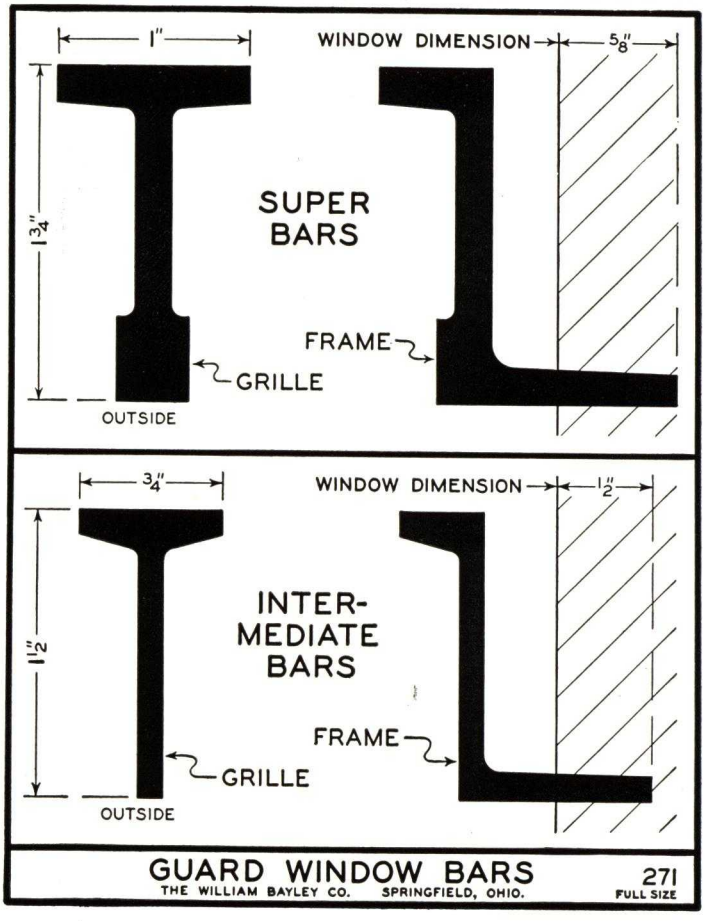
3—Bayley super-bar of structural grade steel may meet normal maximum security requirements where supervision is constant, but it should be understood such material is not tool resisting. This construction is also often used for medium security.

Medium Security Permits Grilles of Intermediate Bars

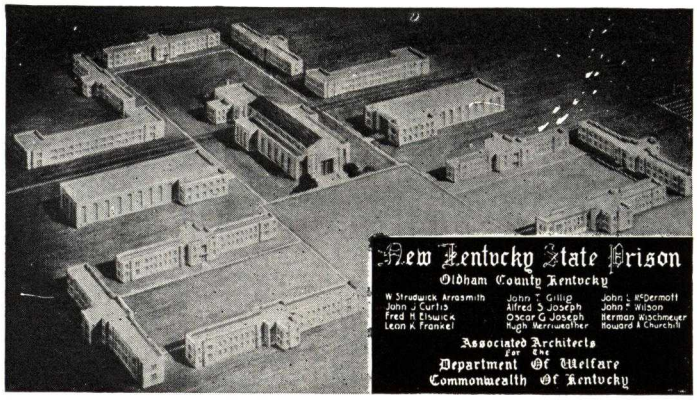
Bayley's Intermediate Bar Guard of structural grade steel sections 1½″ deep weighing 1 lb. per lin. ft., fabricated and welded the same as No. 3 in Super Bar construction, is used when economy is essential. See Plate 271 at right and Plate 269 page 17.

Minimum Security May Be Met in Diversified Ways

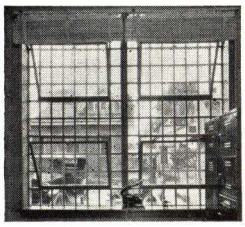
Buildings within walled enclosures, and those for the detention of juveniles and of adults without escape urge, may use a window of lesser detention value, and many of the more usual types of solid section windows, modified to meet local requirements, are suitable. There are so many offerings that only those of the economical "Industrial Detention" group are described here. They are modified Horizontally Pivoted, or Projected windows of industrial sections and construction without extra welding, of approximate 6 x 9″ glass size, and with ventilators one light high which operate in such manner as to prevent egress through the opening. This product predates Bayley's Guard-Window development.



BAYLEY SUPER BAR GUARD-WINDOWS

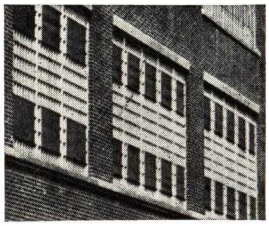


When it is vital to protect valuable contents against entrance, as in banks, fur and silk storages, bonded warehouses, precious metal shops, etc., Bayley recommends that designers select and specify windows of the great strength and weight of this "Detention" group.



The super-bar guard window is a minimum recommendation for such protection. See photo at left and number 3, plate 328 at right.

Shown below, right.
Federal Detention Headquarters, New York City. Bayley Guard Windows Super Bar Non-annealable



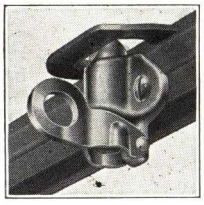
BAYLEY VENTILATORS AND HARDWARE

Guard window construction as offered by Bayley includes two methods of ventilator attachment to either super bar or intermediate bar grilles.

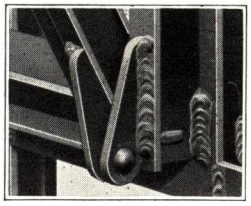
METHOD "A"—Ventilator and its frame welded to the grille in the factory and the two shipped as a complete window. See plate 326, (page 16) and plate 269, (page 17).

METHOD "B"—Ventilator and its frame fabricated as a unit with provision for later attachment to the grille in the field. See plate 320, below.

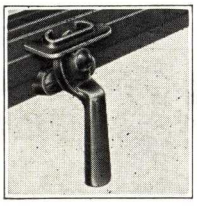
Method "B" has the following advantages. (1) Grilles may be shipped in advance of ventilators. (2) Grilles may be bricked in or placed in concrete forms. (3) Ventilators are attached as the building is being finished, thus protecting contacts, hardware and finish. (4) Ventilators may be glazed, painted and hardware attached, separately on trestles on the job under more favorable conditions. Large scale operations already completed have proven the soundness of this Bayley plan of guard window construction.



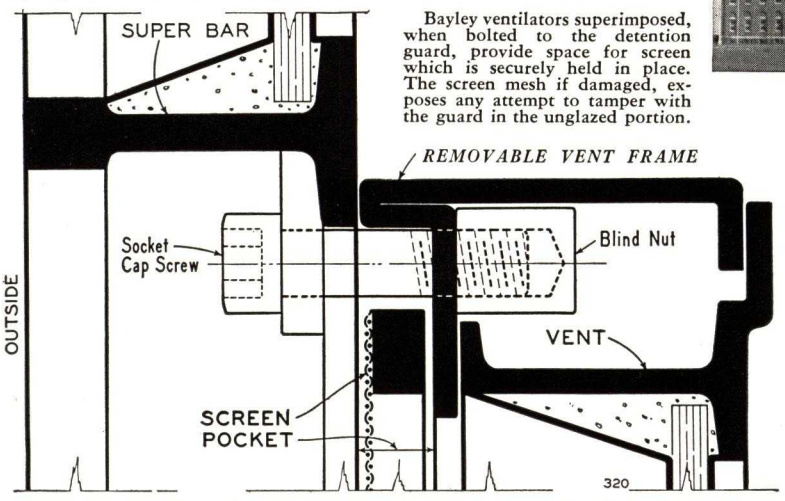
Spring Catch H 106



Hinge Welded to Frame

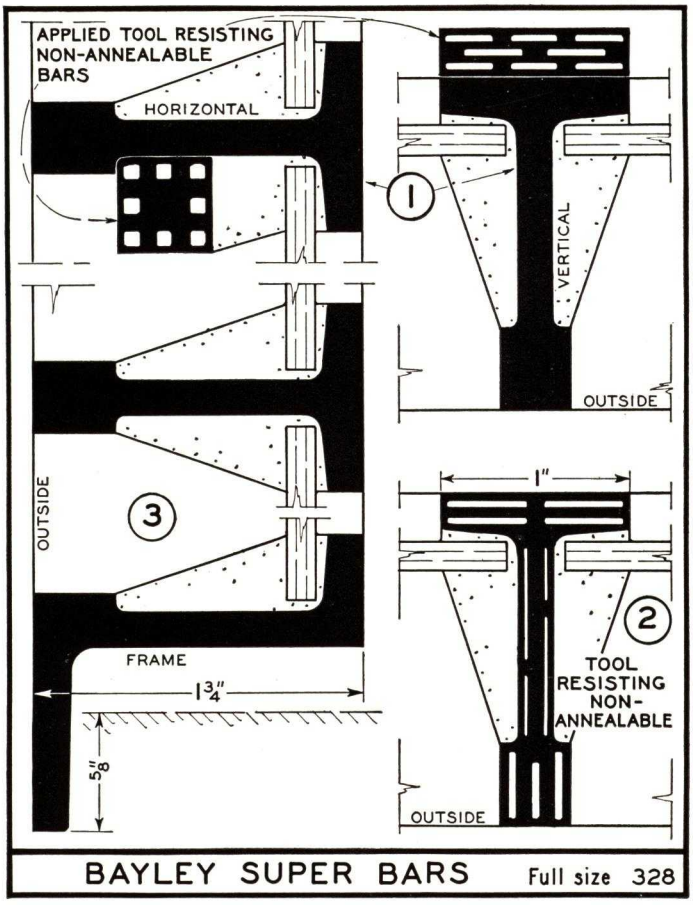


Cam H 82

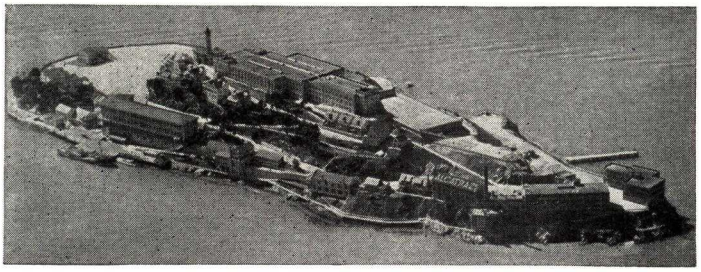


Bayley ventilators superimposed, when bolted to the detention guard, provide space for screen which is securely held in place. The screen mesh if damaged, exposes any attempt to tamper with the guard in the unglazed portion.

Bayley Super-Bar, Ventilator and Screen assembly. Full size.

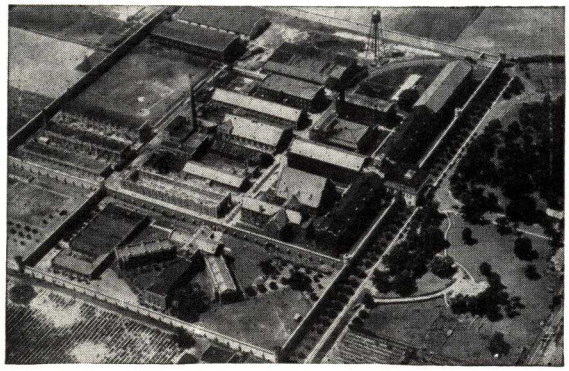


BAYLEY SUPER BARS Full size 328



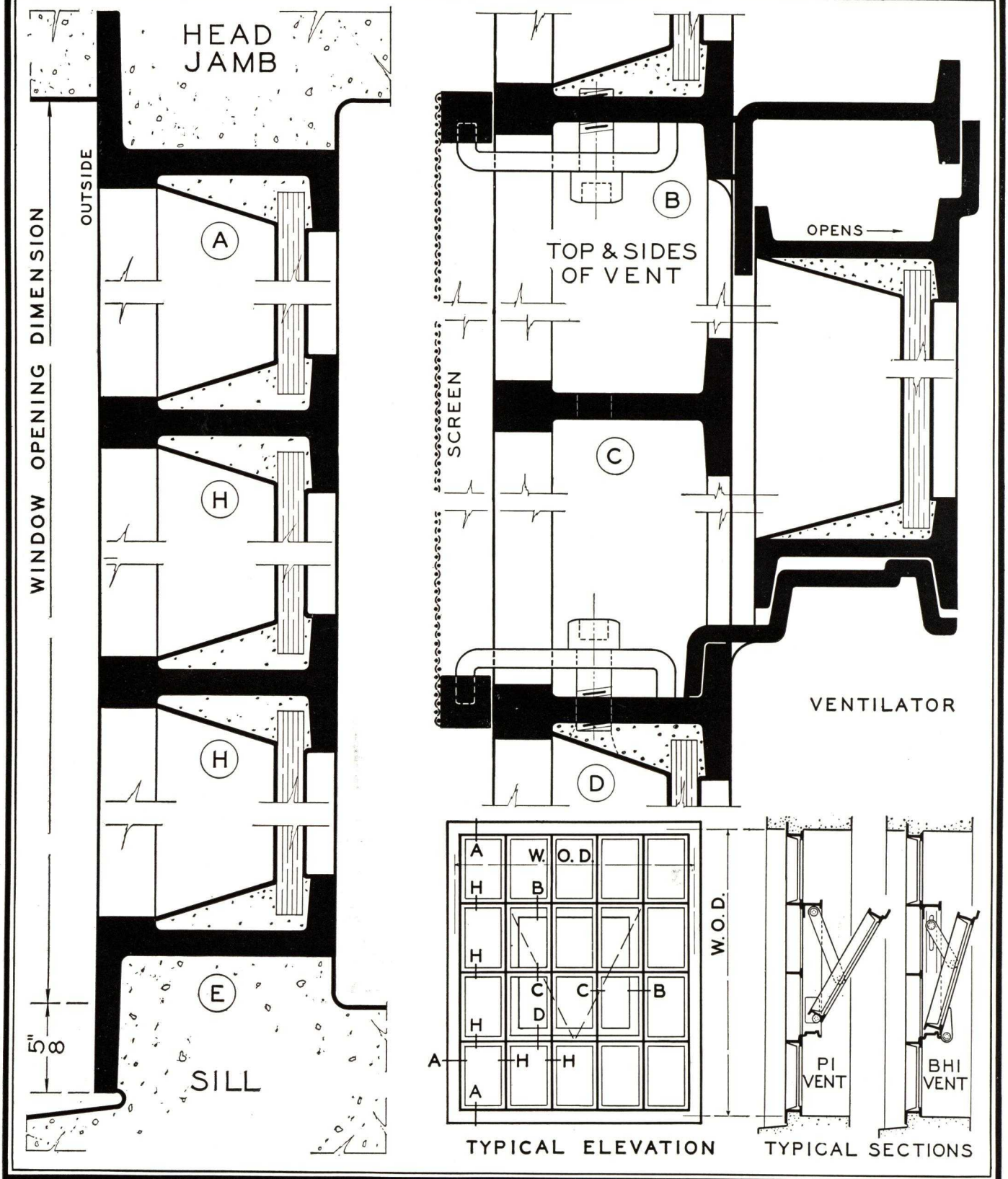
U. S. Penitentiary, Alcatraz Island, California.

Men's Reformatory, Howard, Rhode Island.



Indiana State Prison, Michigan City, Indiana

BAYLEY SUPER BAR GUARD-WINDOWS



BAYLEY

SECTIONS & DETAILS

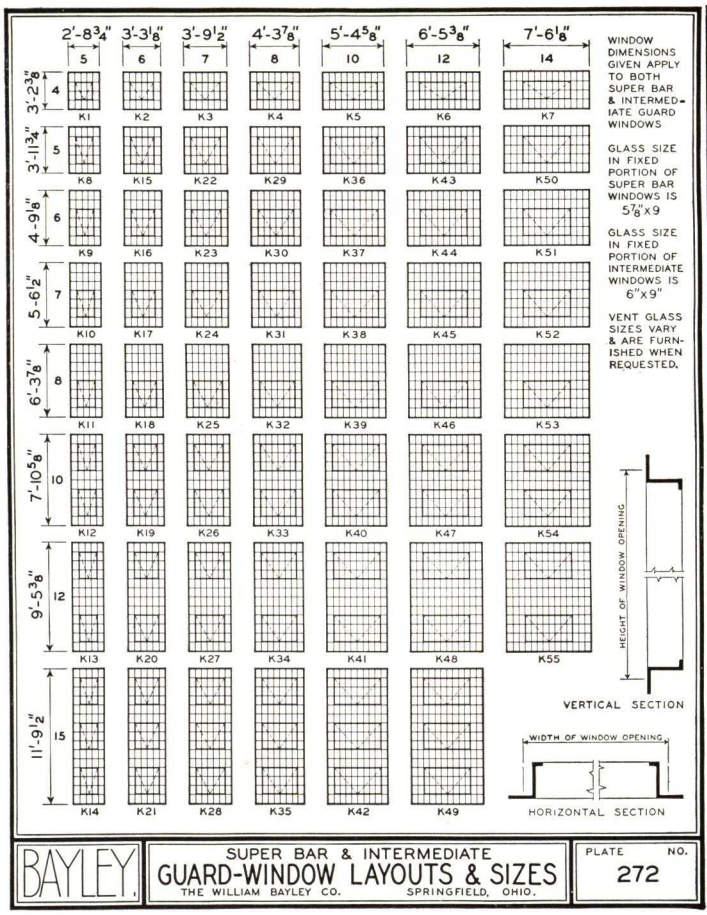
SUPER BAR GUARD-WINDOW

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

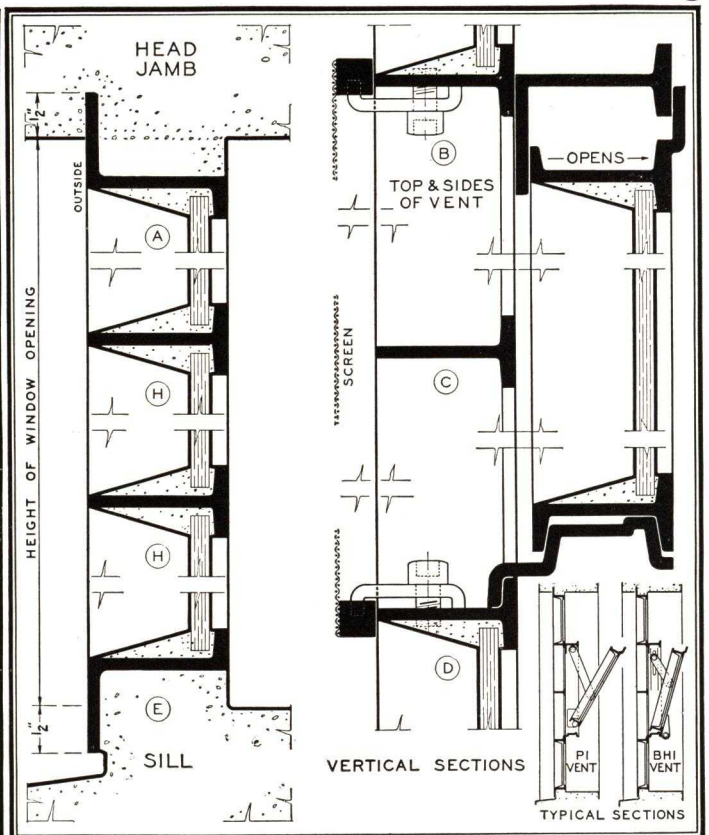
PLATE NO. 326

For Layouts See Plate 272 on Opposite Page

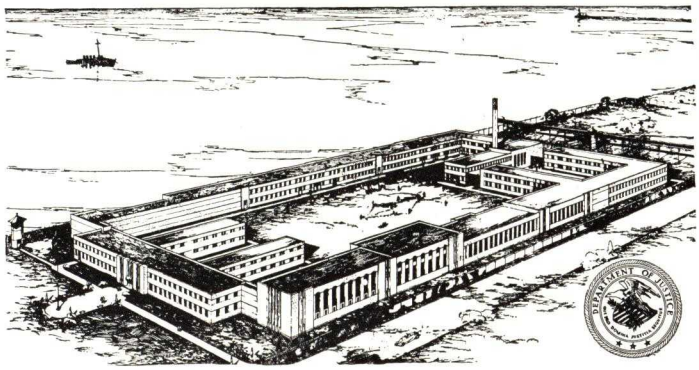
BAYLEY INTERMEDIATE BAR GUARD-WINDOWS



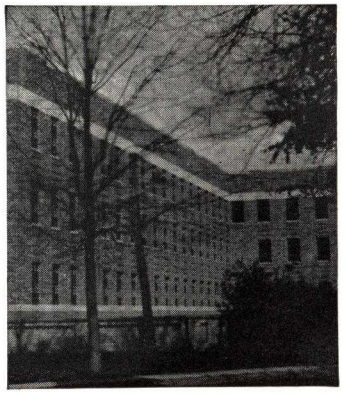
BAYLEY — SUPER BAR & INTERMEDIATE GUARD-WINDOW LAYOUTS & SIZES — THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. — PLATE NO. 272



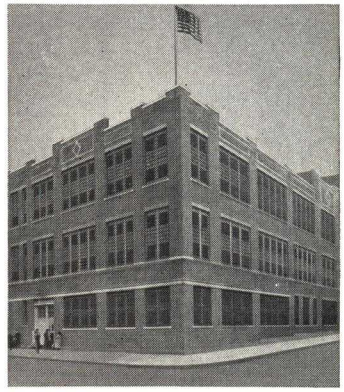
BAYLEY — SECTIONS & DETAILS INTERMEDIATE GUARD-WINDOW — THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. — PLATE NO. 269



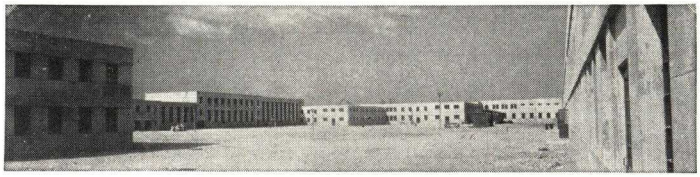
General View, Federal Jail, Los Angeles, California



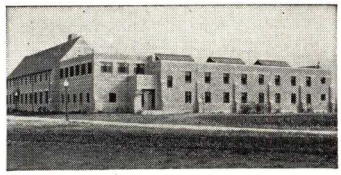
Ionia State Hospital, Ionia, Mich. Super Bar Non-Annealable Screened



Federal Detention Headquarters, New York City, Super Bar Non-Annealable Screened

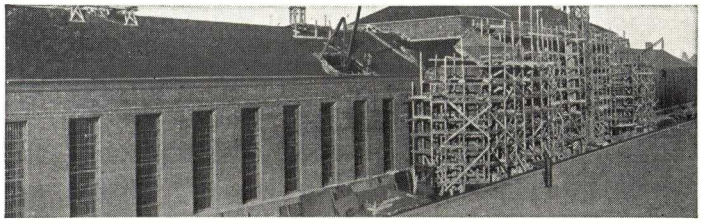


Yard View, Federal Jail, Los Angeles, California



Medium Security Building, Women's Reformatory, Dwight, Illinois

Women's House of Detention, New York City



Cell Blocks A and B, Clinton Prison, Dannemora, New York

Diagnostic Building, Illinois State Hospital, Kankakee, Illinois

BAYLEY PROTECTION WINDOWS Screened

Protection Window. Applied ventilator inside. Screen between ventilator and grille

These Protection Windows and the Security Windows shown at bottom of this page, employ the guard window principle of grille and ventilator. Sections are 1½" deep. They are designed for protection against forced entrance from the outside when the ventilator is in either the open or closed position. Their use discourages those who unlawfully seek to enter retail stores, warehouses, factories, tool rooms and offices, especially through the windows on alley, rear or dark elevations of such buildings.

Grille of Protection Windows consists of intermediate bars. Muntins are continuous from head to sill and from jamb to jamb with intersections made as in Bayley Pivoted Windows. Grille is glazed except where ventilators occur. Glass size in grille is 6 x 9". Opening dimensions and window dimensions are identical. For sizes see plate 272, page 17.

Ventilator of intermediate bars is superimposed on, and welded to the grille. They are bottom hinged to swing in at top and have arms which limit the degree of opening. They may be hand or mechanically operated.

Ventilators are glazed and are listed by the number of open grille spaces they cover. They do not have muntins except when covering ten or more spaces in grille, then muntins are vertical only, occur directly in line with grille muntins, and are so located that the glass divisions of the ventilator are symmetrical.

Protection Windows are Putty Glazed INSIDE as standard, but may be Putty Glazed OUTSIDE. Glazing angles may be applied, but are unnecessary and are not recommended except when windows carry the Underwriters' label.

Underwriters' labeled Protection Windows may have the grille either Putty Glazed OUTSIDE or Angle Glazed INSIDE; vent must be Angle Glazed INSIDE.

Screens by BAYLEY are furnished when required. They are especially designed for this product, are of solid sections, butt welded at corners, hot dip galvanized, and covered with heavy bronze wire cloth. When grille is glazed inside, screens are placed between vent and grille.

When it is vital to protect valuable contents against forced entrance as in banks, bonded warehouses, fur and silk storages, and precious metal shops, BAYLEY recommends that designers select and specify windows of greater strength and weight from the "Detention" group. (Pages 14 to 16.)

BAYLEY SECURITY WINDOWS—Screened

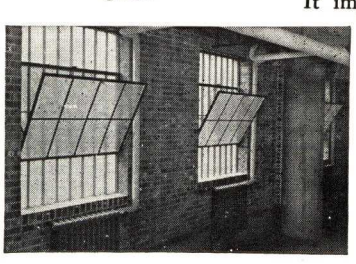
Security Window. Applied ventilator inside. Screen between ventilator and grille

These are one of the two offerings for protection under this general heading, and are made in large quantities to standard sizes and carried in stock for prompt shipment, therefore in proportion to size and weight, they are relatively inexpensive.

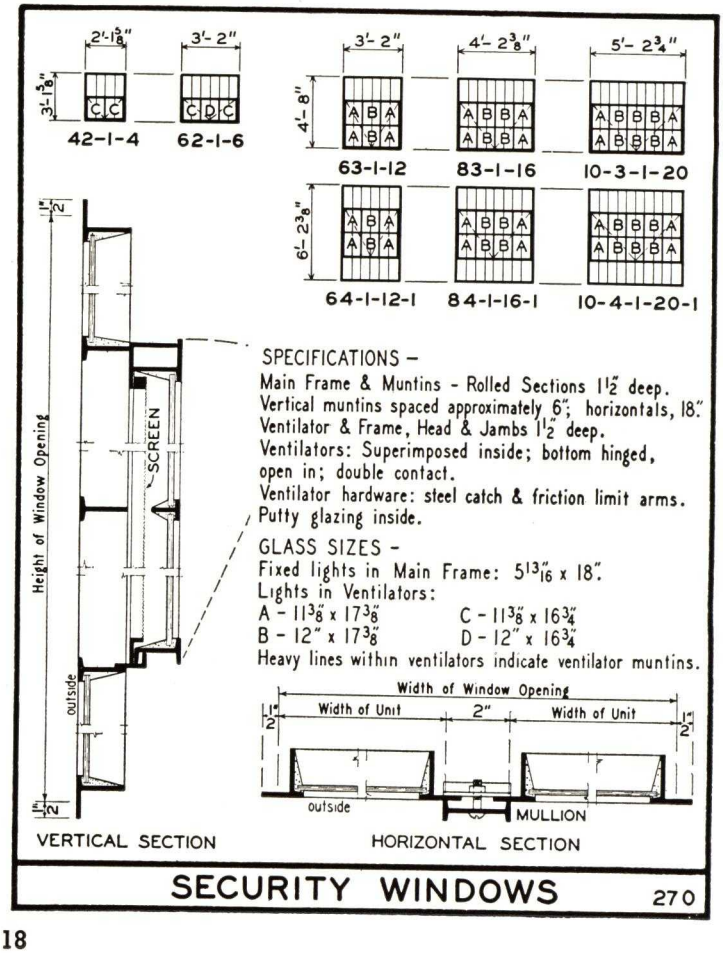
The grille, of industrial sections 1½" deep, with Bayley exclusive interlocked joints, assures better protection from outside entrance than grilles of less depth and less effective jointing. Glass size in the grille is always 5-13/16"x18". Ventilators are large, superimposed, hinged at bottom to swing in. Glass sizes in ventilators are shown on plate 270 at right.

Screens especially designed by BAYLEY for this product, are of solid sections, butt welded at corners, hot dip galvanized, and covered with heavy bronze wire cloth. They drop into position between the grille and the ventilator — an exclusive Bayley feature.

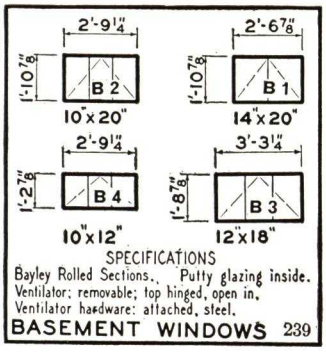
This window gives more light and ventilation than the former wood window and separate guard. It improves appearance, and since it is built as one unit it is easily cleaned and painted.

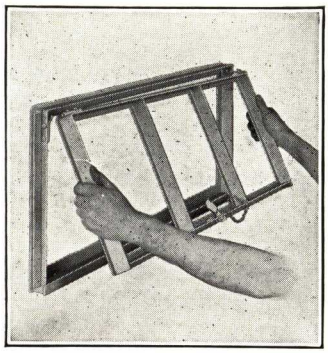


Typical ground floor alley installation of stock Security Windows. Ventilators are hinged in-swinging, — no projections outside of building line. Removable screen is in place between ventilator and grille.

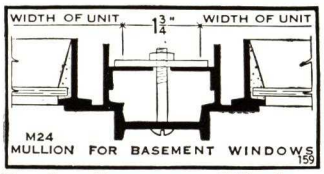


BAYLEY BASEMENT WINDOWS

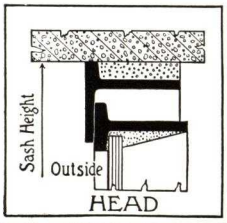


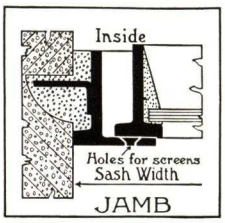


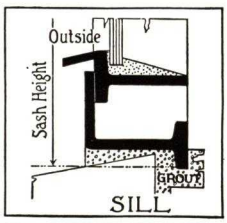
For residential purposes. In stock of steel. Wrought iron on special orders. Sections 1½" make these units especially rigid. Ventilators are top pivoted to swing in. Pivot construction permits easy removal of ventilator for glazing. Bayley screens may be furnished. Mullions M-24, for vertical attachment of more than one unit in an opening.



Bayley Basement Window Installation Details

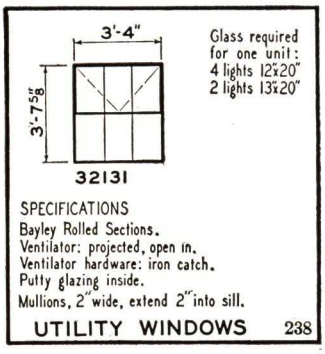






BAYLEY UTILITY WINDOWS

Are companion products to pivoted and projected windows. In stock of steel. Wrought iron on special order. Ventilators project in at top with a minimum of inside interference. Sections 1½" and 1⅝" deep. Iron catch hardware standard. Used on lot lines or where outside projections are objectionable, specially adapted to garages. This product may be screened with Bayley screens.

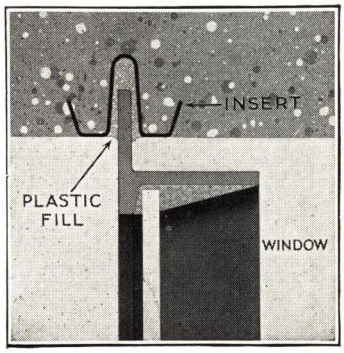


BAYLEY STEEL WINDOW INSERTS

for buildings of concrete construction and finish, or of concrete frame faced with brick.

Inserts are of galvanized rust resisting Armco ingot iron providing recesses in jambs and heads of openings for steel windows. They nail to the forms. Recesses are filled with natural colored mastic. Requires no additional caulking.

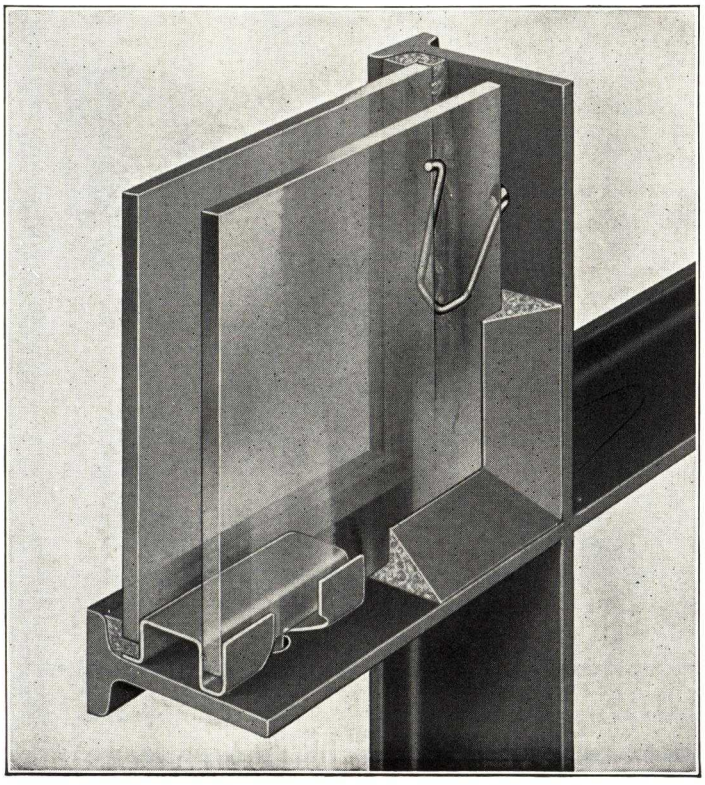
Window erection at any temperature, glazing follows immediately. General construction speeded up.



BAYLEY DOUBLE GLAZING

Double glazing the Bayley way is an exclusive feature, essential where constant temperature and humidity is desired. It also saves fuel. Double glazing in each glass space is accomplished with copper separators 2" long, which provides ⅜" or ½" space between the two lights. Bed putty is applied for outside seal, outside light inserted followed by glazing spring and double glazing separators, inside light is held in place by separators. Face putty is applied for finish and inside seal.

Bayley Windows carry enormous areas of double glazing where constant humidity and temperature is desired. This exclusive Bayley construction pays for itself by reducing heating costs.

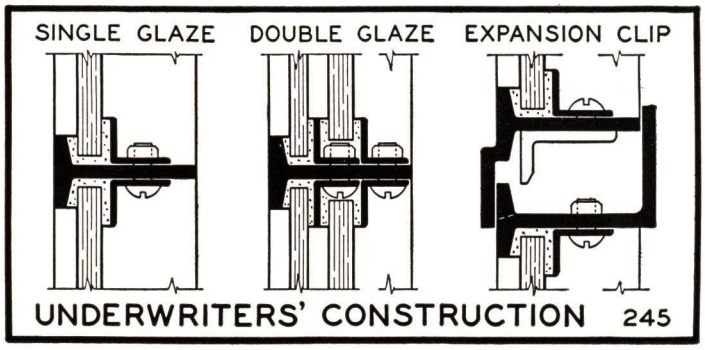


UNDERWRITER'S LABELED WINDOWS

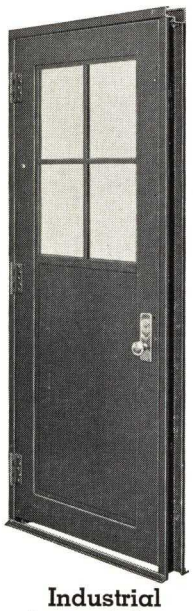
include those with horizontal pivoted ventilators at the center and at the top (Page 3), Pivoted Windows Screened (Page 8), Projected Windows Commercial (Page 10), Projected Windows Architectural (Page 12), Protection and Security Windows (Page 18). Sections and details duplicate those of these standard windows with the following exceptions.

Glass is held in place by glazing angles, and ventilators are equipped at heads and sills with expansion clips. Window units are limited to 7 feet x 12 feet. Width and height may be either dimension. Glass size is limited to 350 square inches. Larger openings are made up of several units connected together by approved T mullions. Mullions have special anchors at heads and sills. Window openings are not limited to any width. Hardware may be either lockbar, spring catch and chain, or cam H 15 and chain. Double glazing may be had in these windows and provides two lights in each glass space, held in place by 2 sets of glazing angles. It is essential that ample bed putty be used to insure a watertight job. Underwriter's label is placed on inside face of glazing angle located at lower edge of fixed light near center and sill of unit.

Fusible Link Chain Set A



BAYLEY INDUSTRIAL STEEL DOORS



Industrial hinged door and frame

Fully meet the requirement for a steel door of intermediate grade to serve where neat appearance, durability, and economy are essential, as in service entrances of all types of buildings, in retail stores and shops, and in office, warehouse and light manufacturing buildings. They are particularly suitable for water purification and sewage disposal plants, gymnasiums, armories and the non-detention portion of penal institutions.

Extensive manufacturing equipment of latest design, and quantity production make it possible to offer this product of uniformity and quality at low cost. Stock sizes are shown on opposite page. Designs to meet individual conditions are available.

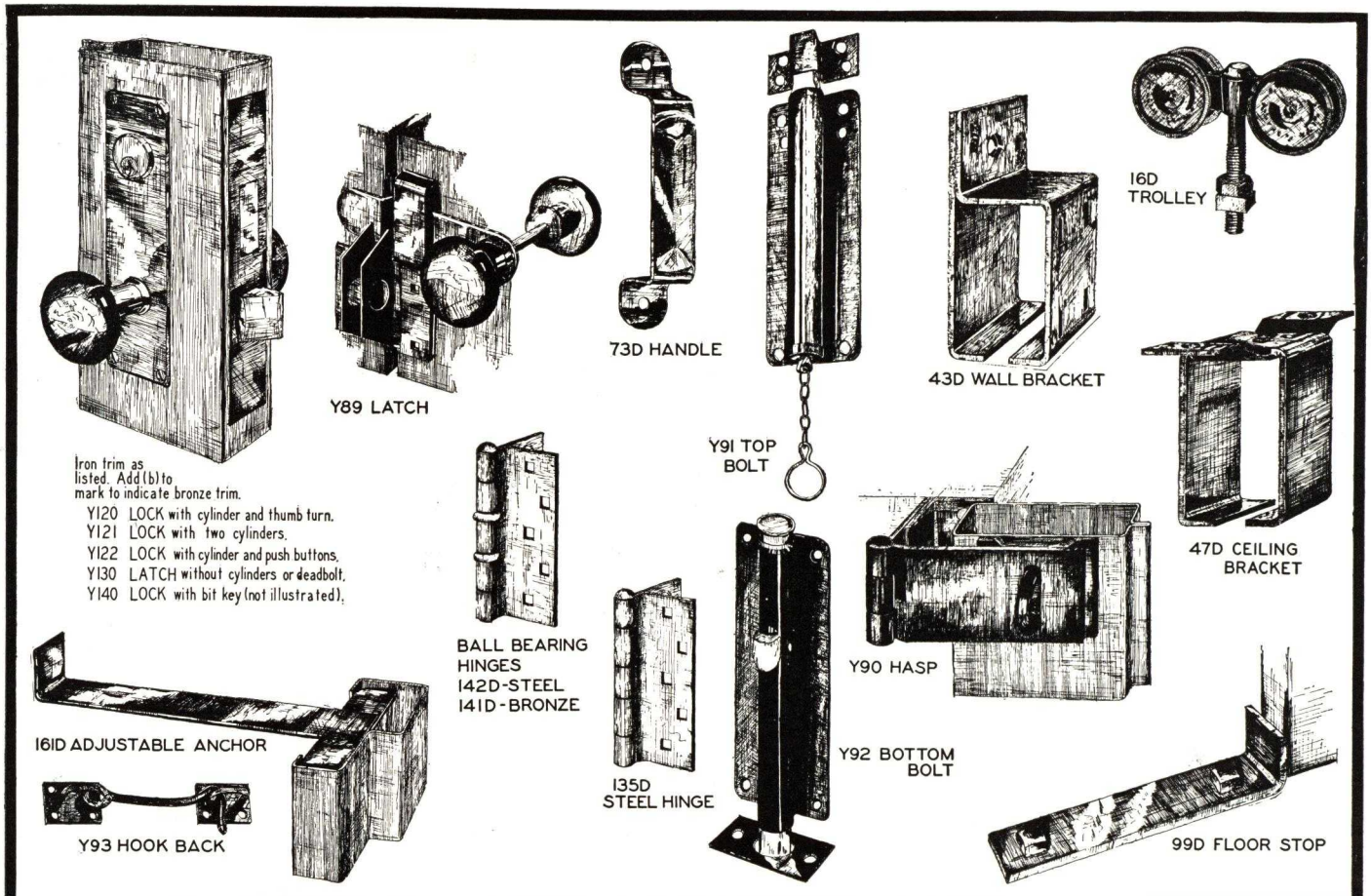
STILES AND RAILS are 5″ wide, formed of 14 gauge steel. Corners are mitered, reinforced, welded solid and ground smooth. Where hinges occur, stiles have internal reinforcement. PANELS are stretcher-leveled steel plate welded in place. Glass spaces have muntins and glazing angles for glass up to ¼″ thick. Doors may have steel panels throughout.

HARDWARE — a wide selection is offered to meet all conditions. Standards are shown below. Doors and frames are prepared for the hardware furnished by Bayley.

HARDWARE for SWING Doors — Bayley standard includes 5″ x 5″ heavy steel, half surface, template hinges No. 135D, three per leaf; top and bottom bolts for standing leaf of double doors. Other hardware available — five kinds of mortise locks with knobs, surface latch and hasps (without padlock), 5″ x 5″ ball bearing template hinges in steel or bronze, hook back (all illustrated below), door checks, and panic hardware.

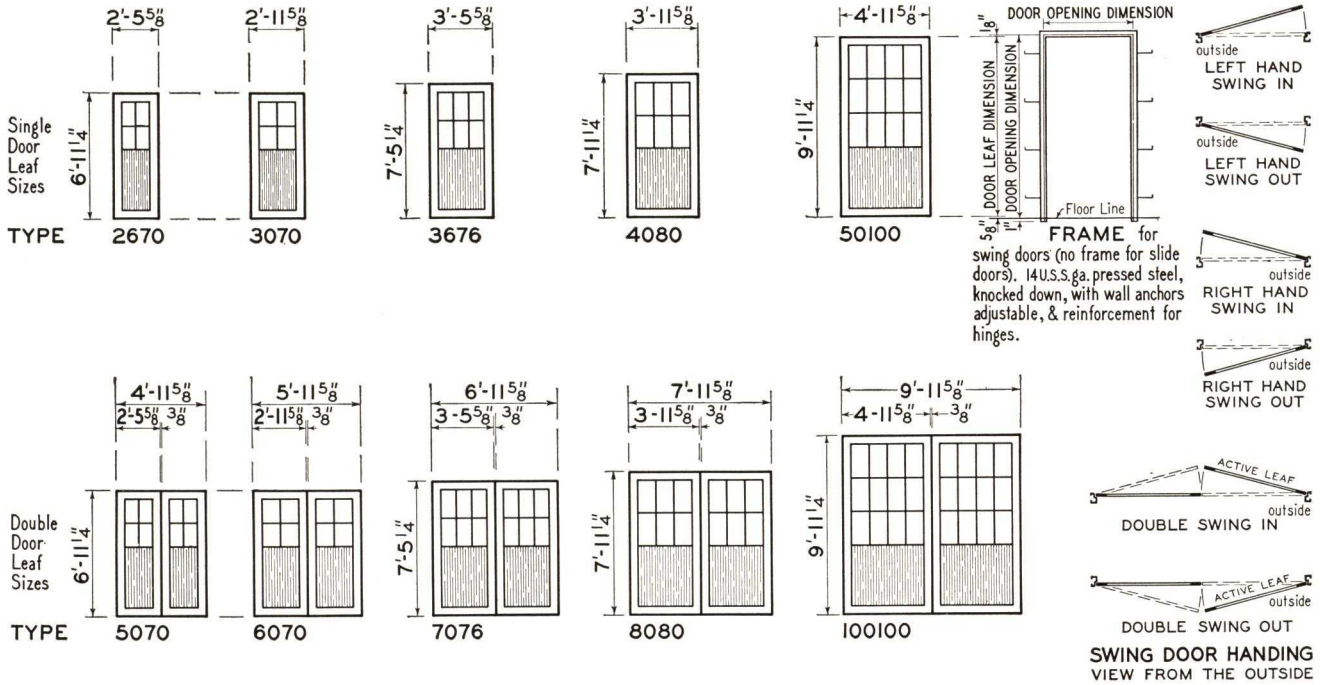
HARDWARE for SLIDE Doors — Bayley standard includes track with wall brackets (ceiling brackets if required) and four-wheel roller-bearing adjustable-hanger trolleys, hasp and staple (without padlock), handles, floor guides and stops. Latch of steel is offered at low extra cost; cylinder lock at additional cost. Mortise extension bolts with hasps may be used (padlocks not included). Slide Doors and Hardware are designed to be placed on inside of wall; specify when on outside of wall and proper hardware will be furnished.

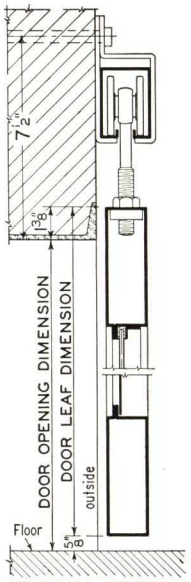
FRAMES for SWING Doors are 14 gauge steel channels with rebate and stop. Jambs extend 1″ below finished floor line providing ⅝″ clearance between door and floor for threshold (this ⅝″ clearance can be reduced if desired by setting the frames further into the floor). Threshold is not included. Frames are shipped knocked down and have double spreader bars designed to set beneath top of finished floor. Masonry anchors with vertical adjustment are provided for 24″ spacing at jambs. Slide Door framing is not included.



HARDWARE FOR INDUSTRIAL STEEL DOORS 218

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.





SIZES – SWING & SLIDE DOORS

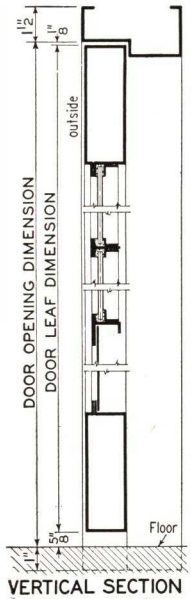
DOOR TYPE		SWING & SLIDE LEAF SIZES		SWING DOOR DOOR OPENING SIZES		SWING DOOR ⊛MASONRY OPENINGS		SLIDE DOOR OPENING SIZES		GLASS SIZES
		Width	Height	Width	Height	Width	Height	Width	Height	
Single Doors	2670	2'-5 5/8"	6'-11 1/4"	2'-6"	7'-0"	2'-9"	7'-1 1/2"	2'-3"	6'-10 1/2"	9 1/2" x 16"
	3070	2-11 5/8	6-11 1/4	3-0	7-0	3-3	7-1 1/2	2-9	6-10 1/2	12 1/2 x 16
	3676	3-5 5/8	7-5 1/4	3-6	7-6	3-9	7-7 1/2	3-3	7-4 1/2	10 1/4 x 19
	4080	3-11 5/8	7-11 1/4	4-0	8-0	4-3	8-1 1/2	3-9	7-10 1/2	12 1/4 x 22
	50100	4-11 5/8	9-11 1/4	5-0	10-0	5-3	10-1 1/2	4-9	9-10 1/2	12 1/8 x 22 1/2
Double Doors	5070	2-5 5/8	6-11 1/4	5-0	7-0	5-3	7-1 1/2	4-9	6-10 1/2	9 1/2 x 16
	6070	2-11 5/8	6-11 1/4	6-0	7-0	6-3	7-1 1/2	5-9	6-10 1/2	12 1/2 x 16
	7076	3-5 5/8	7-5 1/4	7-0	7-6	7-3	7-7 1/2	6-9	7-4 1/2	10 1/4 x 19
	8080	3-11 5/8	7-11 1/4	8-0	8-0	8-3	8-1 1/2	7-9	7-10 1/2	12 1/4 x 22
	100100	4-11 5/8	9-11 1/4	10-0	10-0	10-3	10-1 1/2	9-9	9-10 1/2	12 1/8 x 22 1/2

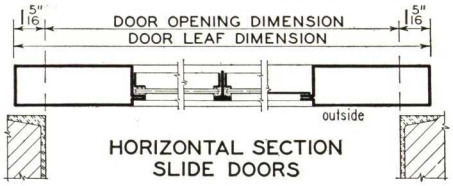
⊛MASONRY OPENING SIZES BASED ON USE OF BAYLEY STANDARD PRESSED STEEL DOOR FRAMES.

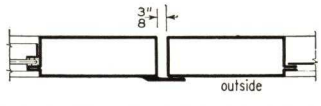
SPECIFICATIONS: Elevations are viewed from outside.
Swing doors: specify hand and swing (see diagrams above).
Slide doors: singles - specify "slide right" or "slide left"; all double slide doors slide apart.
Tube: 1¾x5x14 U.S.S. pressed steel. Corners mitered, internally reinforced, welded and ground.
Upper panel: inside, angle glazed. Glass and putty not included.
Lower panel: 18 U.S.S. gauge steel, welded in.
Upper and lower panels: steel (no glass) - same price, factory shipment.
Paint: one standard protective coat.
Hardware included
Swing doors: three hinges per leaf; and top and bottom bolts for inactive leaf of double doors.
Slide doors: complete track equipment, hasp and staple (without padlock), handles, guides, and stops.

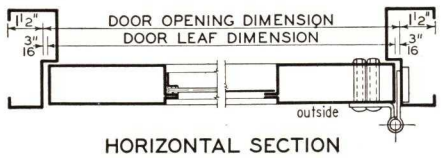
EXTRAS for SWING DOORS	
CYLINDER LOCK - Iron Handles.....	*
- Bronze Handles..	*
LEVER LATCH (without padlock)...	*
BIT KEY LOCK (leaf limit 32 sq.ft.) -	
- Steel Plated Trim..	*
- Bronze Trim.....	*
HOOK BACK & RING.....	per leaf

*ONE REQUIRED PER DOOR OPENING









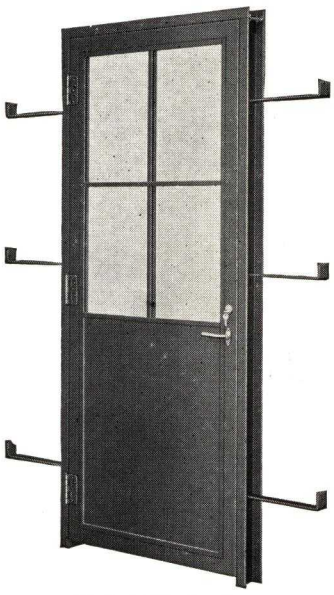
BAYLEY

LAYOUTS, SIZES, SECTIONS & DETAILS
INDUSTRIAL DOORS
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

PLATE NO. 219
SCALE 1½"=1'-0"

Stock sizes are shown on the above plate.

BAYLEY TUBULAR STEEL DOORS



Tubular Steel
Hinged Door and Frame

Are made to withstand the constant abuse incident to commercial and industrial installations, and combine strength and performance with good appearance. They are made to swing, slide, fold, and lift, with hardware of the most substantial kind designed for permanent, trouble-free service. Bayley pioneered the tubular door idea as applied to standardized manufacture, and continues to lead in design and workmanship.

STILES AND RAILS are welded steel tubes, generally 2½ x 1½ x 5/32". Larger tubes or structural shapes are employed for doors of unusual size or design. PANELS (steel below, muntins and beads for glass above) have 1½" deep channels which straddle and are rigidly welded to stiles and rails. This exclusive feature provides a neat appearance on both sides of door. Doors may have steel panels thruout.

HARDWARE for SWING doors includes steel hinges, and the mortise extension bolts for the inactive leaf of double doors. MORTISE LOCKS AND LATCHES especially designed and manufactured by BAYLEY of non-corrosive metals are reliable for heavy duty. Y2 LOCK has handles and cylinders both sides, and has latch bolt 2" high and 7/8" thick which is deadlocked by key only. CYLINDERS made for Bayley are standard; masterkeying extra. Cylinders may be omitted from either side, or thumb turn may be substituted for key. LATCH Y11 is identical in construction to Lock Y2 when cylinders are omitted. SURFACE LATCH Y14 of steel offered at lower cost. PANIC DEVICES with handle or bar release are furnished in several combinations.

HARDWARE for SLIDE doors includes complete track equipment, hasp and staple (without padlock), handles, floor guides, and stops. Slide doors and hardware are designed to be placed inside of wall; when placed outside, mention must be made so that proper hardware may be furnished. LOCK Y17 is similar in materials and construction to Lock Y2 for swing doors. LATCH Y13 of steel offered at lower cost. HASP BOLT Y71 for single, and Y72 for double doors may be used. Padlocks not included.

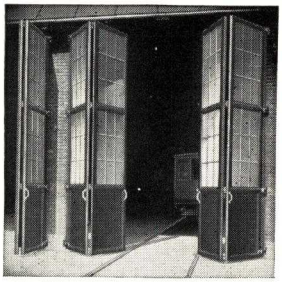
FRAMES for swing doors are structural channels fitted in shop. Slide Door framing not included.

Tubular Doors and Frames with grilles and side lights of Super Bars, in steel or non-annealable, are used in walls and corridors of prisons. They can be glazed with bullet proof glass or left open.

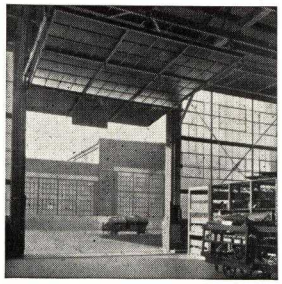
Bakery Proof Room Doors of tubular steel, with hardware of unique design, were originated by BAYLEY and are offered to meet steam and acid conditions.

Send for separate catalog on Airplane Hangar Doors.

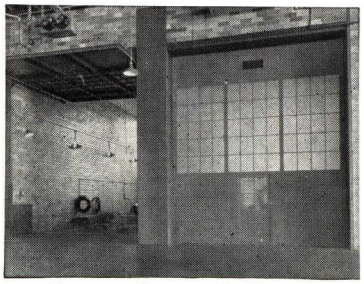
BAYLEY STEEL DOORS HAND OPERATED OR ELECTRIC CONTROLLED



Railroad Accordion



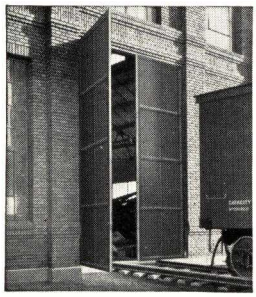
Large Canopy



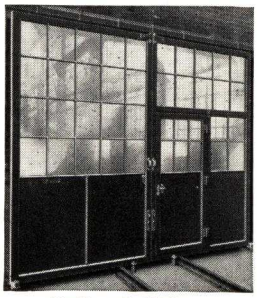
Canopy Open and Closed

Overhead

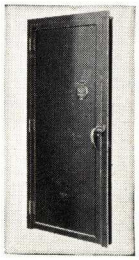
Craneway

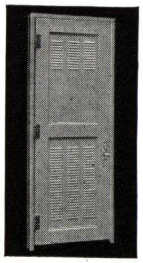


Railroad Hinged

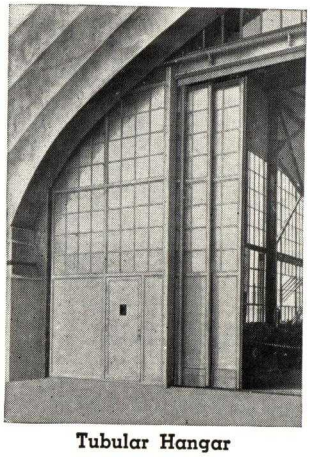


Railroad Sliding

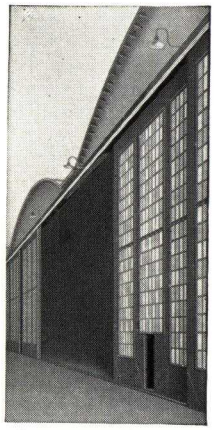




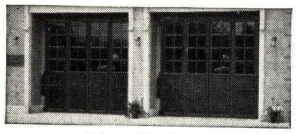
Proof Room Louvre



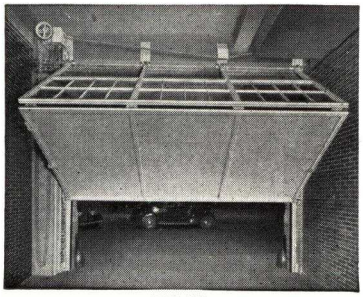
Tubular Hangar



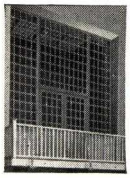
Structural Hangar



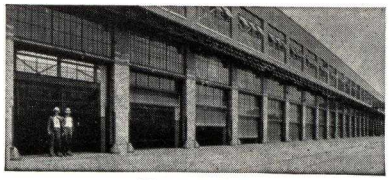
Fire Station



Bifold



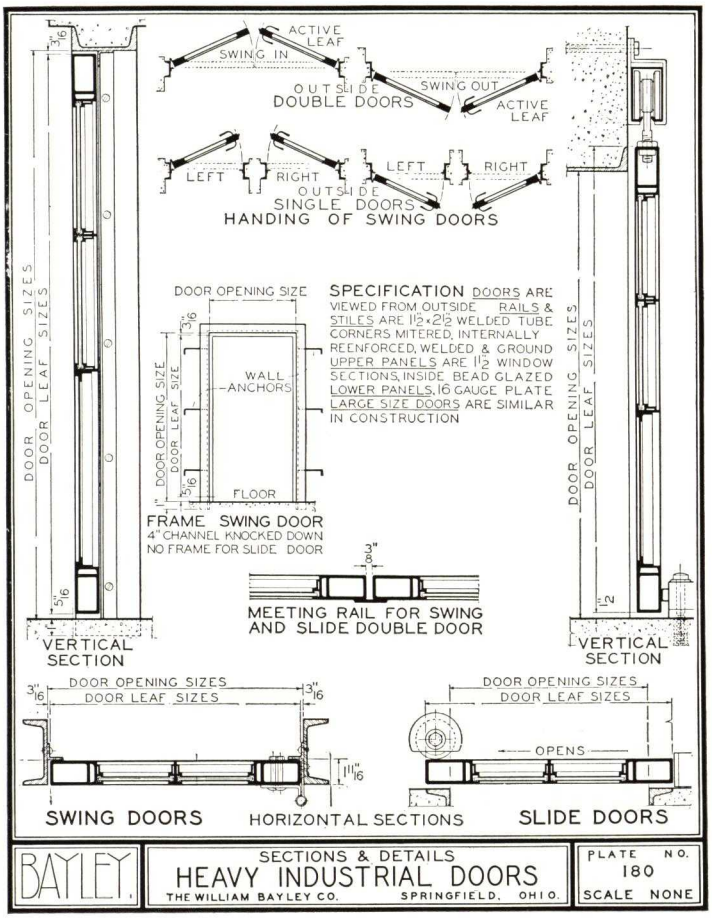
Prison and Grille



Vertical Lift

Tubular Hangar

BAYLEY TUBULAR STEEL DOORS—DETAILS, LAYOUTS, AND SIZES



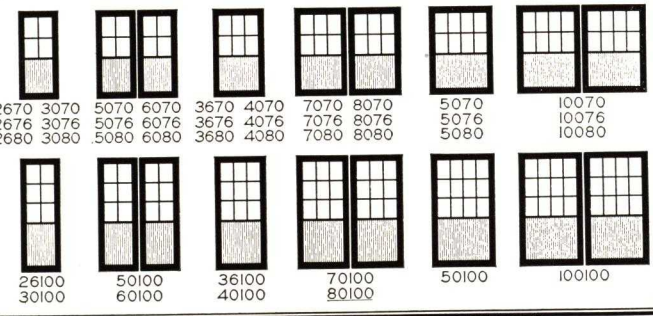
BAYLEY

SECTIONS & DETAILS
HEAVY INDUSTRIAL DOORS
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

PLATE NO. 180
SCALE NONE

SWING AND SLIDE DOORS SIZE SCHEDULE

SINGLE DOORS					DOUBLE DOORS					DOOR LEAF SIZES		GLASS SIZES	
	OPENING SIZES					OPENING SIZES							
	SWING		SLIDE			SWING		SLIDE					
TYPE	WI.	HI.	WI.	HI.	TYPE	WI.	HI.	WI.	HI.	WI.	HI.	WI.	HI.
2670	2'-6"	7'-0"	2'-3"	6'-10½"	5070	5'-0"	7'-0"	4'-9"	6'-10½"	2'-5⅝"	6'-11½"	11⅝"	21⅛"
3070	3-0	"	2-9	"	6070	6-0	"	5-9	"	2-11⅝	"	14⅝	"
3670	3-6	"	3-3	"	7070	7-0	"	6-9	"	3-5⅝	"	11⅝	"
4070	4-0	"	3-9	"	8070	8-0	"	7-9	"	3-11⅝	"	13⅝	"
5070	5-0	"	4-9	"	10070	10-0	"	9-9	"	4-11⅝	"	13⅛	"
2676	2-6	7-6	2-3	7-4½"	5076	5-0	7-6	4-9	7-4½"	2-5⅝	7-5½"	11⅝	24⅛
3076	3-0	"	2-9	"	6076	6-0	"	5-9	"	2-11⅝	"	14⅝	"
3676	3-6	"	3-3	"	7076	7-0	"	6-9	"	3-5⅝	"	11⅝	"
4076	4-0	"	3-9	"	8076	8-0	"	7-9	"	3-11⅝	"	13⅝	"
5076	5-0	"	4-9	"	10076	10-0	"	9-9	"	4-11⅝	"	13⅛	"
2680	2-6	8-0	2-3	7-10½"	5080	5-0	8-0	4-9	7-10½"	2-5⅝	7-11½"	11⅝	21⅛
3080	3-0	"	2-9	"	6080	6-0	"	5-9	"	2-11⅝	"	14⅝	"
3680	3-6	"	3-3	"	7080	7-0	"	6-9	"	3-5⅝	"	11⅝	"
4080	4-0	"	3-9	"	8080	8-0	"	7-9	"	3-11⅝	"	13⅝	"
5080	5-0	"	4-9	"	10080	10-0	"	9-9	"	4-11⅝	"	13⅛	"
26100	2-6	10-0	2-3	9-10½"	50100	5-0	10-0	4-9	9-10½"	2-5⅝	9-11½"	11⅝	22
30100	3-0	"	2-9	"	60100	6-0	"	5-9	"	2-11⅝	"	14⅝	"
36100	3-6	"	3-3	"	70100	7-0	"	6-9	"	3-5⅝	"	11⅝	"
40100	4-0	"	3-9	"	80100	8-0	"	7-9	"	3-11⅝	"	13⅝	"
50100	5-0	"	4-9	"	100100	10-0	"	9-9	"	4-11⅝	"	13⅛	"



2670 3070 2676 3076 2680 3080 — 5070 6070 5076 6076 5080 6080 — 3670 4070 3676 4076 3680 4080 — 7070 8070 7076 8076 7080 8080 — 5070 5076 5080 — 10070 10076 10080

26100 30100 — 50100 60100 — 36100 40100 — 70100 80100 — 50100 — 100100

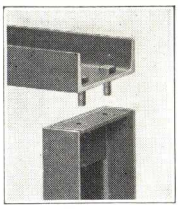
BAYLEY

LAYOUTS & SIZES
HEAVY INDUSTRIAL DOORS
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

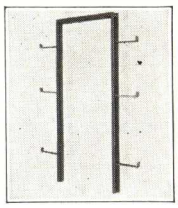
PLATE NO. 179
SCALE NONE

BAYLEY TUBULAR STEEL DOOR HARDWARE

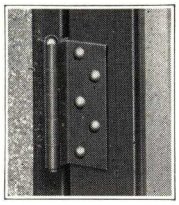
FOR HINGED DOORS



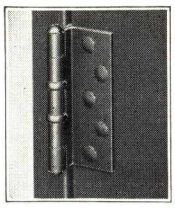
Door Frame Corner Assembly



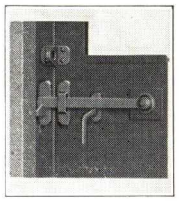
Door Frame Erected



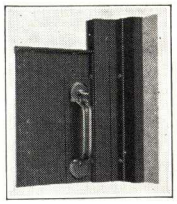
Steel Offset Hinge 135D



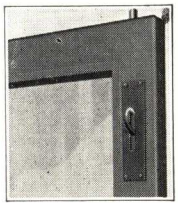
Ball Bearing Hinges 142D-Steel, 141D-Bronze



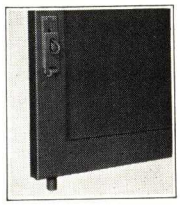
Steel Latch Y14 and Hasps 131D



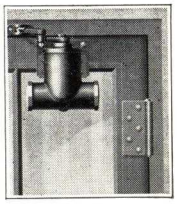
Steel Latch Y14 Interior



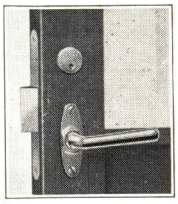
Extension Bolt Y70



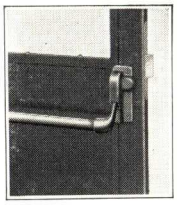
Hasp Extension Bolt Y71



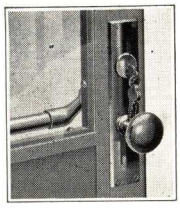
Door Closer



Brass Cylinder Lock Y2

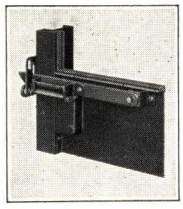


Panic Latch Y20 (Bar Release)

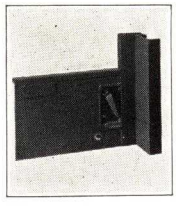


Panic Release Y55 (Outside Control)

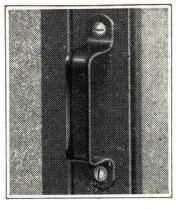
FOR SLIDING DOORS



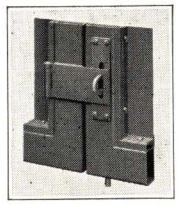
Sliding Door Latch Y13, Interior



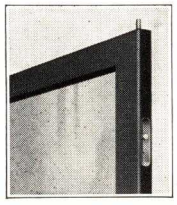
Sliding Door Latch Y13, Exterior



Pressed Steel Handle 73D

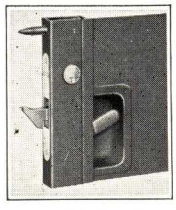


Double Hasp Extension Bolt Y72

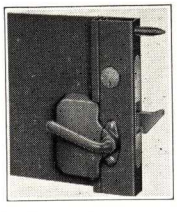


Flush Extension Bolt Y63

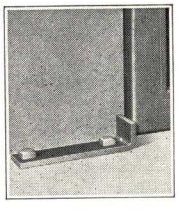
Guide Roller Y73



Sliding Door Lock Y17, Exterior



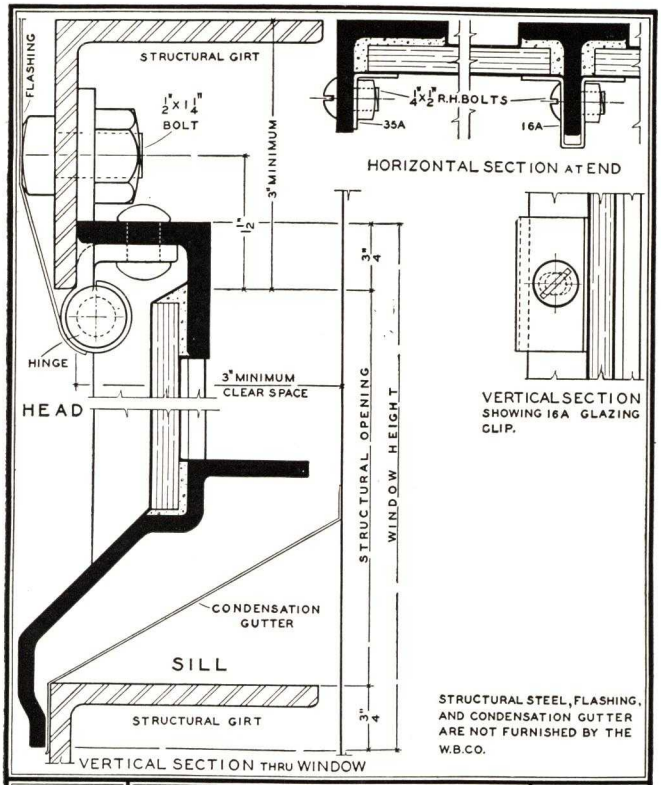
Sliding Door Lock Y17, Interior



Door Stop 99D

BAYLEY

CONTINUOUS WINDOWS AND OPERATORS



BAYLEY SPRINGFIELD DAYTON | FULL SIZE SECTIONS CONTINUOUS WINDOWS THE WILLIAM BAYLEY CO. SPRINGFIELD OHIO. | PLATE NO. 181

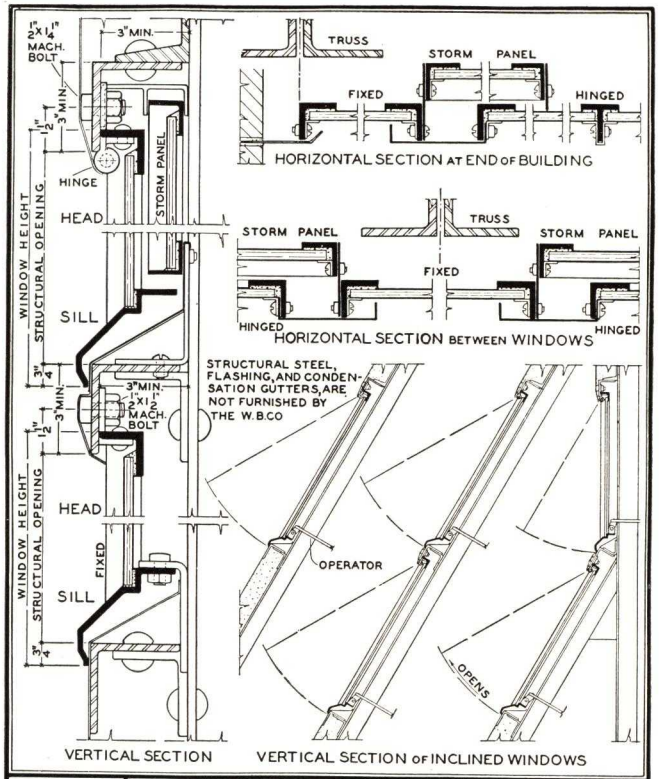
Designed for roofs and sidewalls these windows are constructed of specially designed solid rolled steel sections riveted together for strength and permanency. The sill member is of a design having no pockets for water or ice in either the open or closed position, at any useful angle. It has an integral flange for operator attachment and a flat-surface contact with the structural steel and its shape is such that a condensation gutter of effective size and form may be used where advisable. Hinges, at four feet centers, placed inside of steel framing for protection, are of heavy steel with three-eighths inch brass pins and have slotted holes for adjustment to steel work. Vertical bars are spaced at two feet centers. Putty-bed on all members is in the same plane which facilitates glazing, requires less putty and reduces glass breakage. Where panels are joined the splice is placed at the center of glass space, and fully develops the strength of horizontal members. Vertical weathering, where hinged portions meet fixed panels, is of formed galvanized steel. Hinged windows have fixed panels one foot wide at extreme ends of lines and two feet wide at intermediate ends. All steel is given one dip coat of standard red oxide paint.

Overall length of windows should be held to full feet in order to use stock and insure quick shipment. Variations from full feet to be taken up with flashing by others.

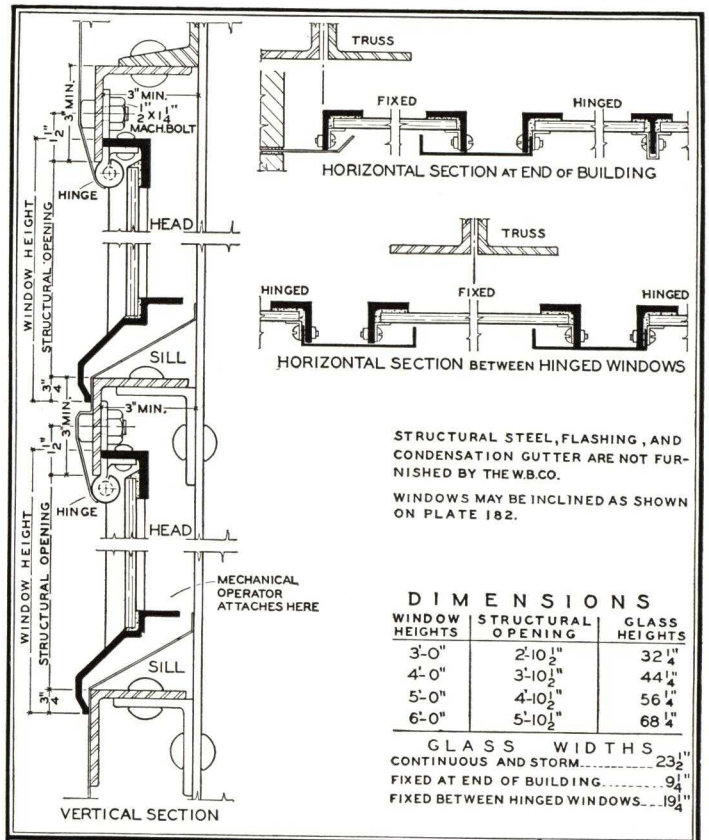
Storm Panels are not included but are furnished at extra cost when specially ordered and fit inside the three inch clearance space with provision to drain water outside. Glass in storm panels is of same size as glass in main part of line.

Wire glass one quarter inch thick is recommended and must be twenty-three and one-half inches wide, except in end panels, set in an even bed of putty struck flush with outside surface of glass and held by galvanized metal clips and bolts. Face putty may be used at extra cost.

Items not furnished by The William Bayley Co. are structural steel, all flashing and condensation gutters, glass, putty, erection, pointing, field painting and glazing, unless specifically mentioned in the contract.



BAYLEY SPRINGFIELD DAYTON | TOP HINGED & FIXED STORM PANEL INCLUDED CONTINUOUS WINDOWS THE WILLIAM BAYLEY CO. SPRINGFIELD OHIO. | PLATE NO. 182



STRUCTURAL STEEL, FLASHING, AND CONDENSATION GUTTER ARE NOT FURNISHED BY THE W.B.CO.

WINDOWS MAY BE INCLINED AS SHOWN ON PLATE 182.

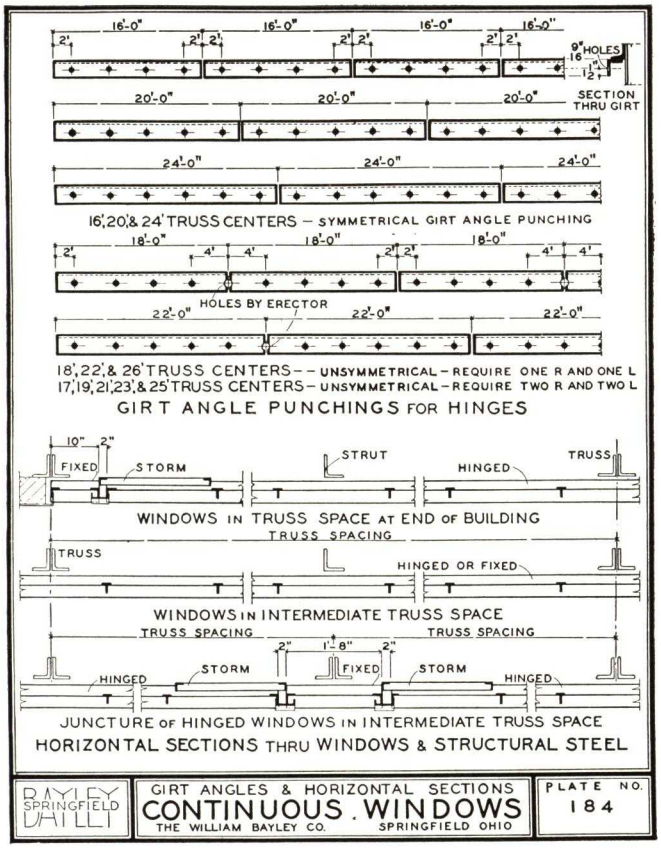
DIMENSIONS

WINDOW HEIGHTS	STRUCTURAL OPENING	GLASS HEIGHTS
3'-0"	2'-10 1/2"	32 1/4"
4'-0"	3'-10 1/2"	44 1/4"
5'-0"	4'-10 1/2"	56 1/4"
6'-0"	5'-10 1/2"	68 1/4"

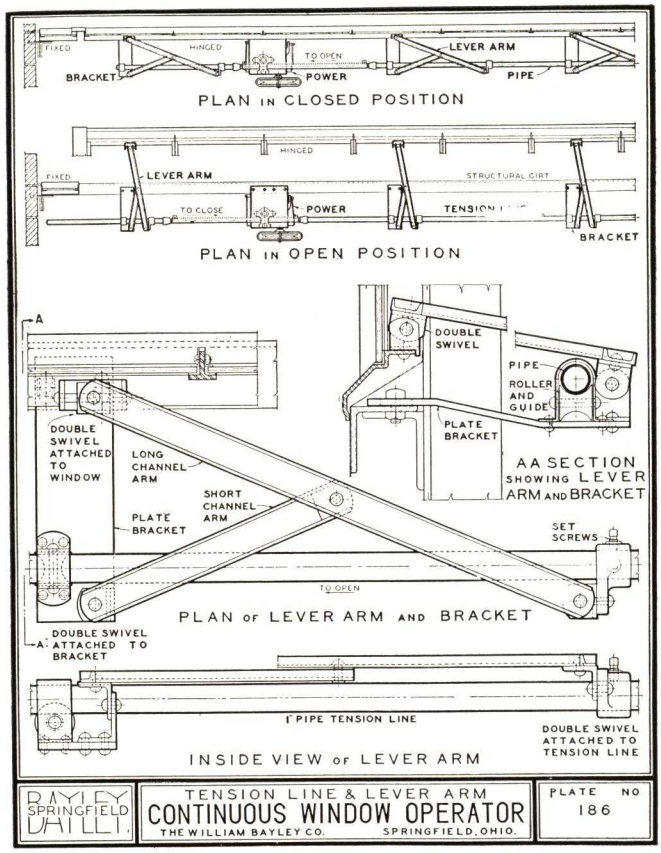
GLASS WIDTHS

CONTINUOUS AND STORM ..... 23 1/2"
FIXED AT END OF BUILDING ..... 9 1/4"
FIXED BETWEEN HINGED WINDOWS ... 19 1/4"

BAYLEY | TOP HINGED STORM PANEL OMITTED CONTINUOUS WINDOWS THE WILLIAM BAYLEY CO SPRINGFIELD OHIO | PLATE NO 183



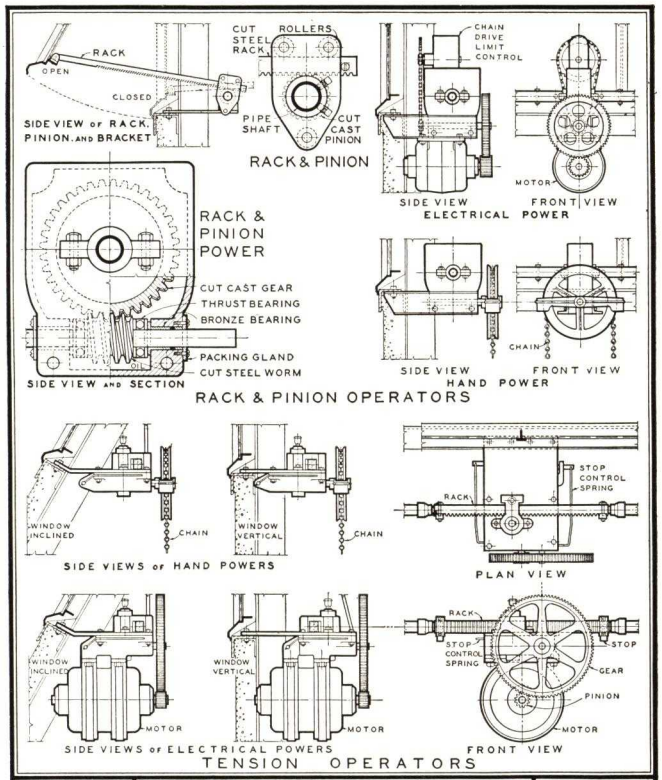
BAYLEY SPRINGFIELD ILL. | GIRT ANGLES & HORIZONTAL SECTIONS | CONTINUOUS WINDOWS | THE WILLIAM BAYLEY CO. SPRINGFIELD OHIO | PLATE NO. 184



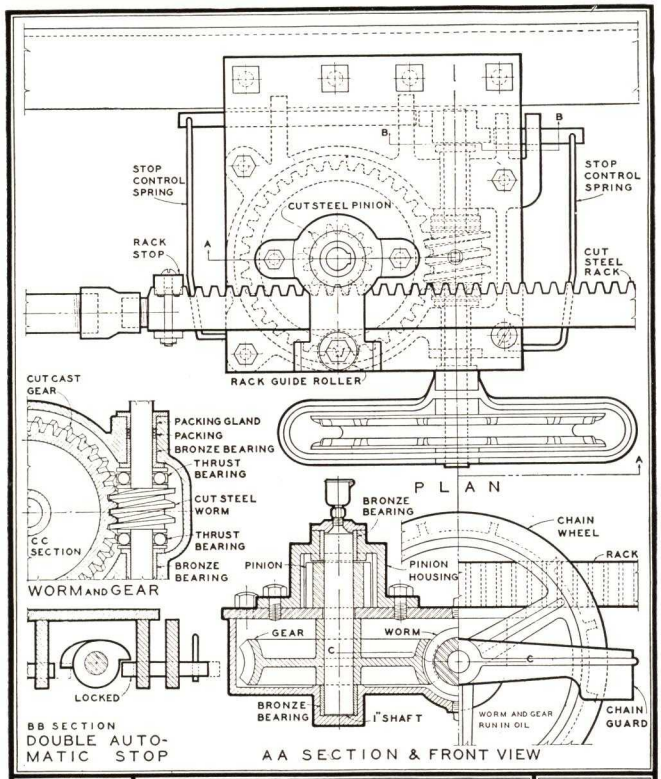
BAYLEY SPRINGFIELD ILL. | TENSION LINE & LEVER ARM | CONTINUOUS WINDOW OPERATOR | THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. | PLATE NO 186

Continuous Window Operators are of the Tension type or Rack and Pinion type. They may be either manually or electrically controlled. Lengths of lines are determined by conditions of the installation. In general, Tension type is used for long lines and Rack and Pinion type used for short lines. This product is of sturdy construction and good quality. Parts are designed to eliminate friction and include such features as machine-cut racks, pinions, worms and gears; bronze or ball bearings, where necessary; and provision for working parts to run in oil. BAYLEY MECHANICAL OPERATORS for Sidewall and Continuous Windows are offered with or without window products.

BAYLEY electric control is dependable and recommended.



BAYLEY SPRINGFIELD ILL. | HAND CONTROL & ELECTRICAL CONTROL | CONTINUOUS WINDOW OPERATORS | THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. | PLATE NO. 187

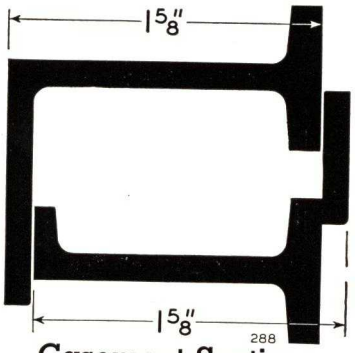


BAYLEY SPRINGFIELD ILL. | TENSION POWER FOR | CONTINUOUS WINDOW OPERATOR | THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. | PLATE NO. 188

BAYLEY

CASEMENTS—SERIES 30

For Residential, Office and Monumental Buildings



Casement Sections

The Series 30 section as developed by Bayley represents unusual features for windows for all types of buildings requiring the finest equipment. As shown in the detail the form of the sections provides flat surface contacts parallel to the glass with the resulting advantages of smooth, tight operation, improved appearance and minimum air leakage.

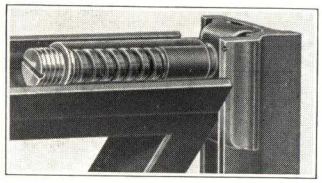
The Series 30 sections are formed into a variety of window types to meet practically any conditions or requirements of a particular building. Standard types are shown below; Bayley engineers will be glad to work with architects to design special windows when required. *(Continued on next page)*

BAYLEY CASEMENTS PROJECTED—Screened—Series 30

Ventilators to move out and down, and in and up, are a recent development for domestic uses. These movements insure unusual service and weathering, especially for casements of Series 30 sections and in combination with the Bayley developed adjustable friction arms and shoes. Series 30 steel contact sections 1⅝" deep, meet all the conditions of casements of this kind. Corners are welded and ground as in other windows of this group.

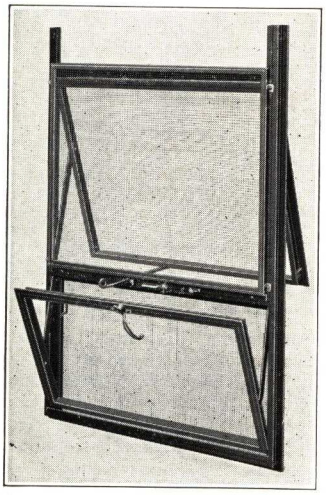
Supporting arms are heavy and arranged to hold casements firmly. The sliding friction pivot shoes are of bronze machined and are adjustable. They top the list in casement hardware.

Projected out ventilators have screens inside and bronze through-screen operator H87. Projected in ventilators have screens outside and bronze handle H81.



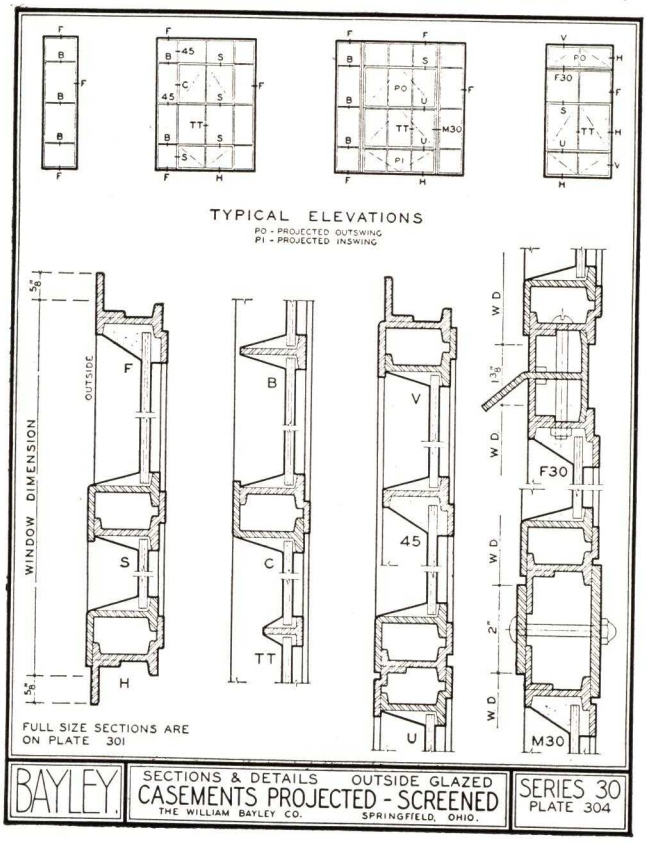
Sliding Friction Pivot

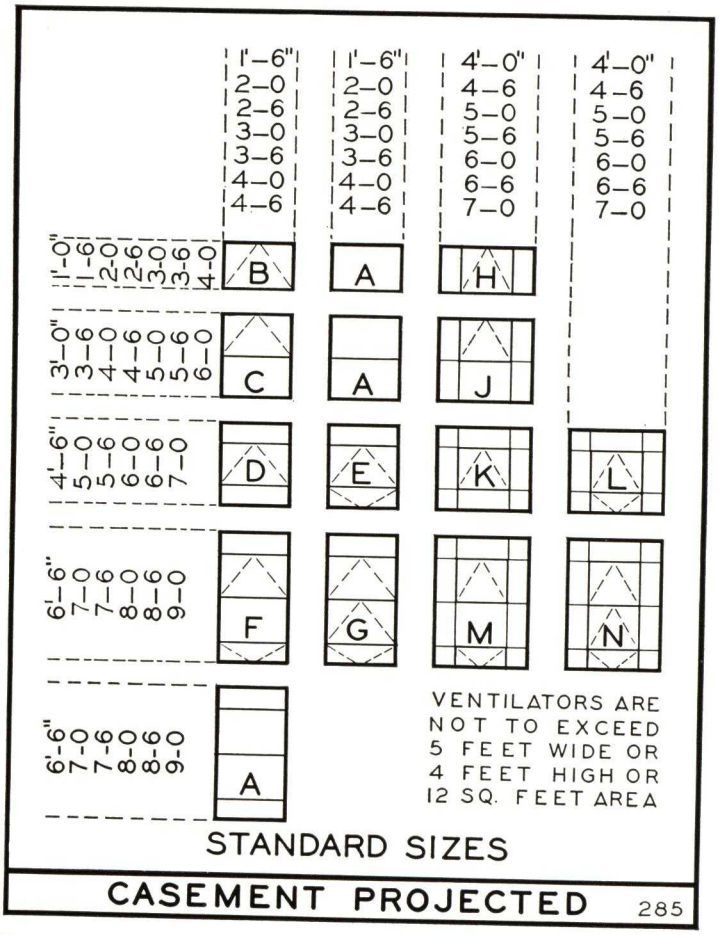
welded to projected "out" and "in" ventilators. Constant friction is maintained by heavy helical spring and machined adjusting screw. Working parts protected against paint and dirt.



Projected Out Ventilator. Screen Inside Through screen operator H87

Projected In Ventilator. Screen Outside Handle H 81





Materials and Features

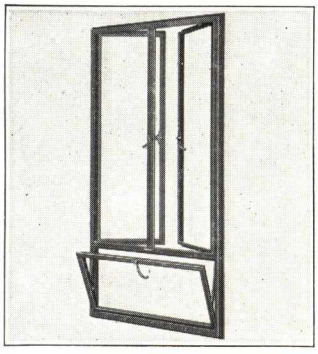
SECTIONS are of new billet hot rolled when of steel and extruded when of bronze or aluminum. Classification intermediate. Depth 1⅝". Minimum thickness ⅛". Process straightened. Shown Full Size (plate 288) on opposite page.

SHOP PRACTICE includes the use of only carefully selected materials, most accurate machining and fitting, and corners of units of ventilators and of openings for ventilators butt welded and surface ground. Finish is one coat of gray paint.

HARDWARE includes extended hinges of steel to provide arm room for outside washing. They are welded to casements and have solid bronze collar pivots. Underscreen casement operator is of the rotary type with bronze operating handle and bronze locking handle, in statuary bronze finish. Bronze friction adjuster of the concealed type, and lever handles are standard where screens are not required. For inswing see illustrations. Standard hardware is solid bronze.

SCREENS of Bayley manufacture are long life and rigid. Frames of steel or bronze.

BAYLEY CASEMENTS COMBINATION—Screened—Series 30

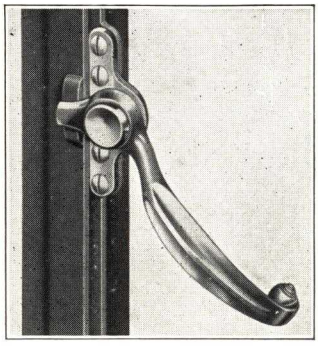


Casement Combination

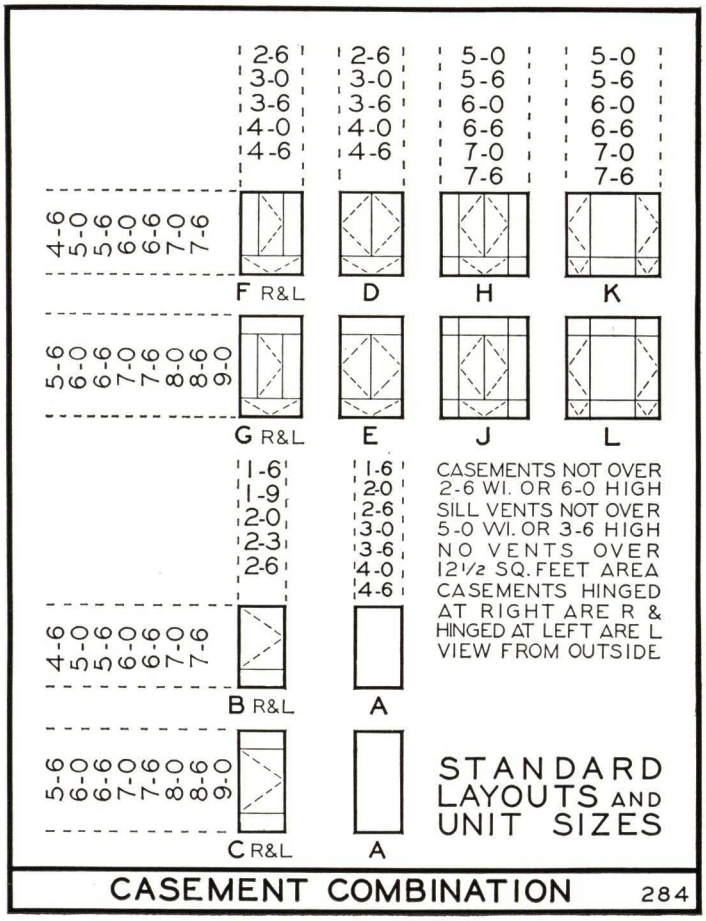
Incorporated in this steel window is a sill line inswinging horizontal casement similar to that of Sir Christopher. The vertical casements, however, swing out. The fixed portions also offer drapery spaces.

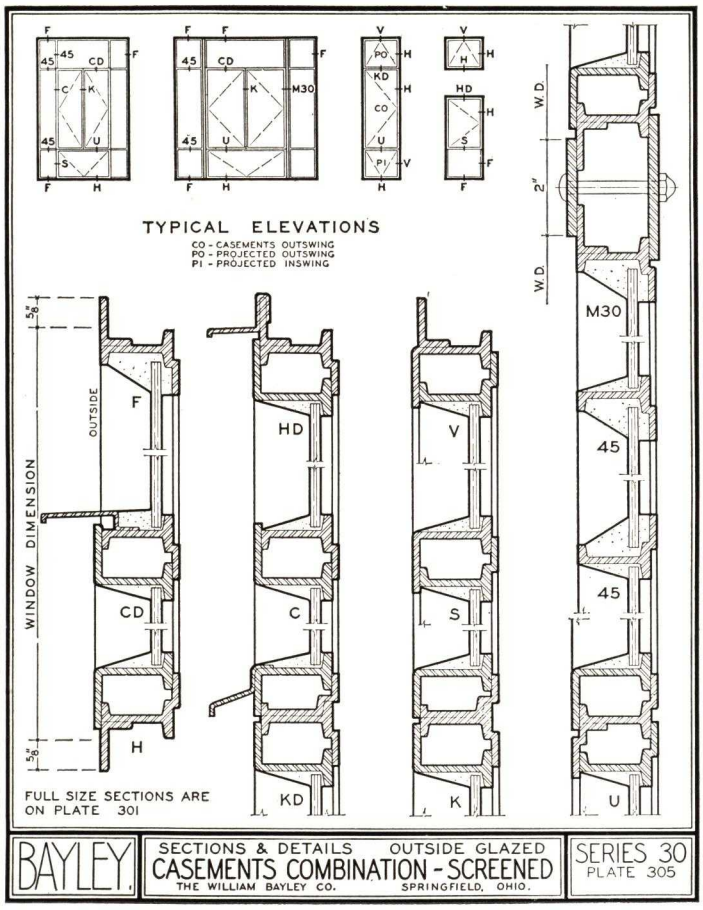
Hardware for the outswinging parts is through the sill and screens for these openings are on the inside. In construction and material these screens duplicate those of Sir Christopher, are Bayley made and an integral part of the window.

For those not desiring the complete inswing, but whose requirements fall within limited layouts, this window is recommended above all other casement windows.

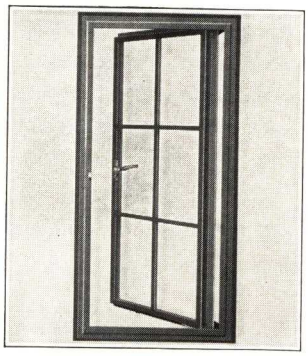


Bronze Handle H70

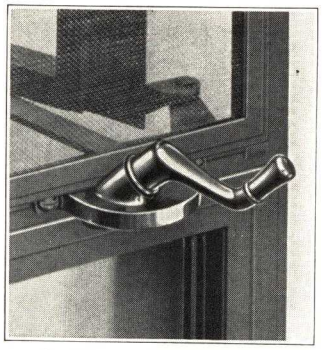




BAYLEY CASEMENTS—OUTSWING
Screened—Series 30



Casement Outswing



Geared Underscreen Operator H115

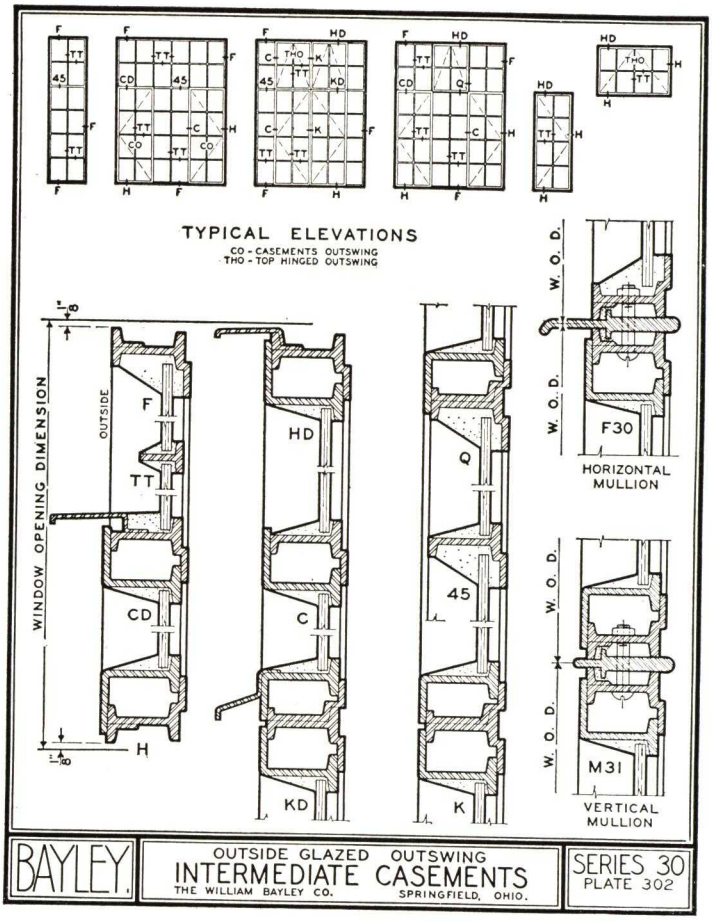
Very early workers in metal casements blazed the trail for these single or double outswinging ventilators, sometimes combined with casement transoms.

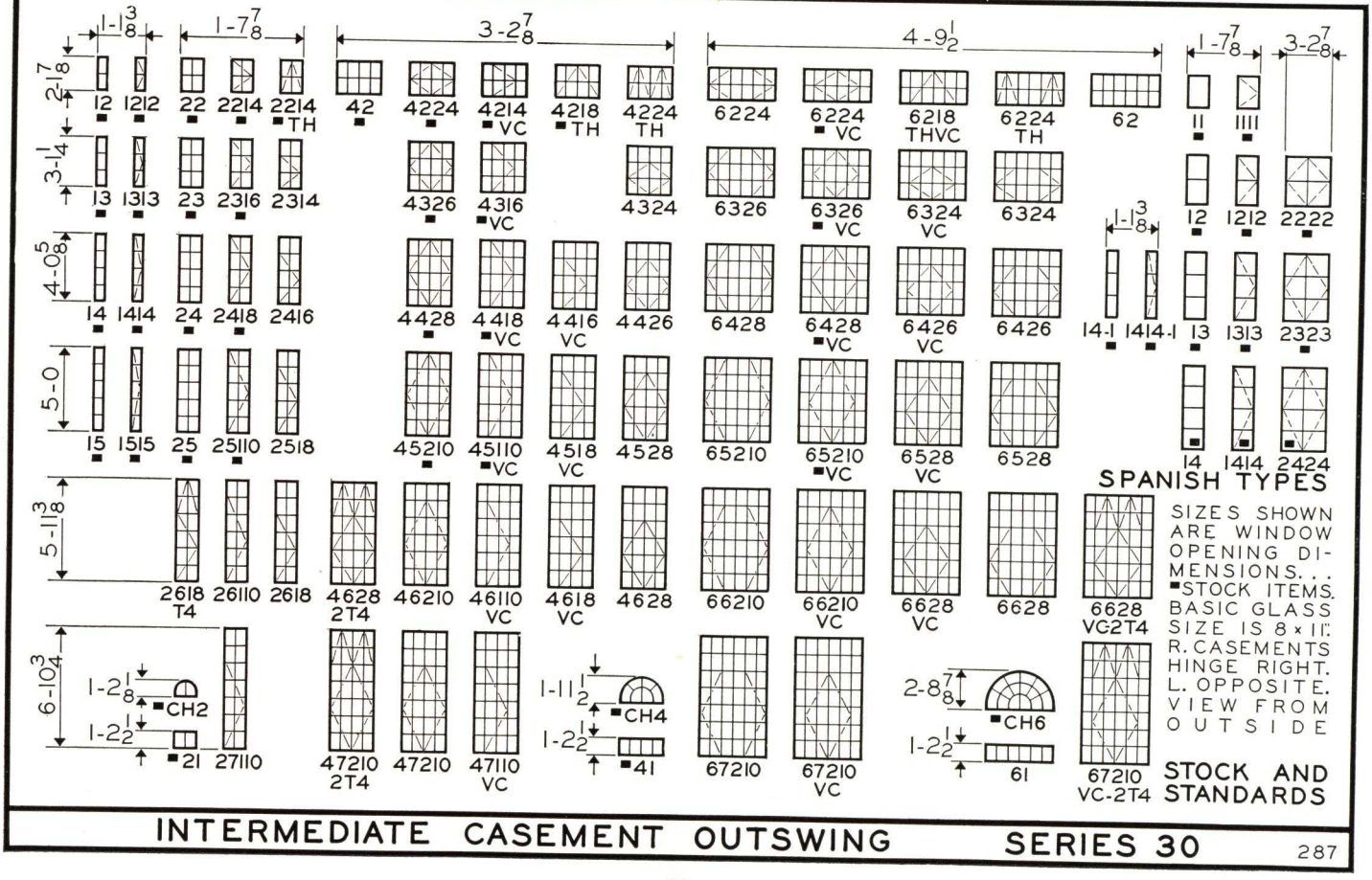
Standards and listed special layouts are extensive in sizes and numbers. Available in steel and bronze and aluminum.

Ventilators like in all Series 30 products are rigid with sections shaped to insure good permanent contacts. Their 1⅝" depth is fabricated the Bayley way with mitered corners of casements and the corners of ventilator openings butt welded and ground flush on contact and outside faces. Welding converts each of these frames into continuous perimeters. The flat, parallel-to-glass contacts, assures good weather protection even though the casement may become sagged a trifle through rough handling before or after installation.

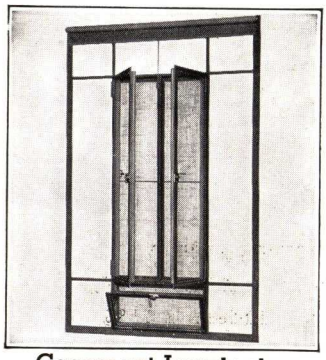
Hardware is through-the-sill stays for opening, holding, and closing and hinges are extended kinds. This extended hinge provides arm room for outside washing from the inside.

Screens flat and on the inside are removable and can be replaced with a panel of glass for insulation against outside temperatures and where air conditioning is employed.

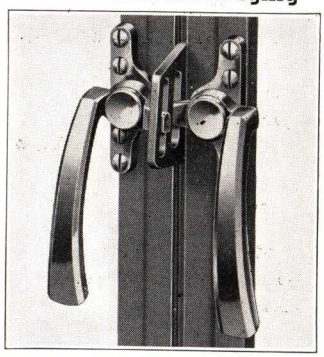




BAYLEY CASEMENTS—INSWING COMBINATION—Screened—Series 30



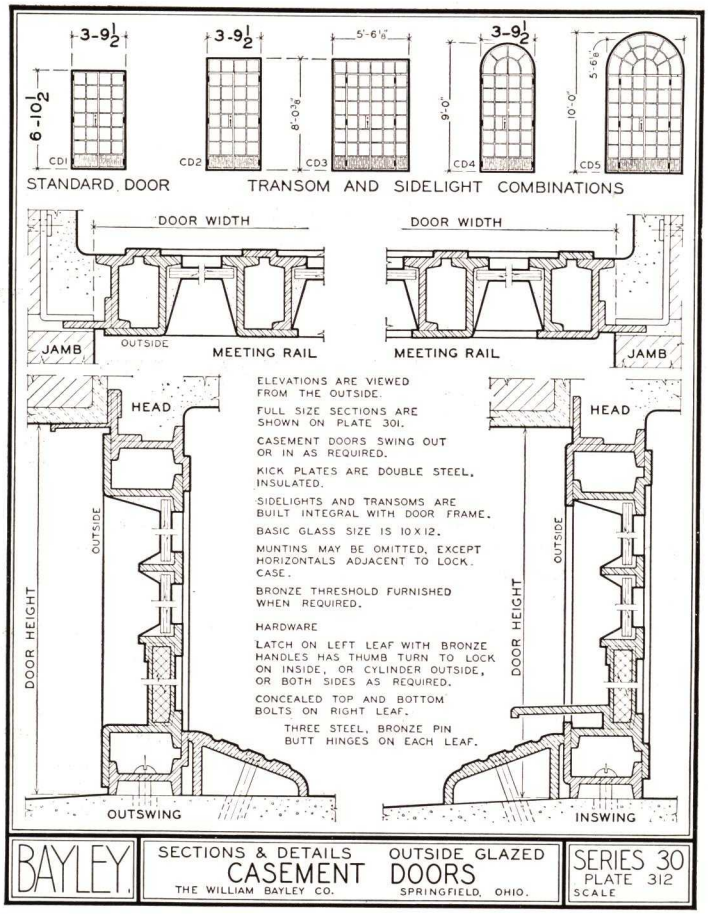
Casement Inswinging



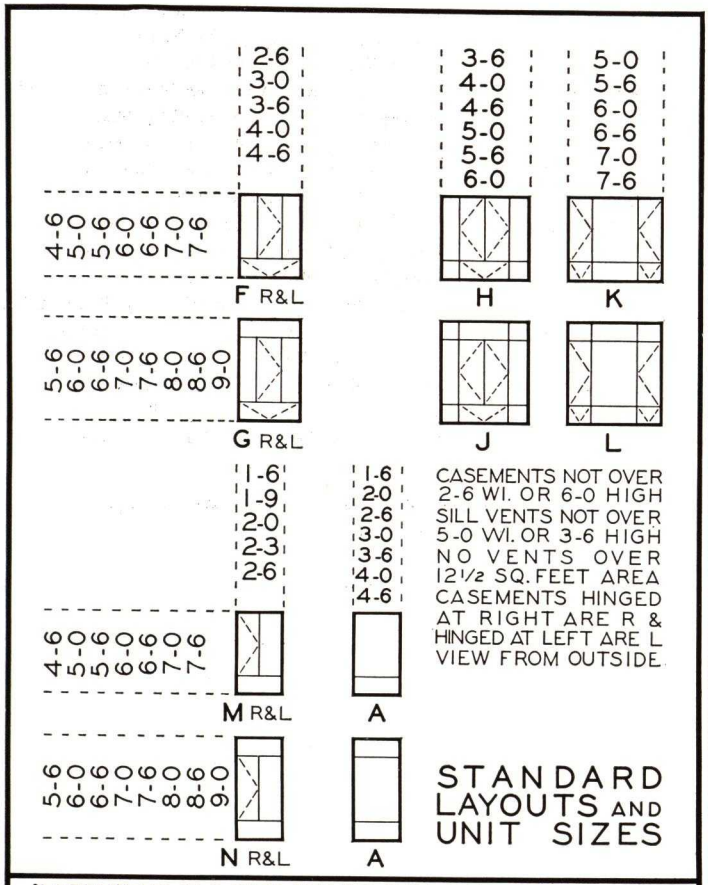
Bronze Handles H123 and H122R for vertical in-opening casements. H122R for horizontal in-opening casement

Known as the "Sir Christopher" the inswing casement developed by Bayley of Series 30 Sections shows many unique characteristics which solve those long-standing problems which have confronted architects when using casements. Unusual features of layout, quality, convenience and efficiency are individual and distinctive.

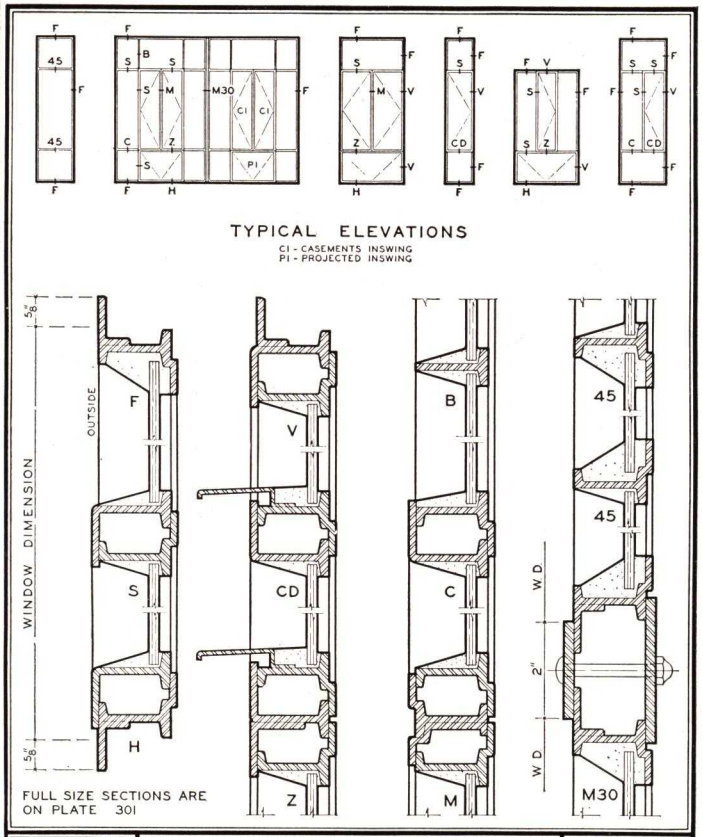
Vertical inswinging casements are set in a frame of fixed glass and have below a horizontal in-opening casement. Such a design provides for draperies and shades and assures draftless ventilation under almost any condition. Vertical casements opening flat against fixed glass, outside washing from inside, fixed side lights for draperies, life safety because of difficult egress through narrow ventilator spaces, screens with steel or bronze frames hinged and to lock, supplement other features of this draft-control, easily operated window.



BAYLEY | SECTIONS & DETAILS OUTSIDE GLAZED CASEMENT DOORS | THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. | SERIES 30 PLATE 312 SCALE



INSWING CASEMENT COMBINATION 286



BAYLEY | SECTIONS & DETAILS OUTSIDE GLAZED CASEMENTS INSWING - SCREENED | THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. | SERIES 30 PLATE 306

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Complete specifications and full size details of the products shown in this Catalog are available; also separate catalogs on mechanical operators for windows, and on airplane hangar doors.

THE WILLIAM BAYLEY COMPANY

SPRINGFIELD • OHIO

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CAMPBELL MAKES THE RIGHT WINDOW FOR EVERY TYPE OF BUILDING

CAMPBELL METAL WINDOWS

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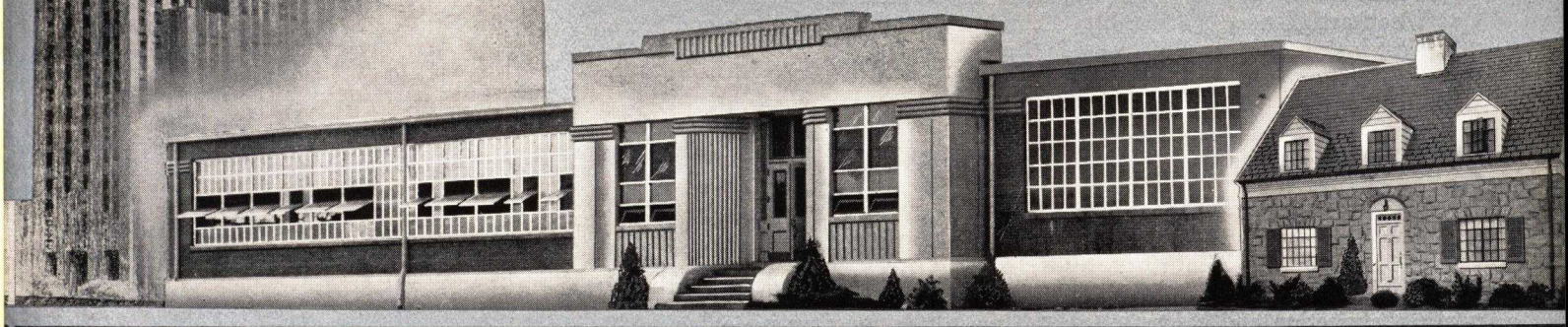
INDUSTRIAL DOORS	38 & 39
DETENTION WINDOWS	40 & 41



CAMPBELL METAL WINDOW CORP.

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Main Office: Bush & Hamburg Streets, Baltimore, Maryland

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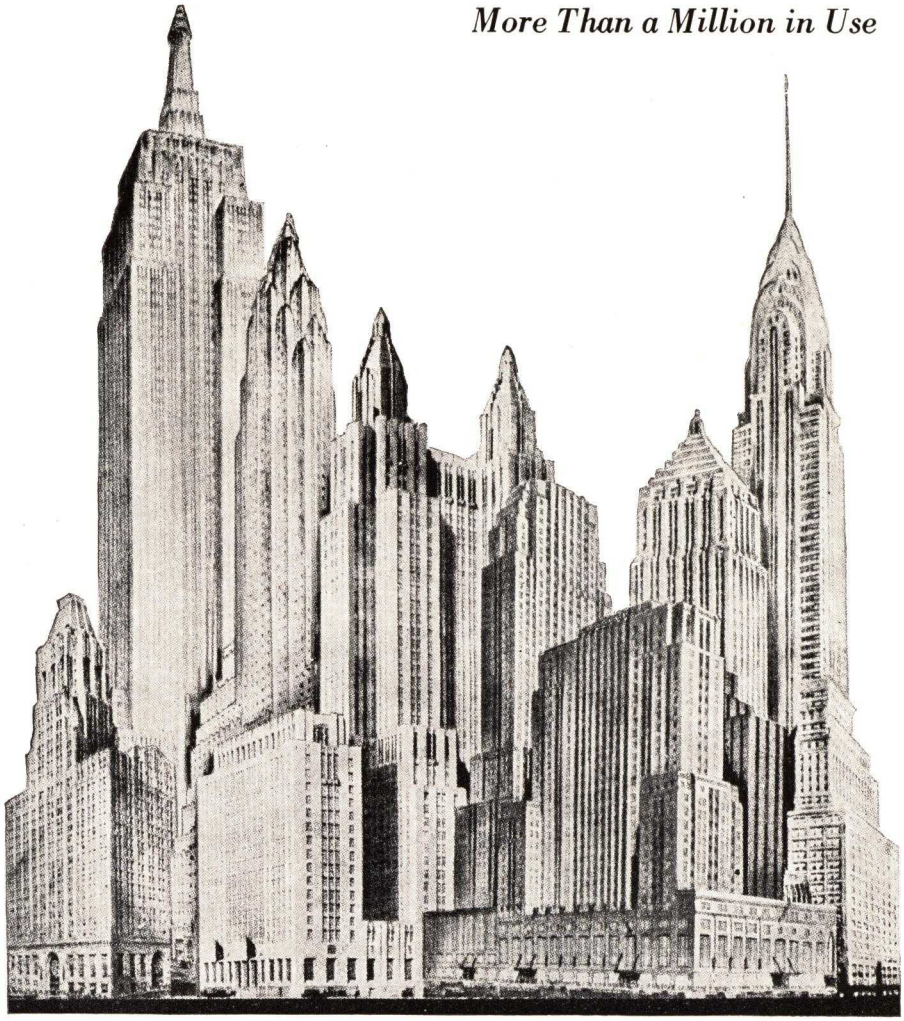
CAMPBELL DOUBLE HUNG WINDOWS

More Than a Million in Use



Baltimore Trust Bldg. Baltimore, Md. | Cities Service Bldg. New York City | Waldorf-AstoriaHotel New York City | Gulf Building Pittsburgh, Pa. | Chrysler Bldg. New York City

Empire State Bldg. New York City | Carew Tower Bldg. Cincinnati, Ohio

The decision to use Double-Hung Windows in any type of building naturally leads to the selection of the window which has been incorporated in outstanding building projects for many years. A few typical installations of Campbell Double-Hung Windows, shown above, testify to their acceptability and their satisfactory service in nationally known structures.

Weathertightness is assured by a construction which permits a guarantee against leakage in excess of ½ cubic foot per minute per lineal foot of sash perimeter under a static pressure equivalent to that exerted by wind of twenty-five miles per hour velocity.

Ease of Operation distinguishes the unique Campbell design which eliminates more than 80% of the friction surfaces usually found in other Double-Hung windows.

Adaptability to all types of building construction is inherent in the window design. Multiple openings with weightless or standard mullions broaden the scope of building treatment.

Maintenance Cost is negligible. All exposed members are rust proofed after fabrication and before shop painting. No joints come in contact with masonry. The extra strength and rigidity of sash and frame members contribute to long, trouble-free use.

Underwriters' Labels can be applied when specified.

Ease of Installation and Glazing contribute to an economical first cost.

Two Models are Available, identical in design. Model 26 MW is slightly heavier in certain members than Model 25 MW, as shown in the table at right.

SPECIFICATIONS

General:

1. Steel Double Hung Windows shall be Campbell Model 26 MW (or 25MW) as manufactured by the Campbell Metal Window Corporation. No substitution shall be made without written approval from the architect.

Material:

2. See Table of Gauges, below.

Construction:

3. Frame members shall be accurately rolled or formed, neatly coped to abutting members and assembled by means of mortise and tenon joints, riveted, or welded joints. The sill members shall be solidly welded to the staff beads, making a watertight joint.

4. Sash members shall be mitred, butt welded and ground smooth. Each sash shall have adjustors within the jamb to eliminate side play and assure smooth, easy operation.

5. Meeting rails shall be interlocking.

6. Window design shall provide for positive adjustment of the sash way for both upper and lower sash.

7. Inside jamb cover plates shall be removable and provide easy access to the counter-weights.

8. Sash shall be designed for glazing from the interior. Glass to be held in place by means of flat glass stops inserted in glass stop holders welded to the sides and top of each sash.

Weathering:

9. Flexible, non-ferrous, metallic weatherstrips shall be fitted to the sill, head and meeting rail. Interlocking, flexible, metallic weatherstrips shall be provided at the sides of the sash and concealed within the jambs.

Hardware:

10. Sash shall be hung on No. 130, hot galvanized, steel sash chains and counter-weighted with single-unit, cast iron weights. Pulley assemblies shall consist of pressed steel housings, securely attached to the frame, and pressed steel pulley wheels with graphite bronze bushings mounted on ⅜" diameter cold rolled steel shafts. Pulley assemblies and chains shall be entirely concealed within the jambs.

11. Adjustable rubbing strips shall be attached to the parting strips at the ends of the meeting rail.

Finished Hardware:

12. Finished hardware shall be of bronze, except the pole sockets which shall be cast iron, painted. The upper sash shall be equipped with a pole socket and pull and the lower sash shall have two lever type lifts and sash fastener. The lifts shall be given U. S. No. 10 finish; fastener and keeper, a burnished finish and the pull, a water rolled finish. Windows beyond easy reach from the floor shall be equipped with hardware designed for pole operation.

Shop Finish:

13. All steel members except glass stops, holders and cover plates shall be zinc coated after fabrication by means of electro-galvanizing, after which the windows shall be given one shop coat of protective paint, oven dried.

Erection:

14. Windows shall be set plumb and square in prepared openings. The sash shall be adjusted for easy operation and the weights hung after the glazing has been completed.

Guarantee:

15. The amount of infiltration of air through Standard Double Hung Windows shall be not more than ½ cubic foot of air per foot of sash perimeter per minute when subjected to a static air pressure equivalent to that exerted by a wind of twenty-five (25) miles per hour velocity.

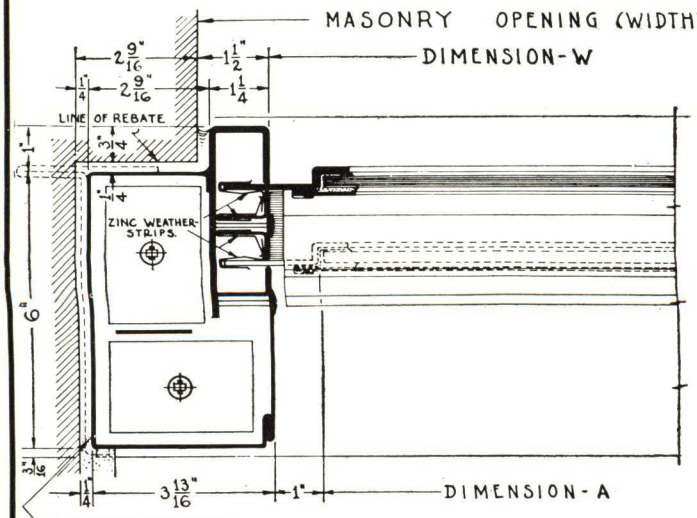
TABLE OF GAUGES

Member	Heavy Type Model 26-MW	Intermediate Type Model 25-MW
Sill	12 GA.	12 GA.
Staff bead or chain pocket	12 GA.	12 GA.
Sash	12 GA.	14 GA.
Glass stop	14 GA.	14 GA.
Parting strip or baffle	16 GA.	16 GA.
Head	16 GA.	16 GA.
Weight box	16 GA.	20 GA.
Lift rail	16 GA.	16 GA.
Jamb cover	16 GA.	20 GA.
Glass stop holder	20 GA.	20 GA.

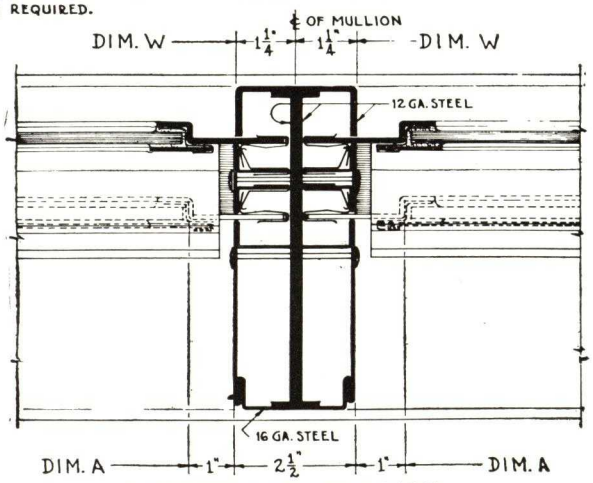
CAMPBELL DOUBLE HUNG WINDOWS

More Than a Million in Use

TYPICAL DETAILS MODEL 25 MW & 26 MW — Scale of Details 3" = 1'-0"

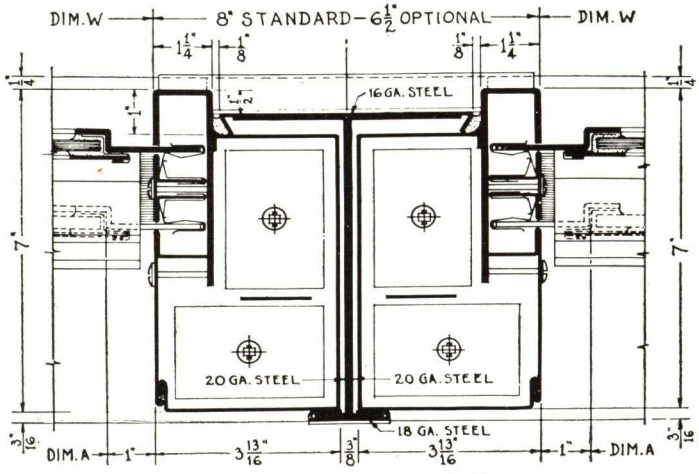


JAMB DETAIL

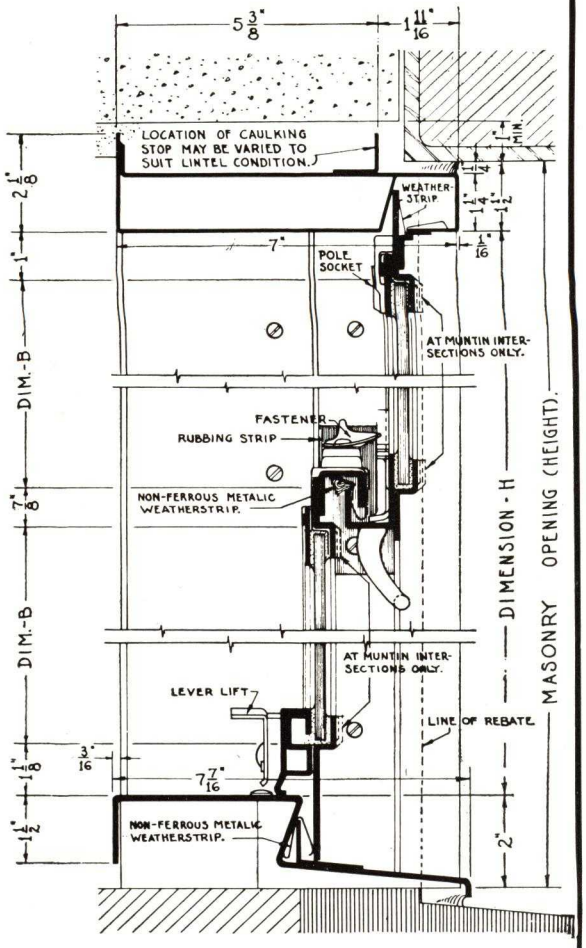


WEIGHTLESS MULLION

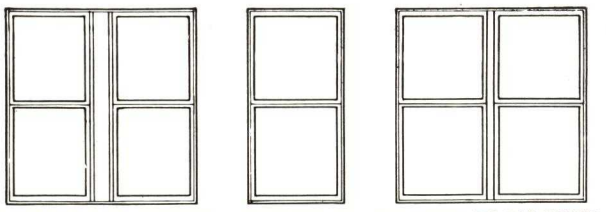
NOTE: WEIGHTLESS MULLION MAY BE USED IN TWIN WINDOW OPENINGS ONLY & AT INCREASED COST.



STANDARD MULLION



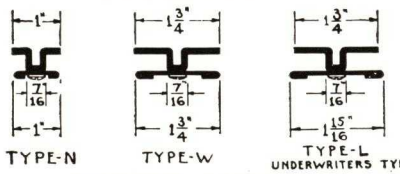
VERTICAL SECTION



DOUBLE OPNG. WITH STD. MULL. SINGLE OPENING WEIGHTLESS MULLION OPENING.

TYPICAL ELEVATIONS

VIEWED FROM EXTERIOR.



MUNTIN SECTIONS.

CAMPBELL SPRING BALANCED DETENTION WINDOWS

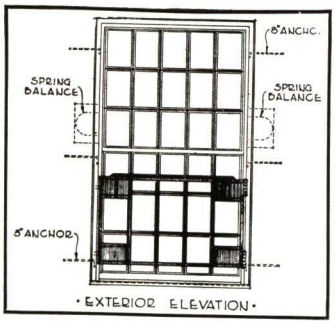
Campbell Spring Balanced Detention Windows are similar in appearance to double hung windows. Because of their effective detention features they have been widely accepted for buildings which house mental patients. An important factor in the control of these inmates is an absence of any visible evidence of restraint.

This feature is vital to U. S. Veteran's Hospitals. The building pictured at the right, for instance, would not suggest either to the visitor or the inmate that the windows were designed for detention purposes.

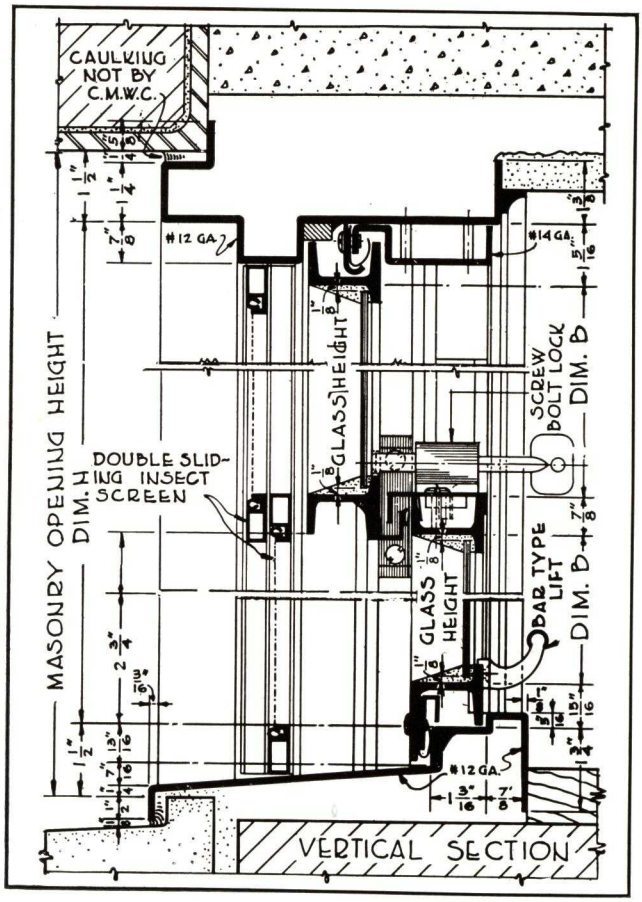
U. S. Veteran's Hospital, Columbia, S. C.
795 Spring Balance Detention Windows

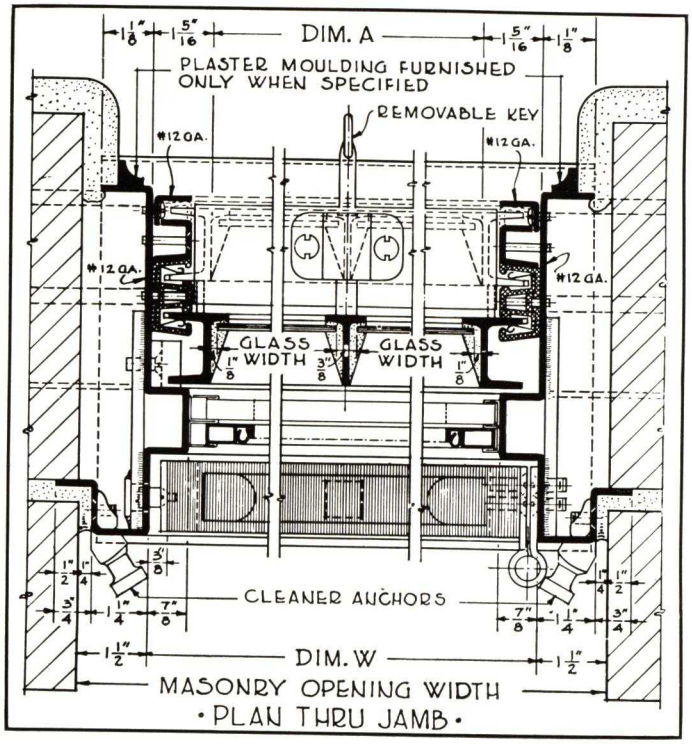
Spring Balanced Detention Windows combine heavy pressed steel frames and rolled section sash members. They are 100% weatherstripped and glazed from the exterior. Double sliding insect screens are easily applied to the exterior.

A grille is applied to the frame, opposite the lower sash. A removable key operates a hardened steel screw bolt lock in a bronze housing and provision is made for two-stage locking. Detention size glass, 6″ x 9″ is used. Upper sash stops applied with interrupted slot head detention screws limit the opening of the upper sash.



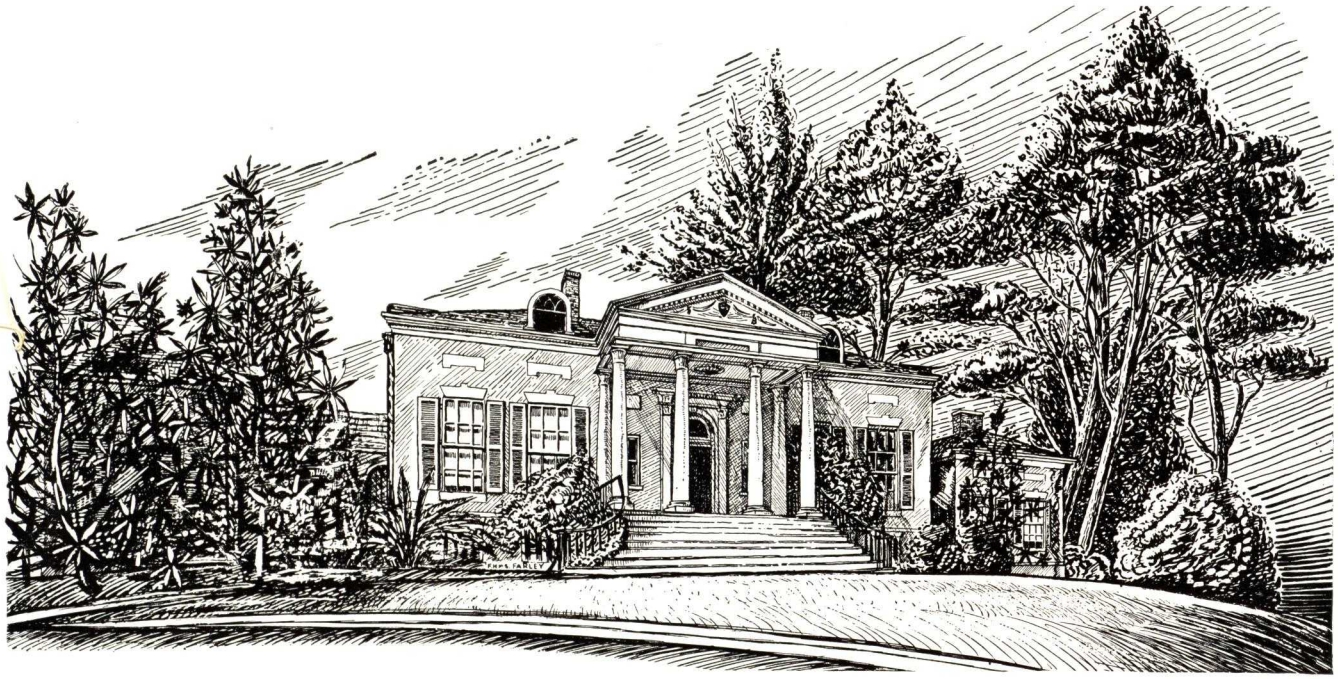
(Scale of Details 3″=1'0″)





INSTALLATIONS OF SPRING BALANCED WINDOWS

Waco (Texas) Veterans Hospital
Perry Point (Md.) Veterans Hospital
Togus (Maine) Veterans Hospital
Roanoke (Va.) Veterans Hospital
Des Moines (Iowa) Veterans Hospital
Coatesville (Pa.) Veterans Hospital
Fort Lyon (Colorado) Veterans Hospital
St. Cloud (Minn.) Veterans Hospital
Fort Snelling (Minn.) Veterans Hospital
Lexington (Ky.) Veterans Hospital
Chillicothe (Ohio) Veterans Hospital
Northampton (Mass.) Veterans Building
Bedford (Mass.) Veterans Hospital
Canadaigua (N. Y.) Veterans Hospital
Knoxville (Iowa) Veterans Hospital
Lyons (N. J.) Vet. T. B. Infirm. Bldg. No. 7
Gulfport (Miss.) Veterans Building
Northport (N. Y. C.) Veterans Hospital
Camp Custer (Mich.) Veterans Hospital
Columbia (S. C.) Veterans Hospital
Taunton (Md.) State Hospital
Boston (Mass.) State T. B. Hospital
St. Elizabeth (Washington, D. C.) Hospital
Epileptic (Va.) Colony
Philadelphia (Pa.) Naval Hospital
Maryland State Hospital Infirmary
Waltham (Mass.) Medical and Surgery
McConnell Park (Mass.) Field House
Anderson (Ind.) Masonic Temple
McKeesport (Pa.) Daily News Building
Ware (Mass.) Post Office
Highbridge Park (N. Y. C.) Bath House
Spencer (W. Va.) Hospital Clinic Bldg.
Vienna (Ohio) Brewing Co.
Medical Center(N. J.) Clinical Bldg.
Hayfield (Calif.) Pumping Plant
Springfield (Mo.) Hosp. for Def. Del.
Psychiatric Wd. (La.) Ntl. Home, Lepers



HOMEWOOD. Built by Charles Carroll for his son. C. 1801. Baltimore, Md.

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW

The Modern Window for Homes of Traditional Design

THE CALDWELL HOUSE—Watertown, Mass. Built C. 1742

Two examples of fine old homes are illustrated here which have influenced the architectural treatment of residences for more than a hundred years. They are part of America's splendid tradition in home building.

One feature is essential to their design—the use of double hung windows. These windows are typically American. They are the kind of windows with which housewives are familiar. They are predominantly the most-used windows for homes.

Yet *modern* windows are made of steel. The advantages which have resulted in virtually universal use of steel windows in industrial buildings, office buildings, hospitals, schools and public buildings apply with even greater emphasis to the modern home. Steel windows are weathertight, cannot swell or stick, give greater light area, resist fire and are not food for termites, nor do they rot.

Campbell Model 101 has all these advantages. It offers them in a DOUBLE HUNG window at a low price, made possible by modern methods of production, which removes the final barrier to the use of steel double hung windows in residential operations, large or small.

The experience gained in the years during which more than a million Campbell Double Hung Windows have been used in the world's largest buildings insures the soundness of design and workmanship.

The distinctive Campbell construction offers a maximum weathertightness without sacrificing ease of operation in damp weather or dry. The window is 100% weatherstripped yet it has 80% less friction surface than conventional types. Complete Bonderizing after fabrication and before shop painting resists corrosion and adds the final assurance of long, trouble-free life.

Campbell Model 101 Windows have been designed for the homes that require double hung windows to give authenticity to the architectural lines. They are made for home owners who want the familiar advantages of ventilation, screening, and decoration which only double hung windows possess. They are commended to the attention of architects and builders who seek to carry out sound tradition with modern material, at a cost which is in line with that of windows made of wood.

MODEL 101 — RESIDENTIAL STEEL DOUBLE HUNG WINDOW

A variety of sizes is essential to the adaptability of a window to Residential work.

All the types marked with an asterisk (*) are carried in stock for immediate shipment, and offer a wide selection of opening sizes to conform to nearly every residential building requirement. Standard types are available for prompt factory shipments.

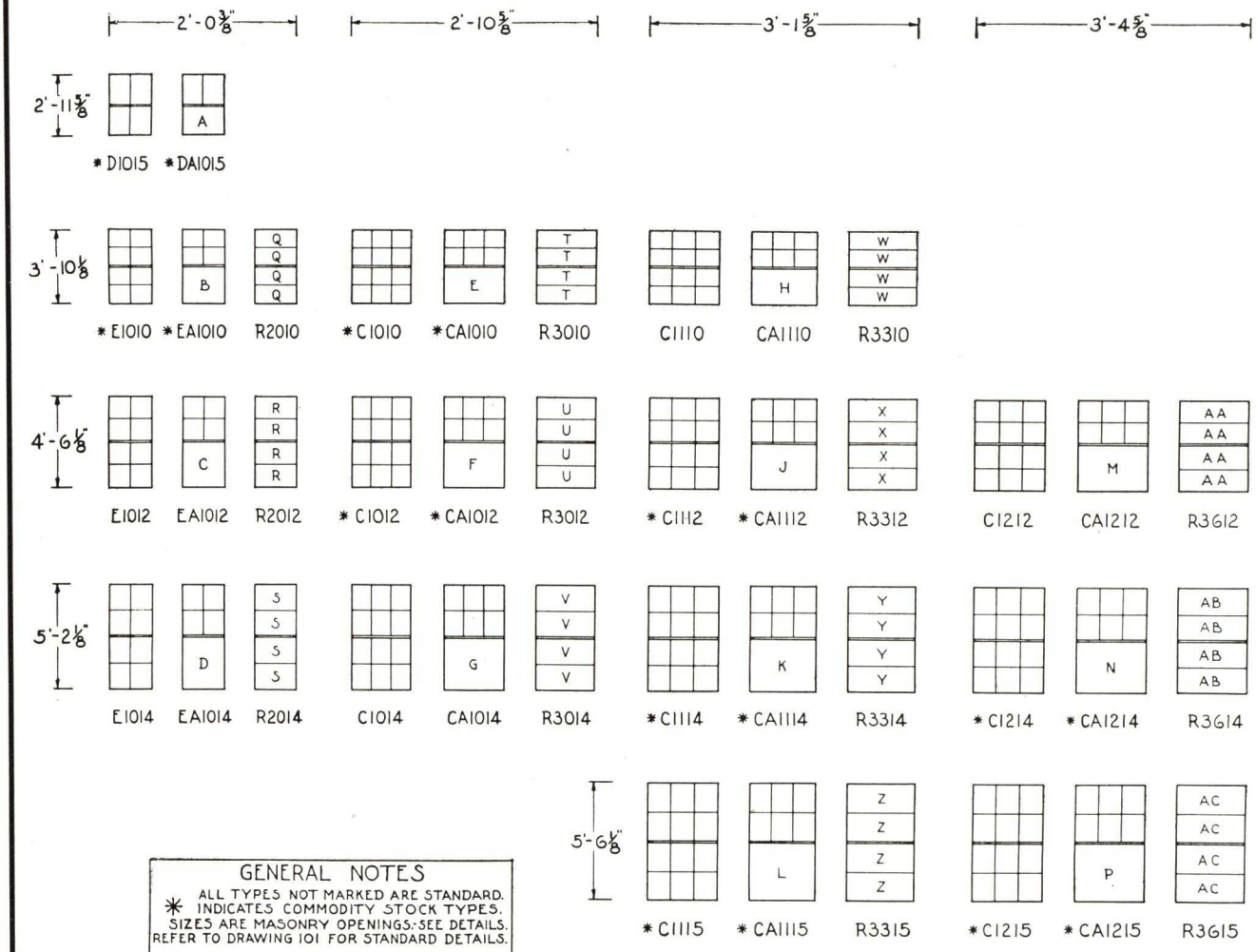
Muntin arrangements may be varied to conform to the requirements of the architectural treatment. All muntins may be omitted and full advantage taken of the exceptionally large ratio of glass area to opening size which these windows provide.

Small lights may be specified in both upper and lower sash, or horizontal muntins only may be retained for more modern treatment.

The numerical designation of the various types indicates the glass size. In Type No. C-1215, for instance, all lights are twelve inches wide and fifteen inches high. The letters refer to glass light arrangement.

Sizes shown are opening sizes. Refer to pages 8, 9, and 11 for details.

STOCK AND STANDARD TYPES AND SIZES (Single Windows)



GENERAL NOTES

ALL TYPES NOT MARKED ARE STANDARD. * INDICATES COMMODITY STOCK TYPES. SIZES ARE MASONRY OPENINGS. SEE DETAILS. REFER TO DRAWING 101 FOR STANDARD DETAILS.

MUNTINS MAY BE OMITTED FROM ALL STANDARD TYPES IF DESIRED. PARTIAL OMISSION MAY BE MADE PROVIDED THAT REMAINING MUNTINS ARE IN STANDARD POSITION. WHERE ALL MUNTINS ARE OMITTED THE GLASS SIZE IN BOTH UPPER AND LOWER SASH BECOMES THE SAME AS IN THE LOWER SASH OF TYPES DA, EA & CA.

LIGHTS NOT LETTERED ARE OF THE SIZE INDICATED BY THE NUMBERS IN THE TYPE SYMBOLS. THUS IN TYPE C1012 ALL LIGHTS ARE 10"×12". IN TYPE CA1012 THE LIGHTS IN THE UPPER SASH ONLY ARE 10"×12", AND THE GLASS SIZE FOR THE LOWER SASH IS GIVEN IN THE TABLE OF GLASS SIZES. IN TYPE R3012 THE GLASS SIZE OF ALL LIGHTS IS GIVEN IN THE TABLE OF GLASS SIZES

TABLE OF GLASS SIZES

SYMBOL	GLASS SIZE	SYMBOL	GLASS SIZE
A	20 1/4" x 15"	Q	20 1/4" x 10"
B	20 1/4" x 20 1/4"	R	20 1/4" x 12"
C	20 1/4" x 24 1/4"	S	20 1/4" x 14"
D	20 1/4" x 28 1/4"	T	30 1/2" x 10"
E	30 1/2" x 20 1/4"	U	30 1/2" x 12"
F	30 1/2" x 24 1/4"	V	30 1/2" x 14"
G	30 1/2" x 28 1/4"	W	33 1/2" x 10"
H	33 1/2" x 20 1/4"	X	33 1/2" x 12"
J	33 1/2" x 24 1/4"	Y	33 1/2" x 14"
K	33 1/2" x 28 1/4"	Z	33 1/2" x 15"
L	33 1/2" x 30 1/4"	AA	36 1/2" x 12"
M	36 1/2" x 24 1/4"	AB	36 1/2" x 14"
N	36 1/2" x 28 1/4"	AC	36 1/2" x 15"
P	36 1/2" x 30 1/4"		

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW

Where twin windows are to be used in residential installations, Model 101 offers the convenience and economy of unit built assemblies. Each of the types shown here combines two upper and lower sash assemblies with a specially designed narrow mullion, all in one frame for easy installation. All sizes marked with an asterisk (*) are carried in stock for immediate shipment. Standard type are available for prompt factory shipments.

The same wide variety of glass arrangement, as used in the single units, is available in the twin units.

Sizes shown are opening sizes. Refer to pages 8, 9, and 11 for details.

STOCK AND STANDARD TYPES AND SIZES (Twin Windows)

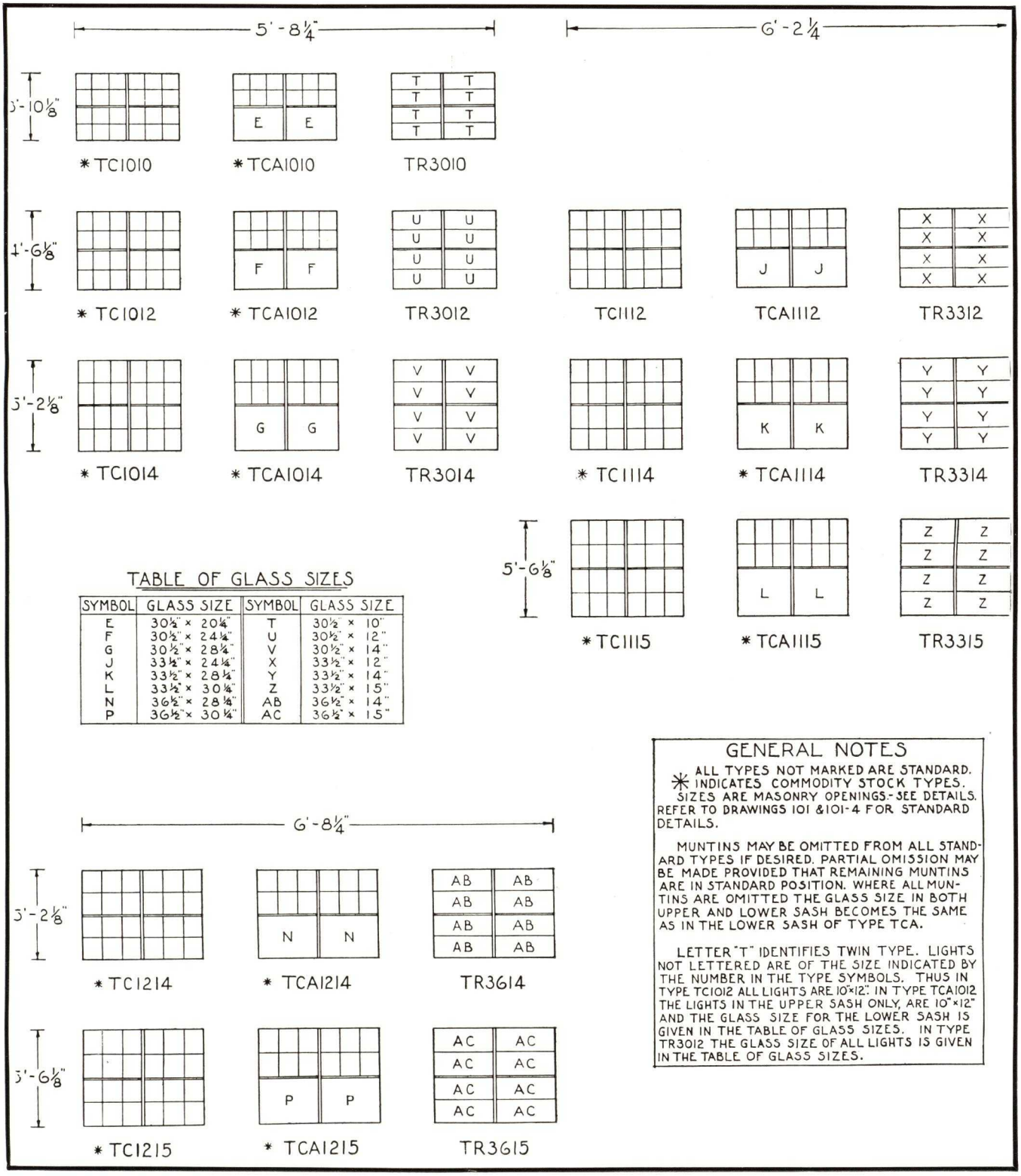


TABLE OF GLASS SIZES

SYMBOL	GLASS SIZE	SYMBOL	GLASS SIZE
E	30⅛" × 20¼"	T	30½" × 10"
F	30⅛" × 24¼"	U	30½" × 12"
G	30½" × 28¼"	V	30½" × 14"
J	33½" × 24¼"	X	33½" × 12"
K	33½" × 28¼"	Y	33½" × 14"
L	33½" × 30⅛"	Z	33½" × 15"
N	36½" × 28⅛"	AB	36½" × 14"
P	36½" × 30¼"	AC	36½" × 15"

GENERAL NOTES

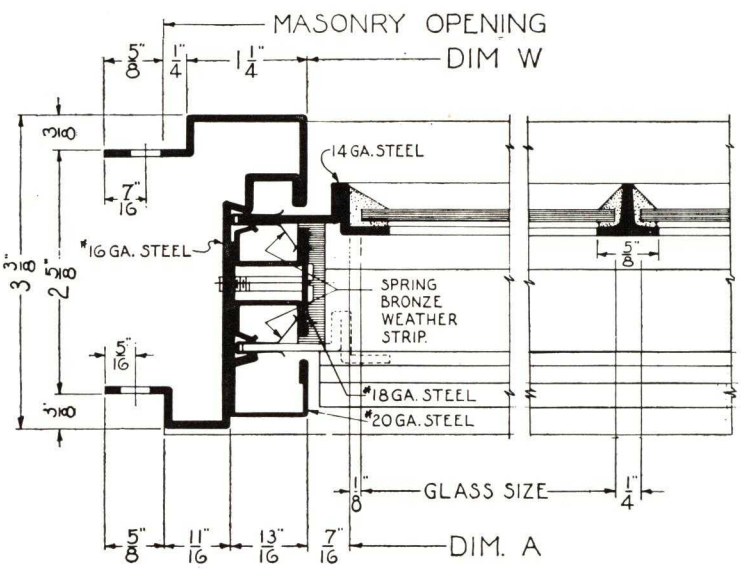
* ALL TYPES NOT MARKED ARE STANDARD. * INDICATES COMMODITY STOCK TYPES. SIZES ARE MASONRY OPENINGS - SEE DETAILS. REFER TO DRAWINGS 101 & 101-4 FOR STANDARD DETAILS.

MUNTINS MAY BE OMITTED FROM ALL STANDARD TYPES IF DESIRED. PARTIAL OMISSION MAY BE MADE PROVIDED THAT REMAINING MUNTINS ARE IN STANDARD POSITION. WHERE ALL MUNTINS ARE OMITTED THE GLASS SIZE IN BOTH UPPER AND LOWER SASH BECOMES THE SAME AS IN THE LOWER SASH OF TYPE TCA.

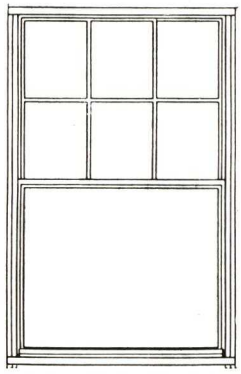
LETTER "T" IDENTIFIES TWIN TYPE. LIGHTS NOT LETTERED ARE OF THE SIZE INDICATED BY THE NUMBER IN THE TYPE SYMBOLS. THUS IN TYPE TC1012 ALL LIGHTS ARE 10"×12". IN TYPE TCA1012 THE LIGHTS IN THE UPPER SASH ONLY, ARE 10"×12" AND THE GLASS SIZE FOR THE LOWER SASH IS GIVEN IN THE TABLE OF GLASS SIZES. IN TYPE TR3012 THE GLASS SIZE OF ALL LIGHTS IS GIVEN IN THE TABLE OF GLASS SIZES.

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW

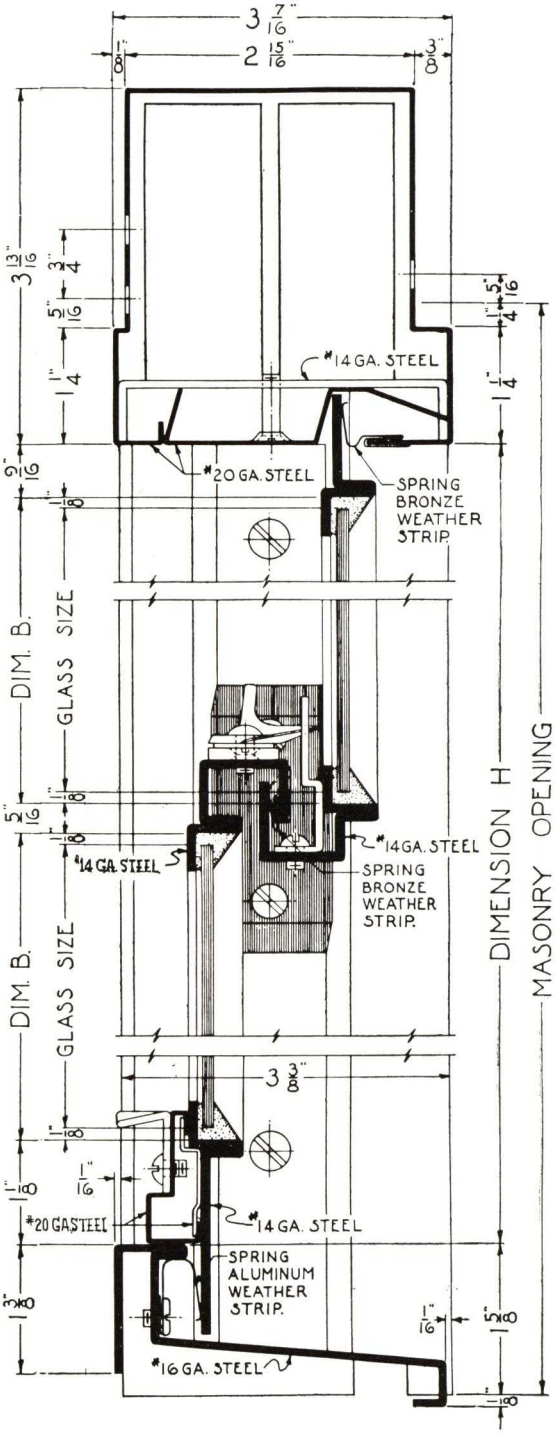
STANDARD DETAILS (Scale of Details—6"=1'-0")



PLAN THRU JAMB



INTERIOR ELEVATION OF TYPICAL WINDOW.



VERTICAL SECTION

FEATURES

The design of Model 101 Residential Steel Double-Hung Windows incorporates many time proven features of the best double-hung practise. The windows are rust-proofed after fabrication and before shop painting. Non-ferrous weather-stripping is used throughout to assure weathertightness. Heavy, durable frame and sash members insure long life, and the assembled construction permits unit installation. The concealed hanging of sash members permits a trim, attractive appearance. The distinctive Campbell design is responsible for the easy operation of these windows under all conditions.

ACCESSORIES

Provision is made in all windows for the attachment of shade or combination shade and drapery brackets. The brackets may be purchased with the windows if desired.

In addition to the above the following complete line of window accessories, or preparation only for same, may be purchased at *The Time The Order is Placed:*

- Interior Storm Sash
- Steel Casings
- Steel Stools
- Provision for Venetian Blind Brackets
- Windshield Brackets
- Awnings

Shutters (Specify Decorative or Operative. If Operative State whether sill adjustors will be used.)

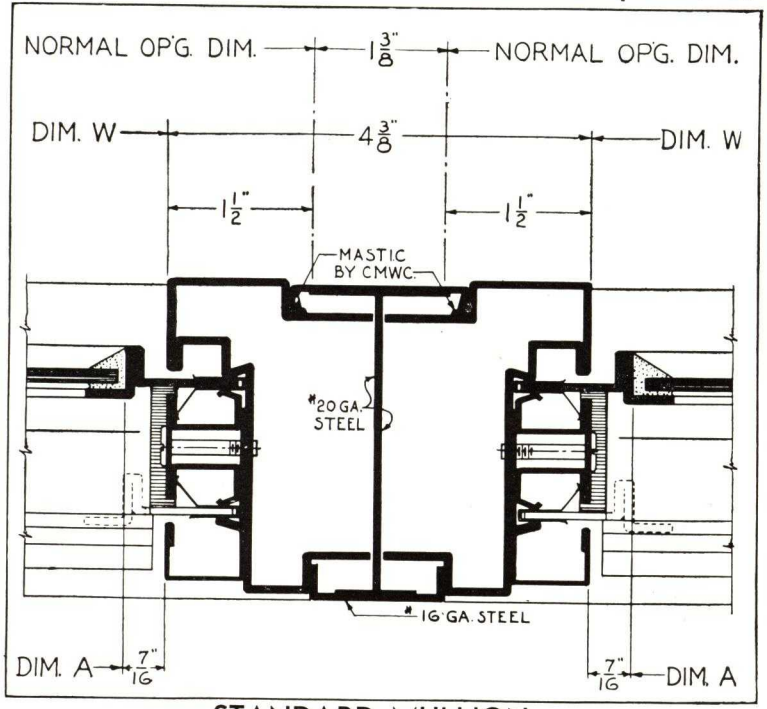
HARDWARE

The hardware included with the windows consists of two steel lifts and bronze plated fastener which are attached at the factory.

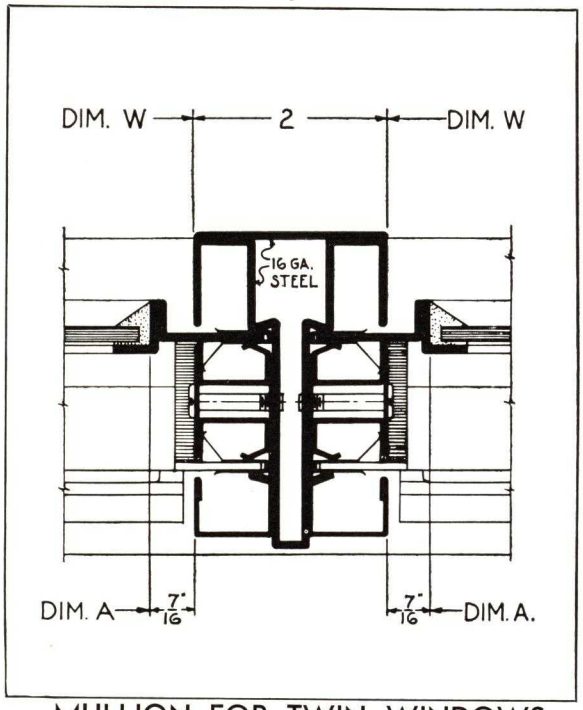
Polished bronze hardware can be supplied in lieu of these standard items at a slight increase in cost. Window cleaner anchors are also available if required, at extra cost.

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW

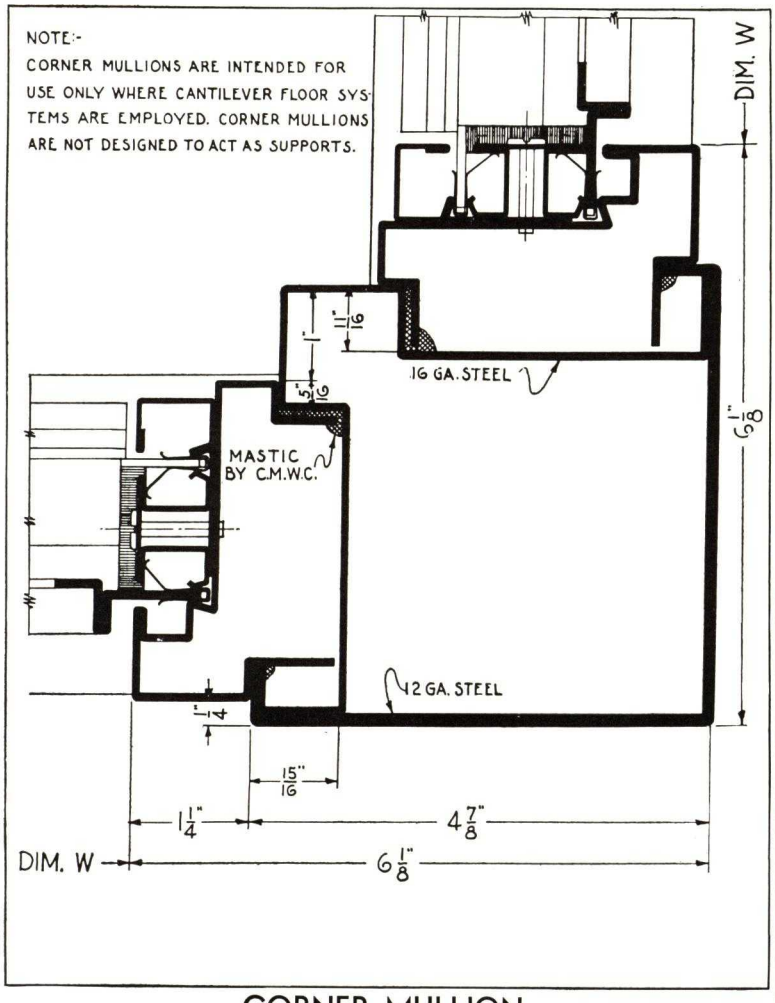
MULLION DETAILS (Scale of Details—6"=1'-0")



STANDARD MULLION



MULLION FOR TWIN WINDOWS



CORNER MULLION

SCREENS

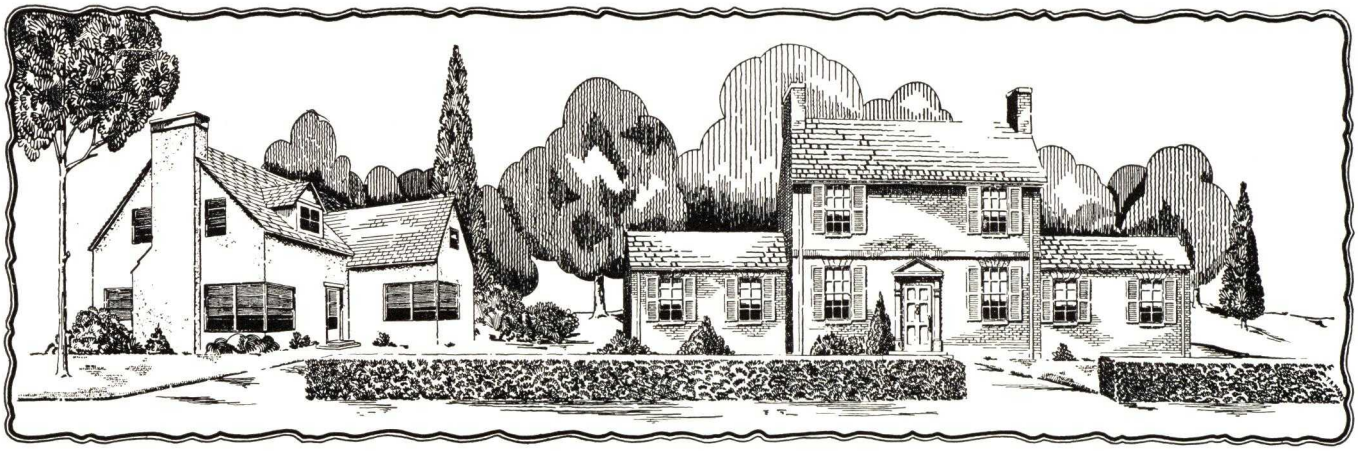
The window is adaptable to conventional screening of nearly every type and four standard types are available, at extra cost, for shipment from the factory.

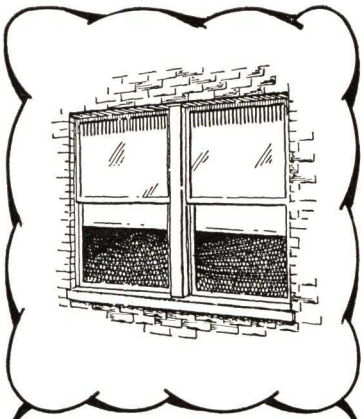
Stationary Half Screen is applied to the lower part of the window, outside, and fits tightly between the sill and the under side of the meeting rail. It is held in place with spring spacers on one side and is equipped with a handle in the center on either side. This type of screen may not be used with operative shutters having sill adjustors, or awnings.

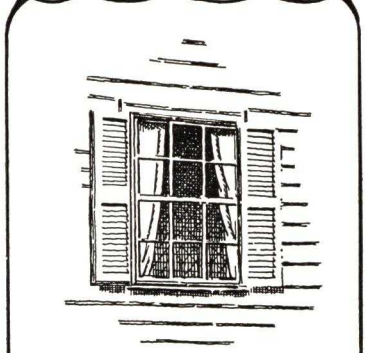
Sliding Half Screen is used with operative shutters having sill adjustors or awnings, and consists of the Tubular Half Screen set in guides which are attached to the inside jamb members by means of screws.

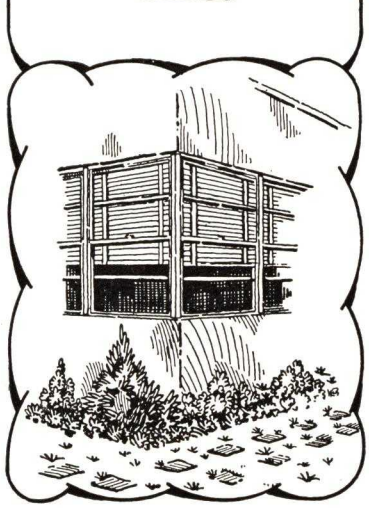
Top Hung Screen covers the full height of the window and uses two hangers which are applied, to the outside of the head of the windows. Properly braced with non-rewirable braces when more than 4½ feet high, these screens are secured four inches from the bottom by hooks provided for the purpose. Special provision at the factory is required for this type of screen which may not be used with operative shutters having sill adjustors or with awnings.

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW









CONDENSED SPECIFICATIONS

Specify

Model 101 Steel Double Hung Window manufactured by Campbell Metal Window Corporation, Baltimore, Md.

Material

Sill and jamb members shall be 16 gauge; sash members 14 gauge; baffle members 18 gauge; head members, lift rail and jamb cover plates 20 gauge; low carbon steel.

Construction

Frame members shall be accurately rolled or formed, as shown on the drawings, neatly coped to abutting members and assembled by means of mortise and tenon joints, riveted, or welded joints.

Corners of sash shall be mitred, butt welded and ground smooth. Each sash shall have adjustors within the jambs to eliminate side play and assure smooth, easy operation.

The meeting rails shall be interlocking.

Sash guides shall be concealed within the jambs.

Muntins, where required, shall be hot rolled tee members, mortised, tenoned and riveted to the sash members. Muntins at intersections shall be mechanically interlocked with flush joints.

Sash shall be designed for glazing from the exterior. Glass to be held in place with spring wire glazing clips.

Weathering

Flexible, non-ferrous, metallic weatherstrips shall be fitted to the sill, head and meeting rail and provided within the jambs.

Weatherstrips shall be designed so that they will not impede the free movement of the sash.

Hardware

Sash shall be counterbalanced by means of approved type spring balances. Adjustable rubbing strips shall be attached to the baffle members at the ends of the meeting rail.

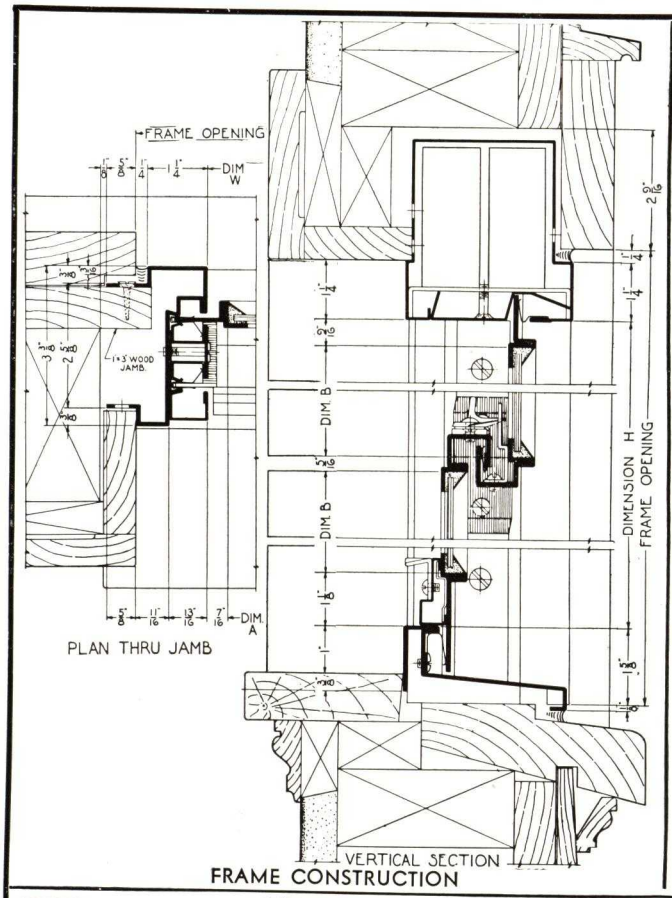
Finished hardware shall be of window manufacturer's standard pattern. Two steel lifts and one bronze plated malleable iron fastener with steel keeper shall be provided for each window. (Solid bronze hardware may be substituted at additional cost).

Finish

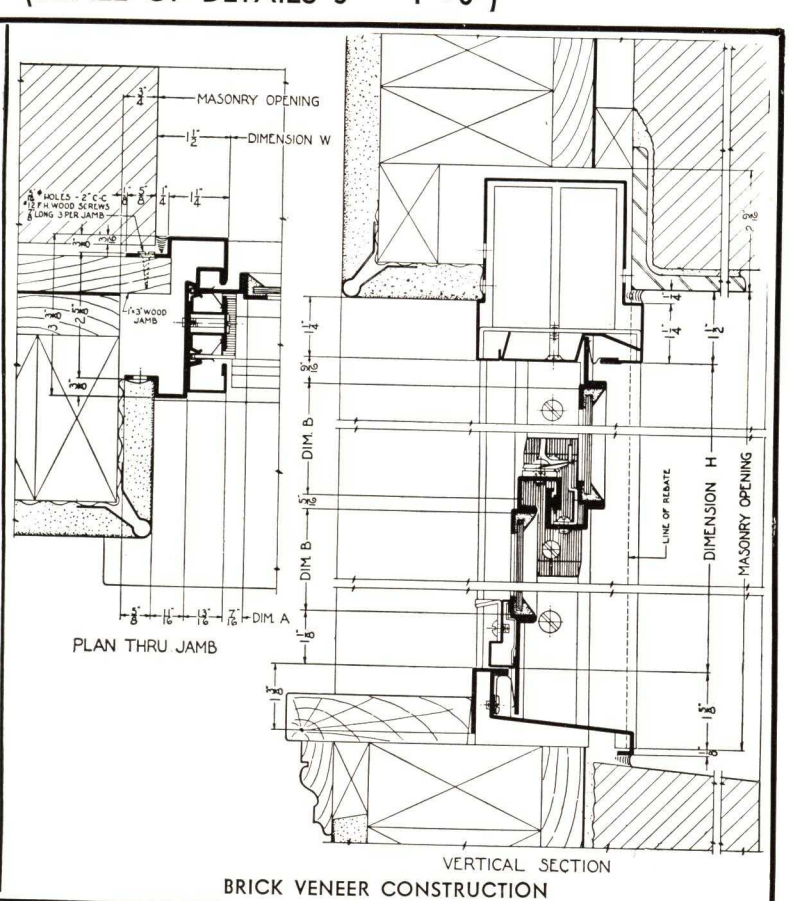
All steel members shall be rust proofed after fabrication with a phosphate coating applied by means of the Bonderite Process, after which the windows shall be given one shop coat of protective paint, baked on.

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOWS

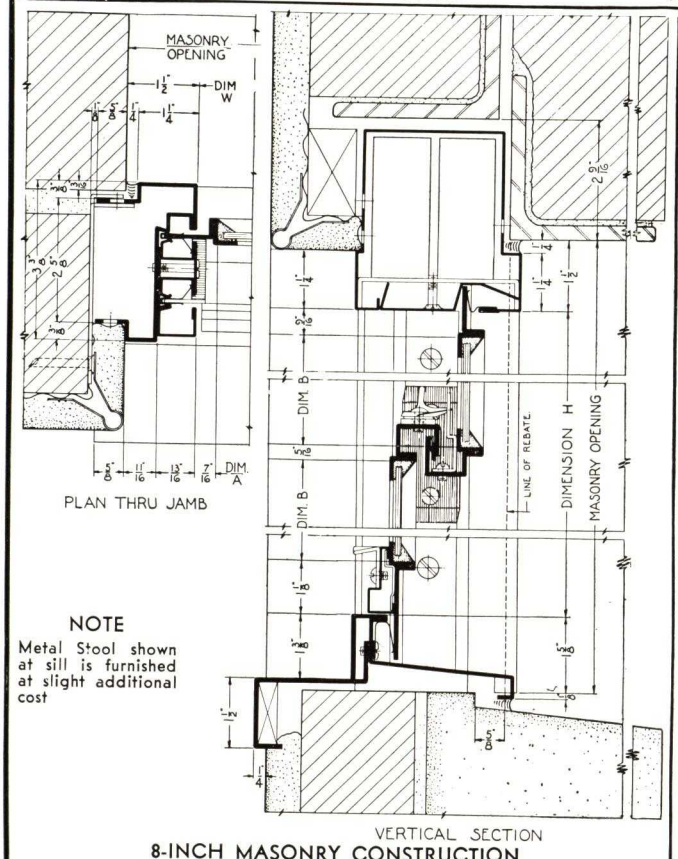
INSTALLATION DETAILS — (SCALE OF DETAILS 3" = 1'-0")



FRAME CONSTRUCTION



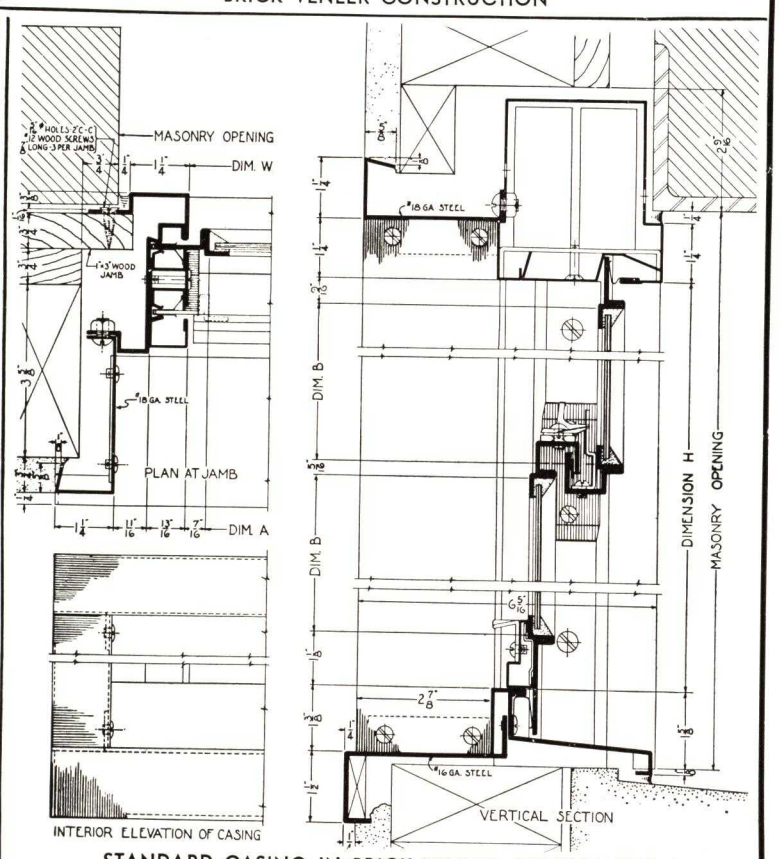
BRICK VENEER CONSTRUCTION



8-INCH MASONRY CONSTRUCTION

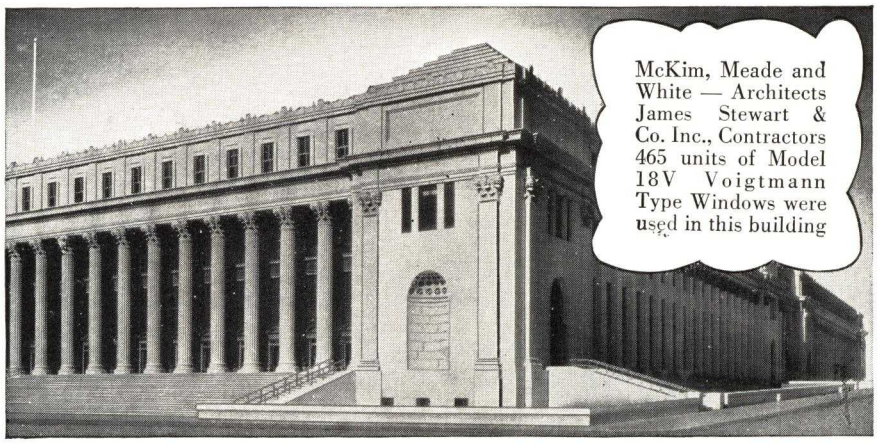
NOTE

Metal Stool shown at sill is furnished at slight additional cost



STANDARD CASING IN BRICK VENEER CONSTRUCTION

VOIGTMANN TYPE DOUBLE HUNG WINDOWS



New York Post Office Annex

Hollow Metal Double Hung Windows were designed to simulate the traditional lines of wood windows and to provide fire protection—at low cost. The rapidly increasing acceptance of the Voigtmann Type Campbell Window testifies to its highly satisfactory fulfillment of these conditions.

Exceptional ease of operation is an outstanding feature of the Voigtmann Type Window. The ingenious application of non-ferrous metal weatherstripping assures a thoroughly weathertight assembly without impeding the free movement of the sash in any way.

Sash members are tubular with all ends closed and all exposed edges eliminated, assuring maximum strength, rigidity and long life. Accurate forming and fitting of all members, the attention paid to workmanship and finish suggest the wisdom of a critical point-by-point comparison with competitive windows. Voigtmann Type windows, though low in price, are distinctly quality windows.

The two types shown in the details on the opposite page are the Models 18-V and the 20-V, the design being the same for both types. Gauges of members vary as shown in the table under the specifications to the right.

Where heavier gauges are desired the Model 18-V may be specified with 14 gauge sills, 16 gauge heads and all other members of 18 gauge at a slight additional cost.

The widespread use of Voigtmann Type Windows in Post Office Buildings, Hotels, Schools, Office Buildings and Public Buildings is indicated by a few recent typical installations listed below.

SOME RECENT INSTALLATIONS OF VOIGTMANN DOUBLE HUNG WINDOWS

U. S. Post Office and Court House, Buffalo, N. Y.
Eli Lilly and Company Building, Indianapolis, Ind.
U. S. Bureau of Engraving, Washington, D. C.
Kalamazoo County Court House, Kalamazoo, Mich.
Federal Office Building, Houston, Texas.
Rogers Hotel and Office Building, Idaho Falls, Idaho.
U. S. Tobacco Company, Nashville, Tenn.
Thomas Carr Howe School, Indianapolis, Ind.
U. S. Post Office and Court House, Peoria, Ill.
U. S. Post Office, Johnstown, Pa.

CONDENSED SPECIFICATIONS

Specify

Steel Double Hung Windows, Voigtmann Type, Model 18-V (or 20-V) manufactured by Campbell Metal Window Corporation, Baltimore, Md.

Material

All members shall be hot dipped galvanized steel of gauges shown in the table below.

Construction

Frames shall have mitred corners, soldered watertight and flush riveted. Sash shall have mitred corners, lapped, welded and soldered watertight. Glazing stops shall be attached with screws on the interior side of sash. Pulleys shall be removable type galvanized steel, bronze bushed, with 3/8" steel axles. Sash weights shall be cast iron, sectional or single unit type. Chains shall be of galvanized steel, American Chain Company's No. 45 with galvanized connections to sash and weights. Rubbing strips shall be attached to each jamb at ends of meeting rails.

Weathering

Lift and lock rails shall be fitted with flexible bronze weather strips. Pulley stiles and head shall be formed with double deep weathering grooves.

Hardware

All finished hardware shall be of malleable iron, bronze plated, of Voigtmann standard design. (Polished bronze hardware is available at slightly increased cost.)

Shop Finish

Frames and sash shall receive a coat of gray metallic paint sprayed on at the factory.

Guarantee

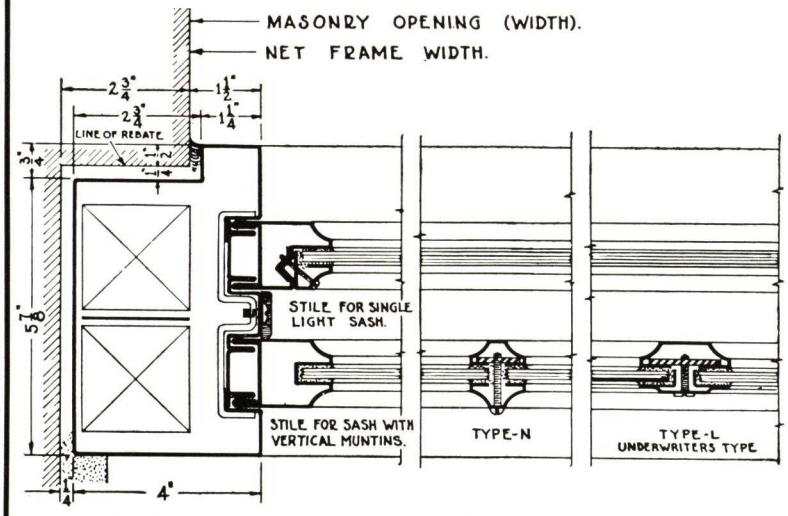
The amount of infiltration of air through standard double hung windows shall not be more than 1.00 cubic foot of air per foot of sash perimeter per minute when subjected to a static air pressure equal to that exerted by a wind of 25 miles per hour.

TABLE OF GAUGES

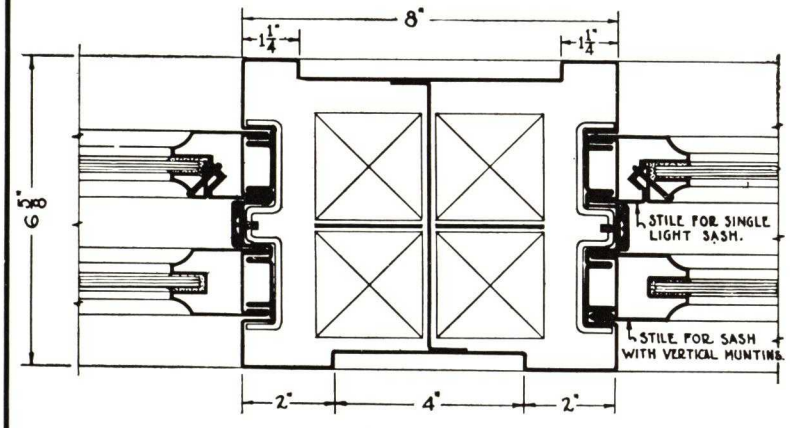
MEMBER	MODEL 18-V	MODEL 20-V
Sill	14 Ga	14 Ga
Jamb	20 Ga	24 Ga
Pulley Stile	18 Ga	20 Ga
Head	18 Ga	24 Ga
Sash Rail	20 Ga	24 Ga
Muntin Bar	20 Ga	24 Ga
Sash Stile	18 Ga	24 Ga
Muntin Cap	18 Ga	24 Ga

VOIGTMANN TYPE DOUBLE HUNG WINDOWS

STANDARD DETAILS — (SCALE OF DETAILS — 3" = 1'-0")

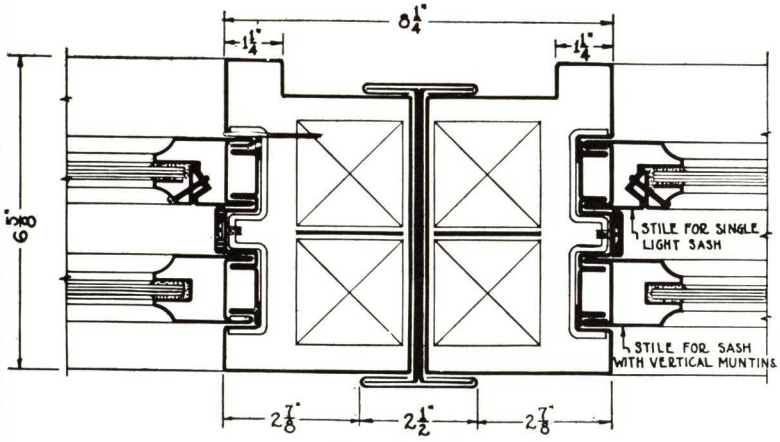


JAMB DETAIL MUNTIN TYPES



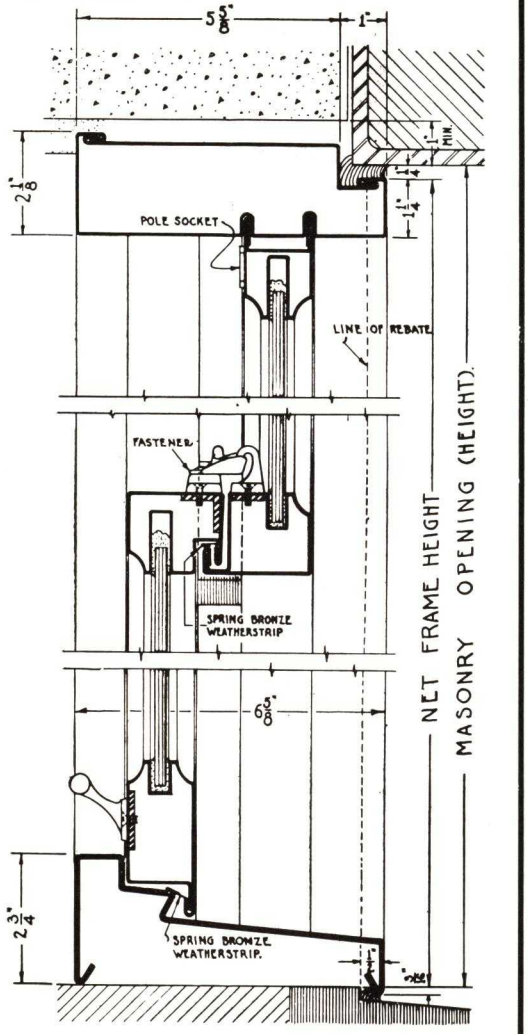
TYPE-B-MULLION

FOR MASONRY OPENINGS NOT GREATER THAN 6'-0" IN WIDTH BY 10'-0" IN HGHT OR 10'-0" IN WIDTH BY 6'-0" IN HGHT.

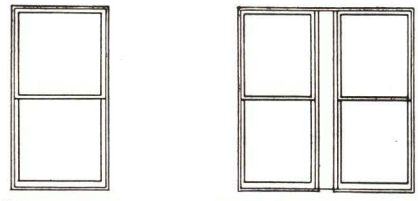


TYPE-A MULLION

FOR MASONRY OPENINGS GREATER THAN 6'-0" X 10'-0".



VERTICAL SECTION



TYPICAL ELEVATIONS.

VIEWED FROM EXTERIOR.

HARDWARE

STANDARD HARDWARE CONSISTS OF FASTENER AND 2 BAR TYPE LIFTS AS SHOWN OF MALLEABLE IRON WITH BRONZE PLATED FINISH. ONE POLE SOCKET WITH PAINTED FINISH IS SUPPLIED FOR UPPER SASH.

NOTE: SOLID BRONZE HARDWARE AVAILABLE AT EXTRA COST.

CAMPBELL RESIDENCE CASEMENTS

TYPICAL INSTALLATIONS

IN SINGLE HOMES (Mott Brothers Development—Garden City, L. I.)

IN APARTMENT HOUSES (New Hotel Geneve, Mexico City, Mexico)

IN ROW HOUSE DEVELOPMENTS

For buildings where the architecture indicates the use of casement windows, Campbell Residence Casements are designed to combine rugged construction with excellent appearance in an inexpensive window.

Campbell Residence Casement members have been especially designed to give extra strength at no sacrifice of desirable narrow lines. A continuous 2-point contact of 1/4" is maintained around the perimeter of all ventilators. Flush muntin joints contribute to a neat appearance.

The design of the hardware makes it attractive in appearance and thoroughly serviceable.

The screens require no holes in the cloth for handles and each ventilator has its own individual screen.

The wide acceptance of Campbell Residence Casements by architects and builders testifies to their fundamentally correct design, careful, accurate workmanship and exceptional value.

CONDENSED SPECIFICATIONS

Specify

Residence Casement Windows as manufactured by Campbell Metal Window Corporation, Baltimore, Maryland.

Material

Members shall be solid section, hot rolled, new billet steel shapes, not less than 1/8" in scheduled thickness. They shall be especially designed with wide baffle legs and heavy fillets. Drip members shall be formed of No. 20 gauge steel, electro-galvanized. Frame members shall be symmetrical Zee members not less than 1" deep. Stiles shall be especially designed members for use adjacent to vents. Vent members shall be unsymmetrical Zee members not less than 1" deep. Muntins shall be especially designed Tee members not less than 3/4" deep nor more than 5/8" across the face. Mullions and Transom Bars between adjacent units set in same opening shall be hot rolled.

Construction

The corners of Frames and Vents shall be accurately mitred or coped and welded, with the exposed surfaces ground smooth. The Meeting Rails or Stiles shall be tenoned, mortised and riveted to frame members. Frame and Vent Assemblies shall be true and square. Continuous two point, flat contact Weathering not less than 1/4" wide shall be provided between vents and frames.

Muntins shall be continuous between frame members and between vent members. Muntin intersections shall be mechanically interlocked and provide a flush surface. Muntins shall be tenoned, mortised and riveted to frames or vents. Horizontal and vertical muntins shall be the same depth.

The windows shall be designed for Glazing from the exterior with spring wire glazing clips (not less than two clips per light) and putty.

Fins

Fins of No. 16 Gauge steel shall be applied to the head and jambs of all windows not set in wood, stone or metal subframes.

Hardware and Insect Screens

All Hardware shall be supplied in the manufacturer's standard pattern of solid non-ferrous material coated with a metallic lacquer finish of statuary bronze.

Insect Screens shall be supplied by the window manufacturer in one of the two types specified below as indicated in drawings.

1. Fixed Screens shall be firmly attached in accordance with manufacturers standard so as to permit easy removal. Vents of window so screened shall be hung on non-friction extension hinges with bronze bushed pins. They shall be operated by a worm and gear underscreen operator that will permit opening and closing of vents without removing the screen. Fasteners shall be of the through-section type requiring no holes or grommets in screens.

2. Hinged Screens shall be hinged to swing in and secured by a keeper on side opposite hinges.

Vents of windows so screened shall be hung on friction type extension hinges with bronze bushed pins. One bronze vent fastener with combination strike and screen keeper shall be provided for each vent. Projection of fastener shall not be more than 3/4" to permit screen to close when vent is closed and locked. All screen frames shall be formed of cold rolled steel not less than .037" thick. Screen cloth shall be of .0113" diameter, antique bronze wire woven to 16 mesh and shall be secured to frames by 1/4" diameter removable splines.

Painting

All windows and screen frames shall be given one prime coat of gray rust resisting paint at the factory.

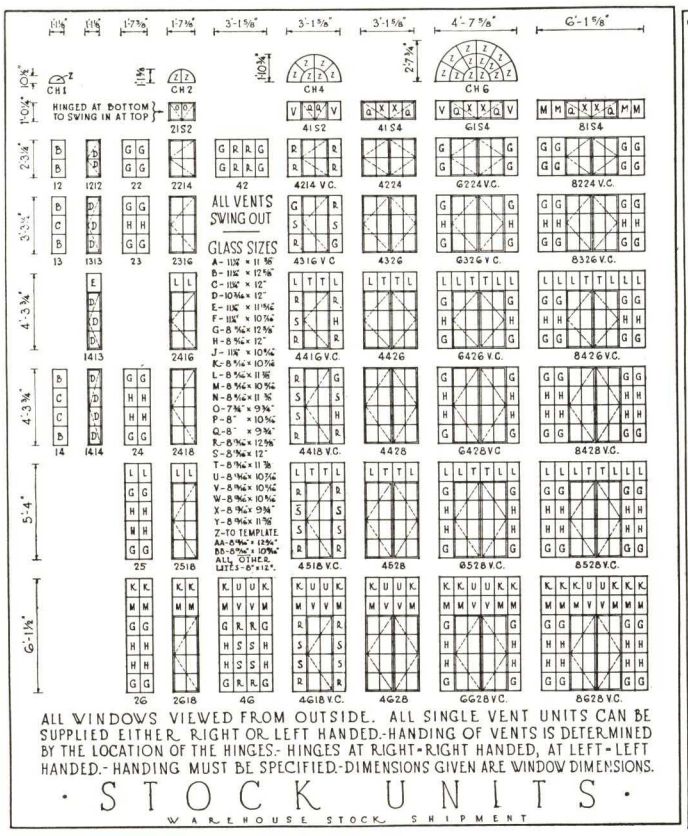
Mastic

The window manufacturer shall supply one pound of mastic for each 10 lineal feet of window unit perimeter.

CAMPBELL RESIDENCE CASEMENTS

TYPES AND SIZES

WAREHOUSE STOCK UNITS

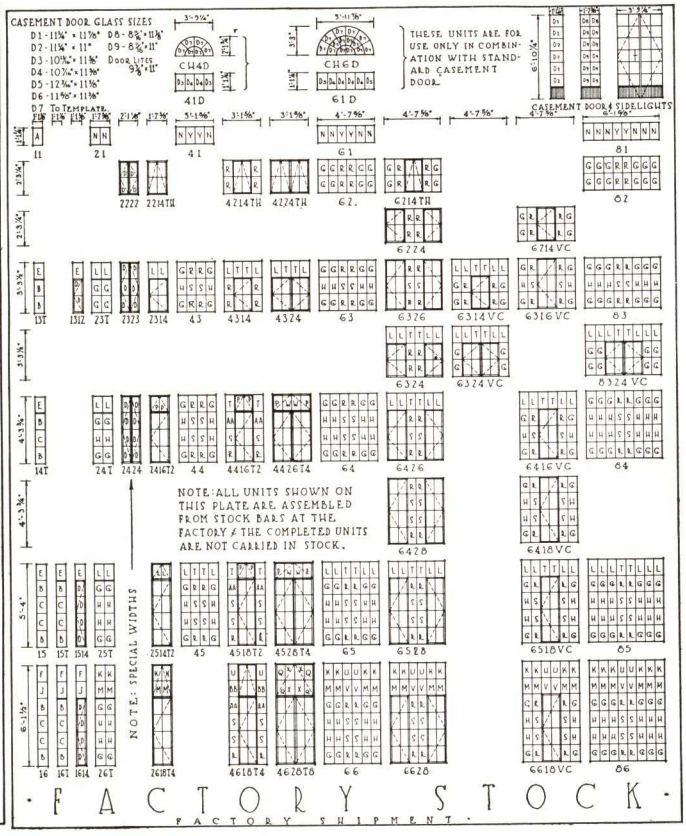


ALL WINDOWS VIEWED FROM OUTSIDE. ALL SINGLE VENT UNITS CAN BE SUPPLIED EITHER RIGHT OR LEFT HANDED.-HANDING OF VENTS IS DETERMINED BY THE LOCATION OF THE HINGES.- HINGES AT RIGHT-RIGHT HANDED, AT LEFT-LEFT HANDED.- HANDING MUST BE SPECIFIED.-DIMENSIONS GIVEN ARE WINDOW DIMENSIONS.

· STOCK UNITS ·

WAREHOUSE STOCK SHIPMENT

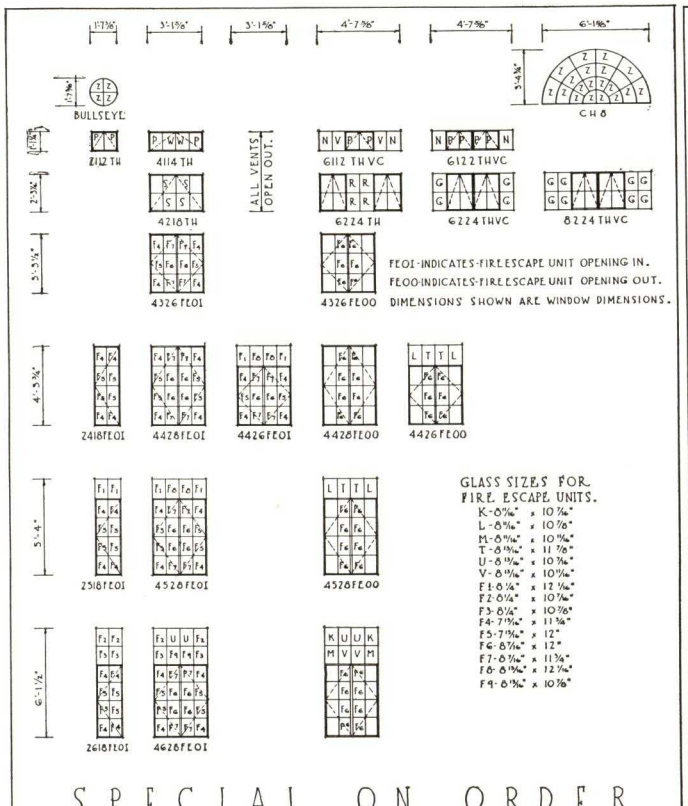
UNITS FOR FACTORY SHIPMENT



· FACTORY STOCK ·

FACTORY SHIPMENT

LISTED SPECIAL UNITS

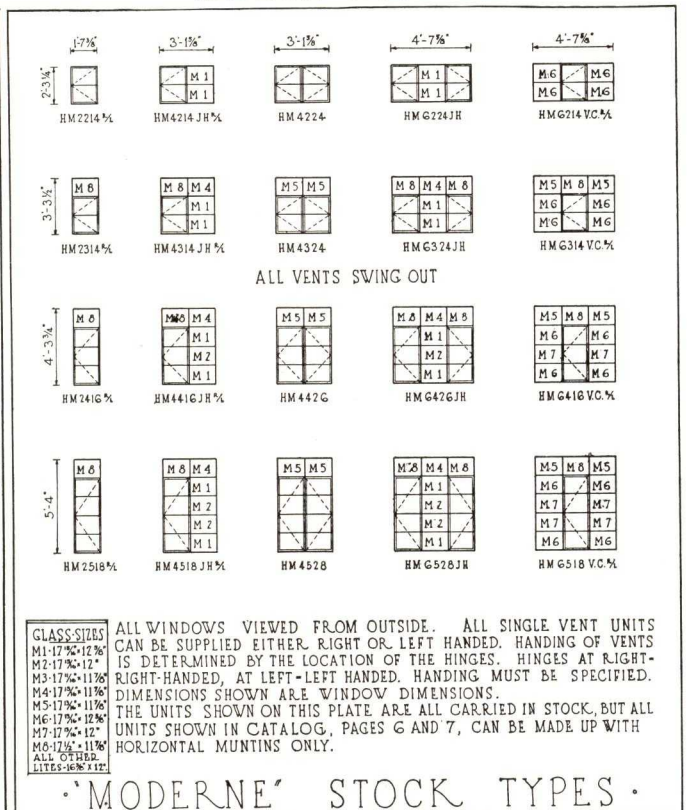


FEOI-INDICATES-FIRE ESCAPE UNIT OPENING IN.
FEOO-INDICATES-FIRE ESCAPE UNIT OPENING OUT.
DIMENSIONS SHOWN ARE WINDOW DIMENSIONS.

GLASS SIZES FOR FIRE ESCAPE UNITS.
K-6⅞" x 10⅞"
L-8⅝" x 10⅞"
M-8⅜" x 10⅝"
T-8⅜" x 11⅜"
U-8⅜" x 10⅜"
V-8⅜" x 10⅛"
F1-8¼" x 12¼"
F2-8¼" x 10¾"
F3-8¼" x 10⅞"
F4-7⅛" x 11¾"
F5-7⅛" x 12"
F6-8⅜" x 12"
F7-8⅜" x 11⅜"
F8-8⅜" x 12¼"
F9-8⅜" x 10⅞"

SPECIAL ON ORDER

"MODERNE" STOCK UNITS



GLASS SIZES
M1-17⅝"-12⅜"
M2-17⅝"-12"
M3-17⅝"-11⅜"
M4-17⅝"-11⅜"
M5-17⅝"-11⅜"
M6-17⅝"-12⅜"
M7-17⅝"-12"
M8-17¼"-11⅜"
ALL OTHER LITES-16⅜"×12"

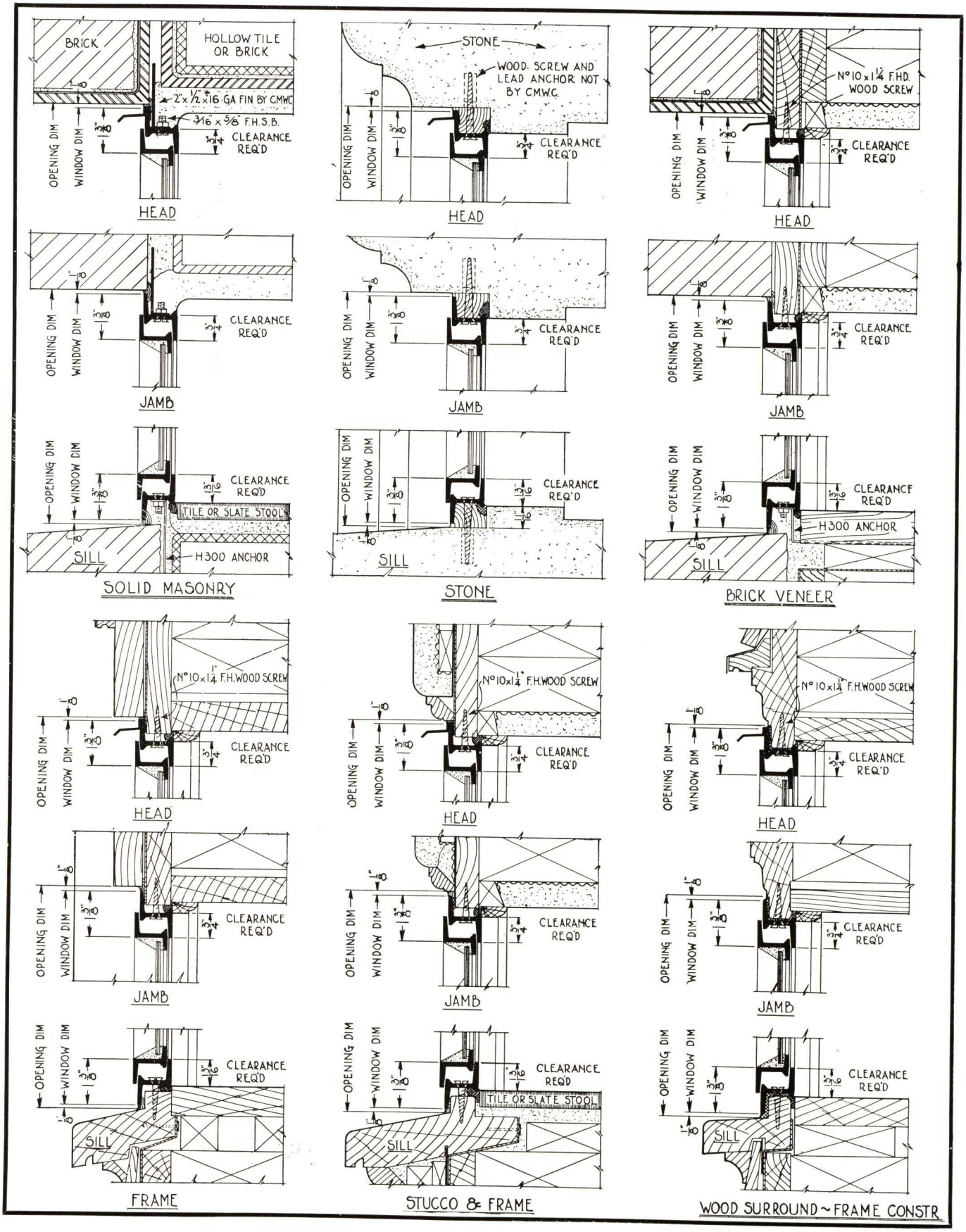
ALL WINDOWS VIEWED FROM OUTSIDE. ALL SINGLE VENT UNITS CAN BE SUPPLIED EITHER RIGHT OR LEFT HANDED. HANDING OF VENTS IS DETERMINED BY THE LOCATION OF THE HINGES. HINGES AT RIGHT-RIGHT-HANDED, AT LEFT-LEFT HANDED. HANDING MUST BE SPECIFIED. DIMENSIONS SHOWN ARE WINDOW DIMENSIONS.
THE UNITS SHOWN ON THIS PLATE ARE ALL CARRIED IN STOCK, BUT ALL UNITS SHOWN IN CATALOG, PAGES 6 AND 7, CAN BE MADE UP WITH HORIZONTAL MUNTINS ONLY.

· "MODERNE" STOCK TYPES ·

WAREHOUSE STOCK SHIPMENT

CAMPBELL RESIDENCE CASEMENTS

INSTALLATION DETAILS (Scale of Details 3" = 1'-0")

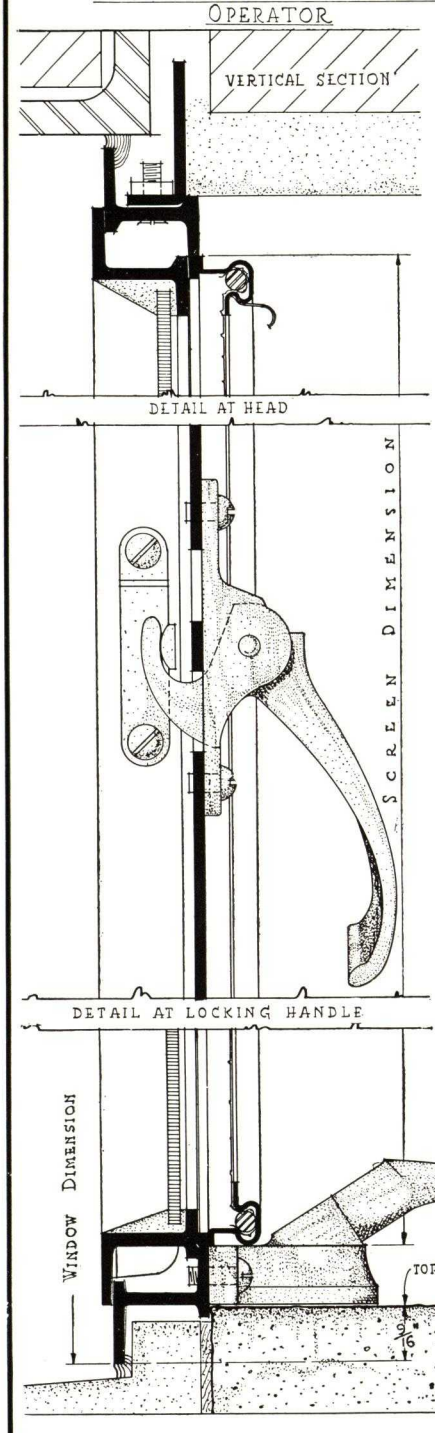


CAMPBELL RESIDENCE CASEMENTS

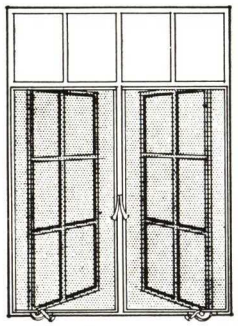
SCREEN DETAILS

SCALE OF DETAILS ½ FULL SIZE

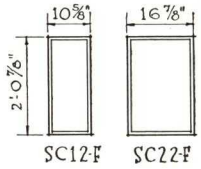
FIXED SCREENS WITH UNDERSCREEN OPERATOR

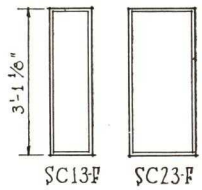


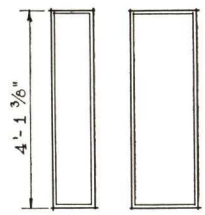
DETAIL AT SILL SHOWING OPERATOR



TYPICAL ELEVATION

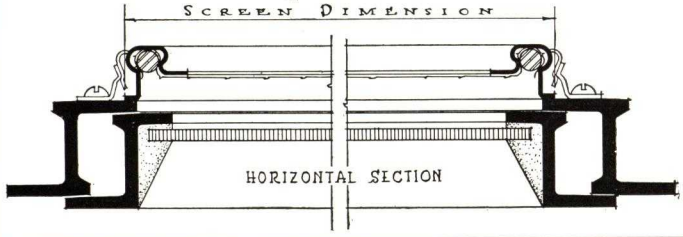




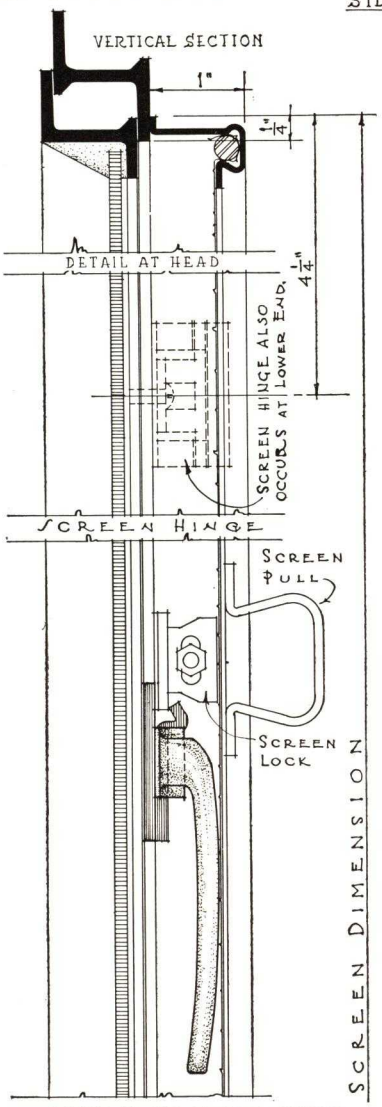


STANDARD TYPES AND SIZES OF FIXED SCREENS

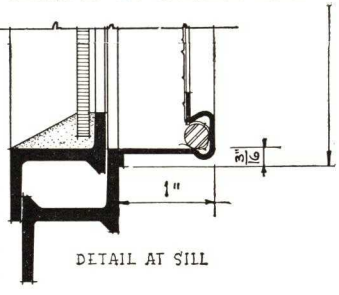
The standard type of fixed screen for use with underscreen operator covers the ventilator portion of the window only and is secured to the frame by means of spring clips . . Ventilators are opened and closed without removing screens. Screens are easily removed for winter storage. The locking handle operates through the frame member, requiring no hole to be cut through the screen to receive it. Screen frames are fitted with splines to facilitate replacement of wire.



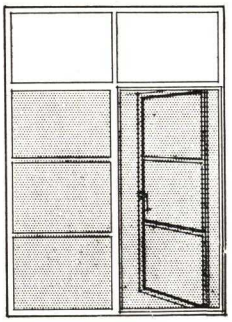
SIDE HINGED TYPE



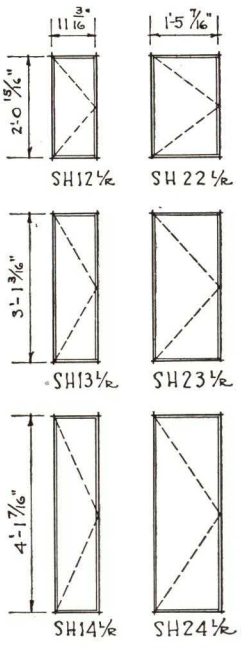
DETAIL AT CAM LOCKING HANDLE



DETAIL AT SILL



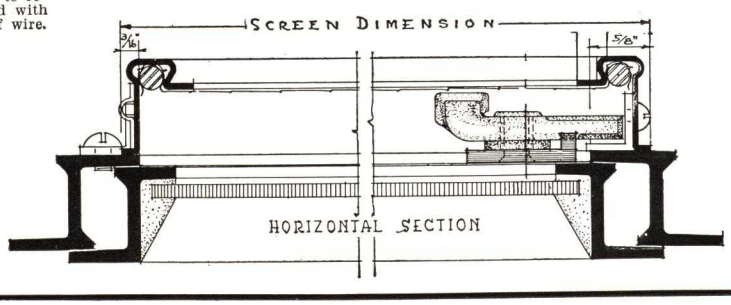
TYPICAL ELEVATION



STANDARD TYPES AND SIZES SIDE HINGED SCREENS

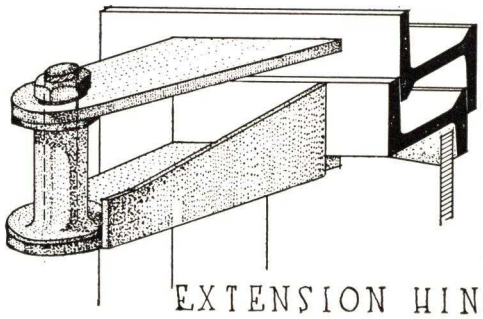
Side hinged screens project only 1" from the interior surface of the window. One screen is applied to each ventilator and is hinged at the same side as the vent. Designed to be used on windows having friction hinges and cam-locking handles, the screens are easily swung open to operate the ventilators. Heavy frames assure full contact all around the vent and the wire is held in the frame by splines which make wire replacement easy.

Handing of screens is same as handing of vents, that is.—left hand screens are used on left hand vents. Screens shown are supplied either in right or left hand types.



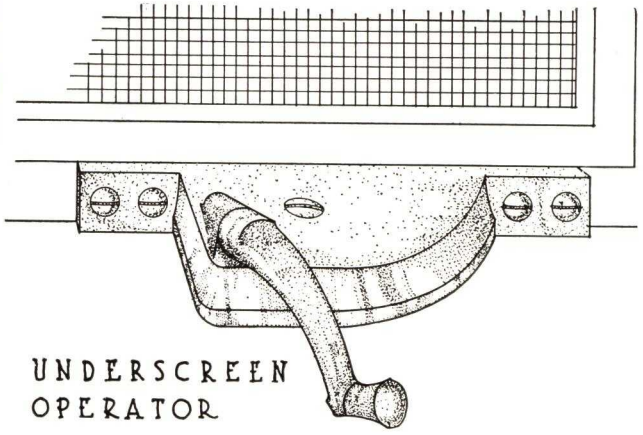
CAMPBELL RESIDENCE CASEMENT HARDWARE

·STANDARD HARDWARE·

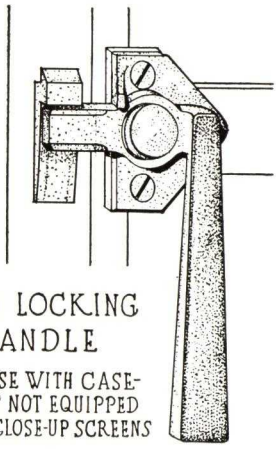


EXTENSION HINGE

PROVIDES PROPER CLEARANCE FOR THE EASY CLEANING OF WINDOWS FROM THE INSIDE.

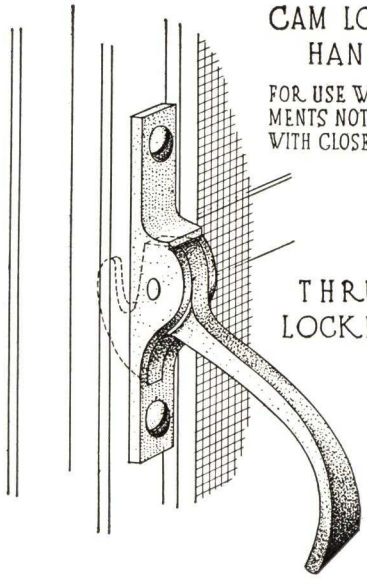


UNDERSCREEN OPERATOR



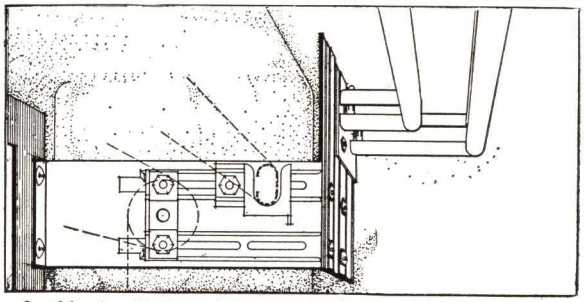
CAM LOCKING HANDLE

FOR USE WITH CASEMENTS NOT EQUIPPED WITH CLOSE-UP SCREENS

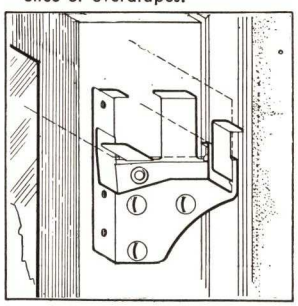


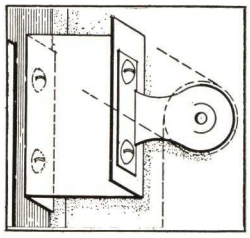
THRU SECTION LOCKING HANDLE

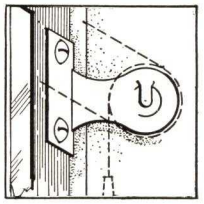
FOR USE WITH FIXED TYPE OF SCREEN



Combination Shade and Drapery Bracket. Provision is made in all windows for the application of a fixture for shades, curtains and valence or overdrapes.





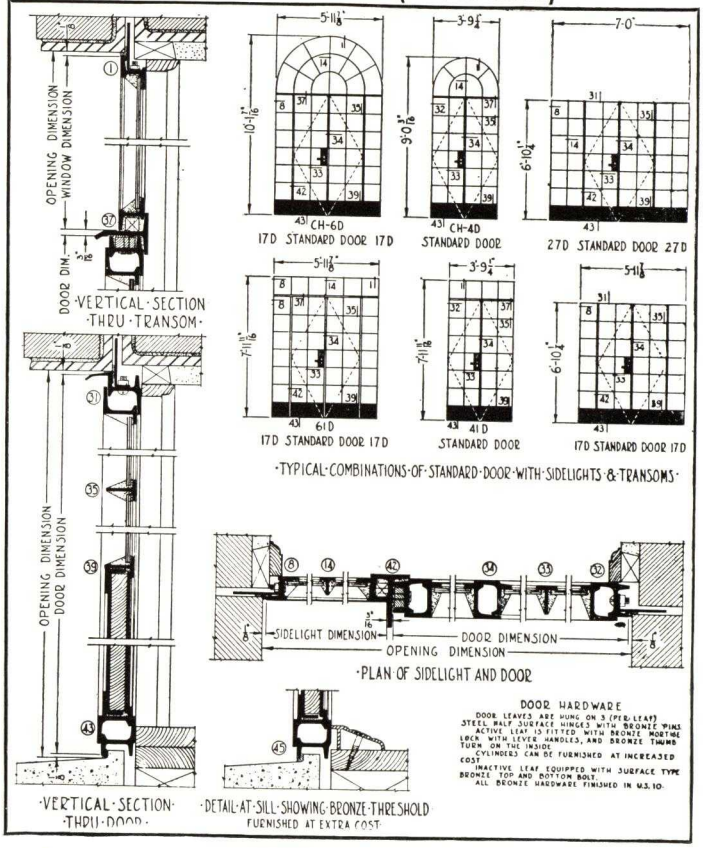


(Above) Venetian Blind Fixture. Provision can be made, in the field, for applying this fixture to the window frame. The fixture is made in a light and a heavy type.

(Upper right) Shade Bracket with Extention Clip. Provision for attaching this fixture, from which the shade hangs 1⅞" in from the window, is made at the factory.

(Lower right) Shade Bracket. Two holes are provided in the window frame, at the factory, for attaching this fixture.

CASEMENT DOORS (Not to Scale)

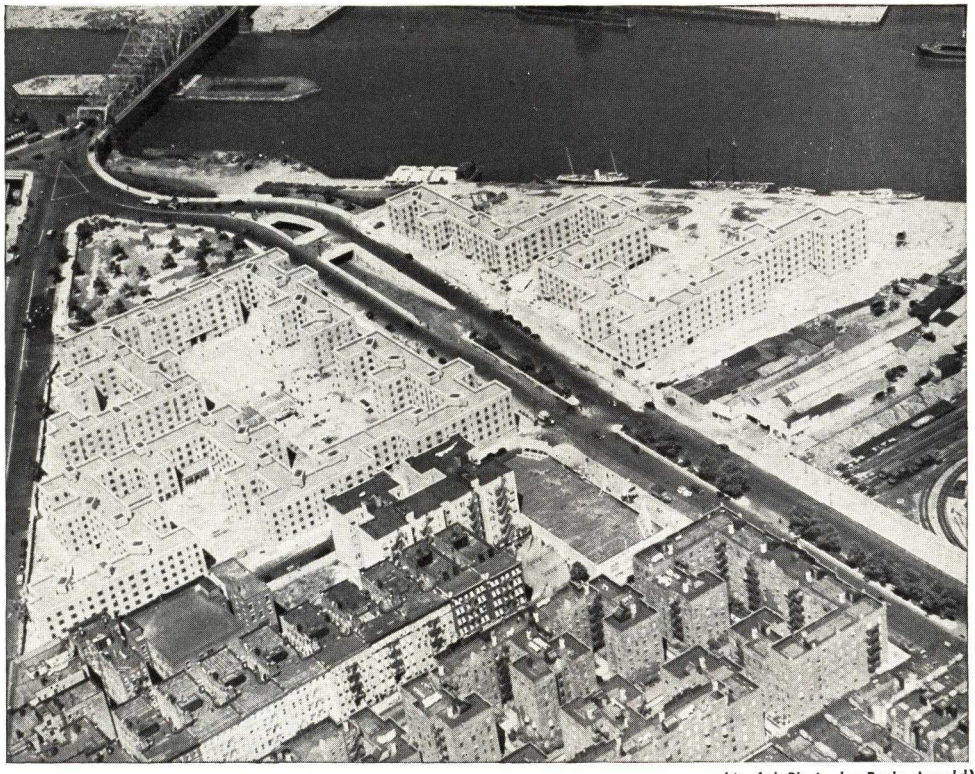


CAMPBELL RESIDENCE CASEMENTS

HOUSING TYPE

Campbell Housing Type Casements, combining the standard windows, hinged screens and steel interior casings, meet low cost housing project requirements as is evident from the fact that over 75,000 are in use. A few typical Housing Projects in which they have been used:

JANE ADDAMS HOUSING PROJECT, CHICAGO, ILL.
GREENBELT RESETTLEMENT PROJECT. BERWYN, MD.
HARLEM RIVER HOUSES, NEW YORK, N. Y.
LANGSTON TERRACE HOUSING PROJECT, WASHINGTON, D. C.
LA SALLE PLACE HOUSING PROJECT, LOUISVILLE, KY.
JULIA C. LATHROP HOMES, CHICAGO, ILL.
LAUDERDALE COURTS HOUSING PROJECT, MEMPHIS, TENN.
LOUISVILLE GREENTREE HOUSING DEVELOPMENTS, LOUISVILLE, KY.
LUCAS DRIVE HOUSING PROJECT, DALLAS, TEXAS
MEETING STREET MANOR & COOPER RIVER COURTS, CHARLESTON, S. C.
PARKSIDE HOUSING PROJECT, DETROIT, MICH.
SMITHFIELD COURT HOUSING PROJECT, MONTGOMERY, ALA.
UNIVERSITY HOUSING PROJECT, ATLANTA, GA.
BRAND WHITLOCK HOMES, DAYTON, OHIO

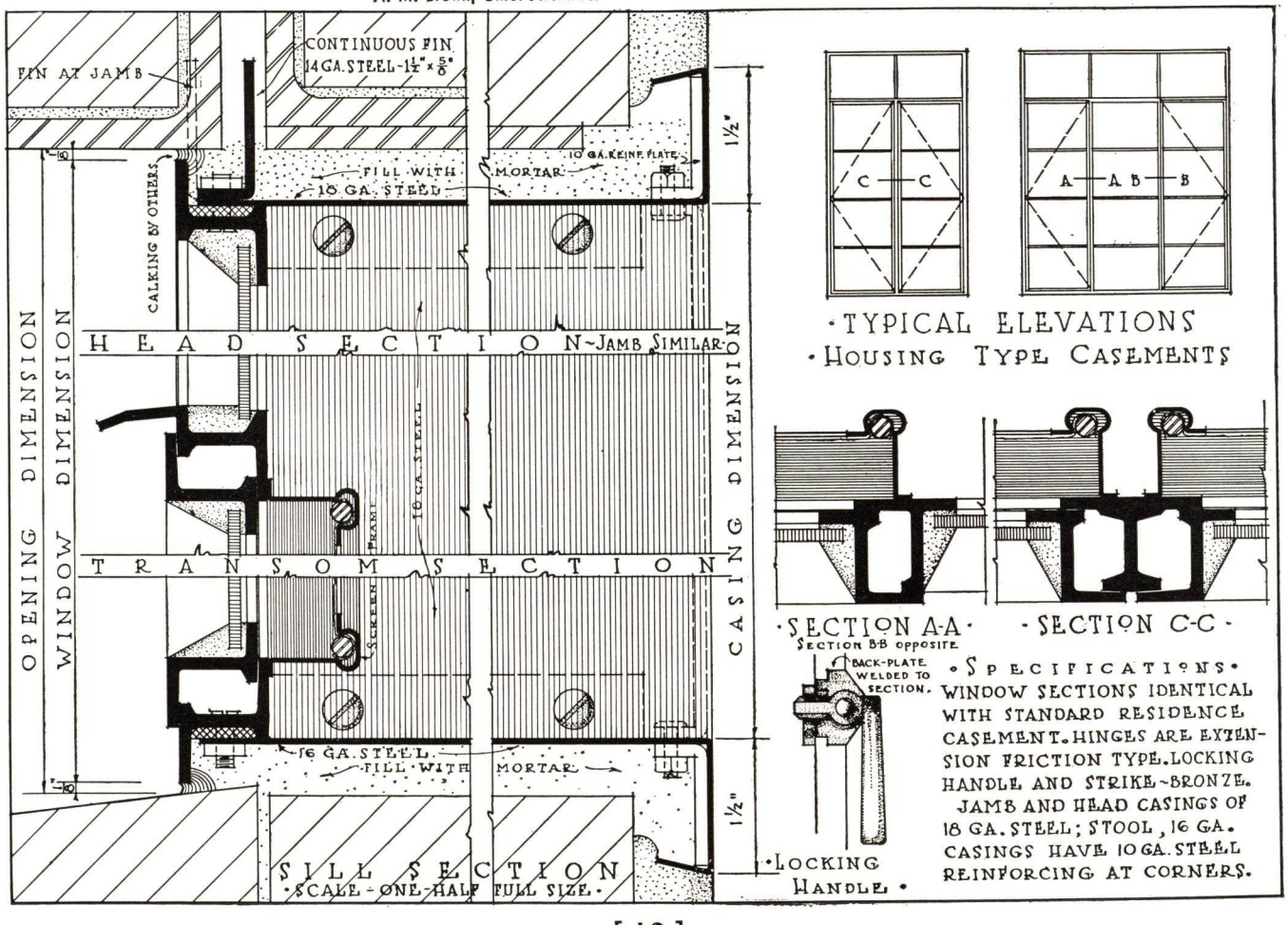


(Aerial Photo by Rudy Arnold)

HARLEM RIVER HOUSING PROJECT

Associated Architects, A. M. Brown, Chief Architect

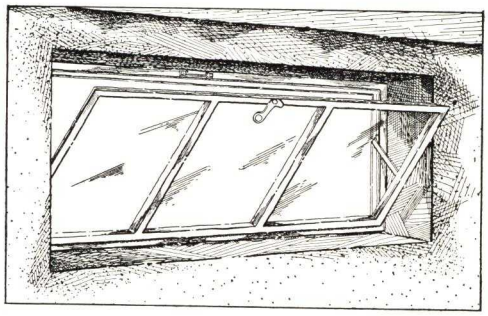
Cauldwell-Wingate Co. General Contractors



BASEMENT WINDOWS • UTILITY WINDOWS • WEATHER SASH

SCALE OF DETAILS — 3" = 1' - 0"

BASEMENT WINDOWS



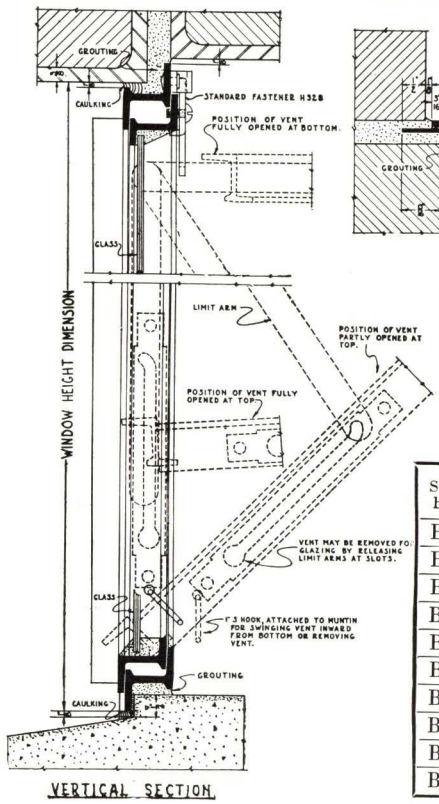
Two methods of ventilator operation are combined in the Campbell Basement Window.

The ventilator is hung on two arms and is secured at the top by a cam latch and keeper. It can be opened in at the top to approximately 45 degrees.

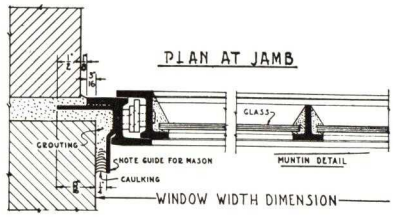
To open the ventilator from the bottom it is necessary only to raise the bottom of the vent over the sill and swing it inward until it rests on the limit arms. Then the ventilator can be raised and fastened in the open position by an S-hook which is attached to the muntin.

Two types in ten sizes are carried in stock, finished in one coat of gray paint.

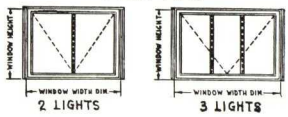
Screens are available for all types and are easily attached to the exterior of the windows.



VERTICAL SECTION



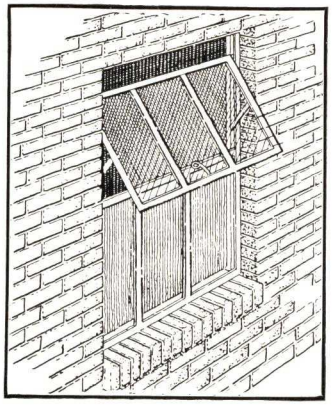
STOCK TYPES



STOCK SIZES

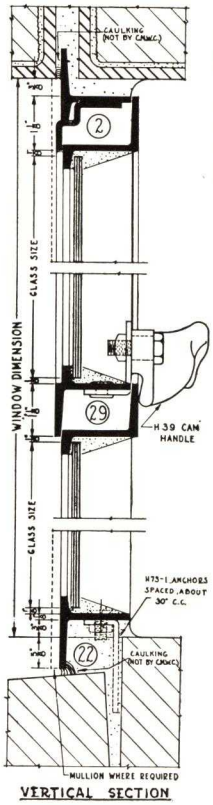
Symbol	Window Dimensions Width	Window Dimensions Height	Lites Wide	Glass Size
BA	1'-11"	1'-2½"	2	10"x12"
BB	1'-11"	1'-6½"	2	10"x16"
BC	2'-7"	1'-10½"	2	14"x20"
BD	2'-9⅜"	1'-2½"	3	10"x12"
BE	2'-9⅜"	1'-4½"	3	10"x14"
BF	2'-9⅜"	1'-6½"	3	10"x16"
BG	2'-9⅜"	1'-10½"	3	10"x20"
BH	3'-0⅜"	2'-2½"	3	11"x24"
BJ	3'-3⅜"	1'-8½"	3	12"x18"
BK	3'-3⅜"	1'-10½"	3	12"x20"

UTILITY WINDOWS

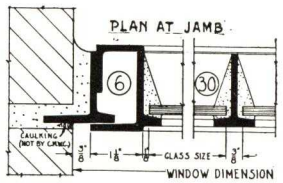


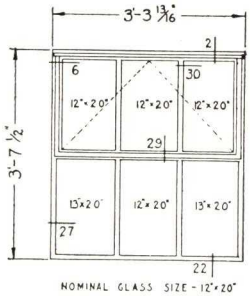
Campbell Utility Windows are adapted to the requirements of garages, basements, area ways and for openings where interior space requirements require ventilation at the top of the window.

Two sizes are carried in stock, one for nominal 10" x 16" glass, the other for nominal 12" x 20" glass, with the ventilator projected down-and-out. Up-and-in ventilators will be furnished on order for either type.

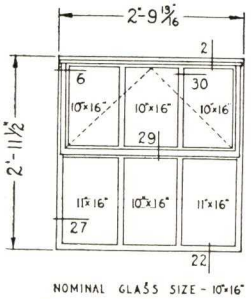


VERTICAL SECTION





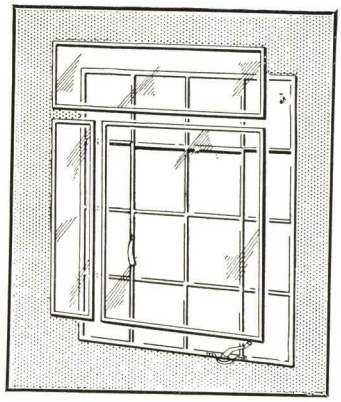
NOMINAL GLASS SIZE - 12"x20"



NOMINAL GLASS SIZE - 10"x16"

Dimensions Shown Are Window Dimensions

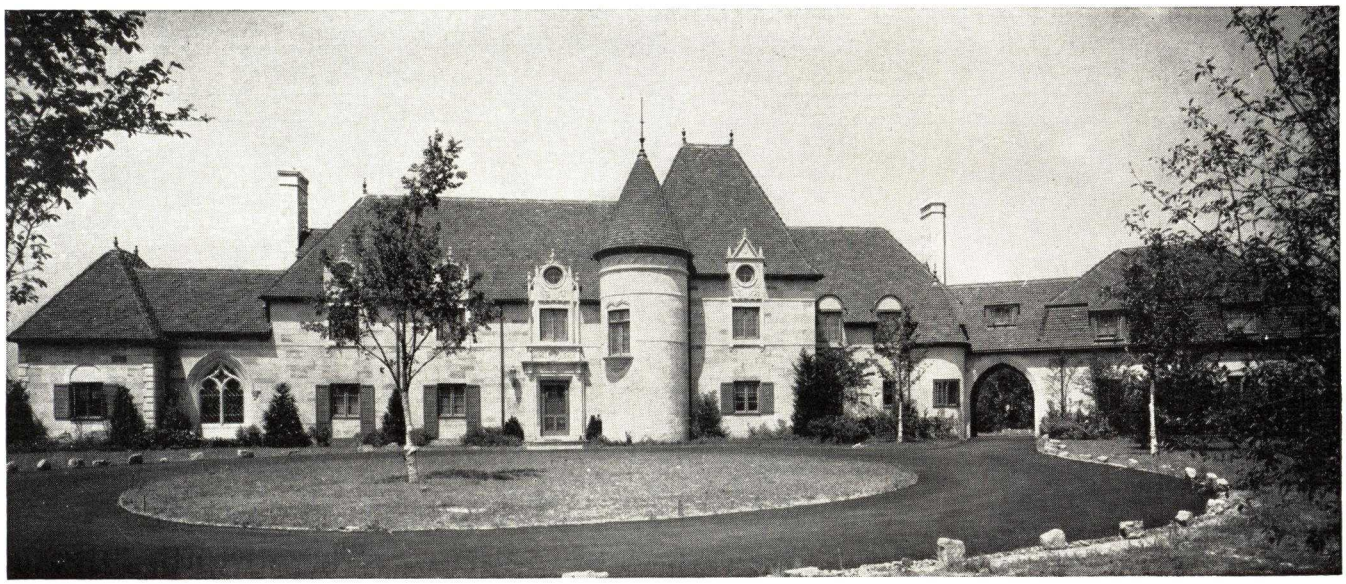
WEATHER SASH



To reduce heat losses through the glass in Campbell Residence Casements, Weather Sash may be applied. They are attached to the windows in a manner similar to that used for removable screens. This application provides an air space between the casement and the weather sash which effectively insulates against heat losses by radiation.

Weather sash are furnished in two types—fixed type or with a hopper ventilator at the sill. They are made to fit certain types of Campbell Residence Casements. Consult the nearest sales representative for details.

CAMPBELL CUSTOM CASEMENTS



Residence of Mr. & Mrs. Lawrence H. Kyte, Cincinnati, Ohio. John Henri Deeken, Architect

Campbell Custom Casements have been developed to meet the high standard of quality demanded in monumental buildings and fine homes in which the style of architecture leads to the selection of casement windows.

Sturdy sections, 1 7/16" deep, are the basis of the strength of these windows. Full 3/8" double weathering contact around all ventilators assures a weather-tight installation. The especially designed muntin members carry out the attractive flat exterior surface of Campbell Custom Casements.

Hardware has been designed to combine rugged strength with good appearance and is sufficiently varied to harmonize with interior treatment.

Three types of ventilator operation are available. The conventional, side-hinged type, with or without sidelights or transoms, answers most requirements for residential work. Projected ventilators, which may be opened in inclement weather and also offer draftless air control by means of hopper vents at the sill, are used in windows particularly adaptable to monumental and public buildings. Casement Combination, in which both side-hinged and projected ventilators (the latter usually at the sill) are used, are suitable for office buildings, hotels and schools.

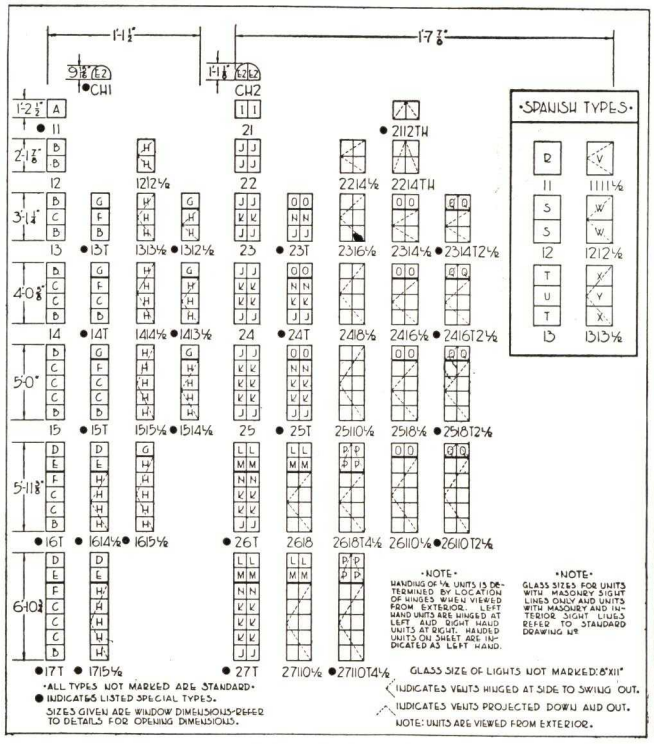
Entrance to Women's Dormitories, University of Colorado, Boulder, Colo.
Chas. Z. Klauder, Architect. Wm. De Mourdant, Asst. Architect

Campbell Custom Casements are built-to-order to meet the requirements of individual building design. Suggested sizes, shown on the following pages, offer a wide selection of windows which have been used most frequently. Within the size limits shown, these windows offer virtually unlimited variations which simplify the task of architects and builders.

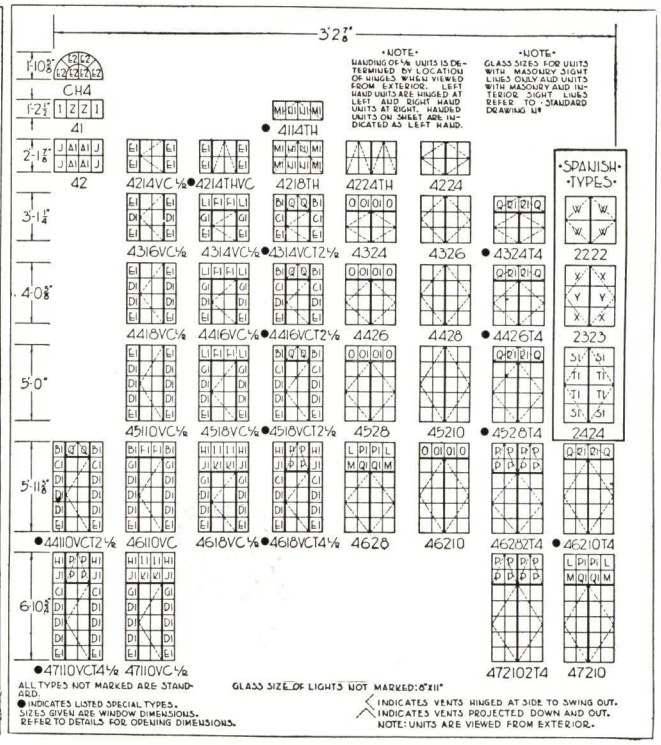
CAMPBELL CUSTOM CASEMENTS

TYPES AND SIZES . . . SIDE HINGED CASEMENTS . . . GLASS SIZES

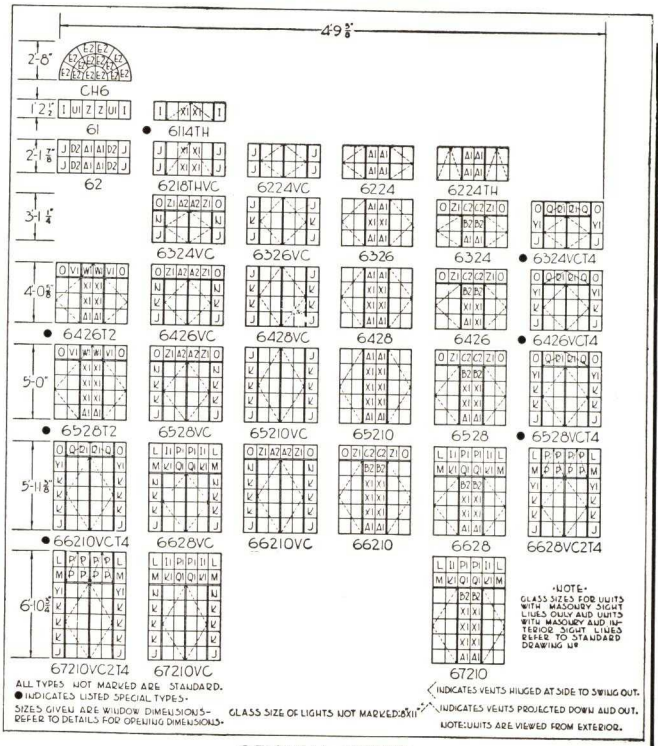
1 & 2 LIGHTS WIDE



4 LIGHTS WIDE



6 LIGHTS WIDE



GENERAL NOTES

All Units are viewed from exterior
VC indicates ventilators at center of window
TH indicates top hinged ventilator
T indicates fixed transom. T2, T4, indicate operative transoms.

All sizes given are window dimensions. Opening dimensions are ¼" greater in width and depth. Refer to details.

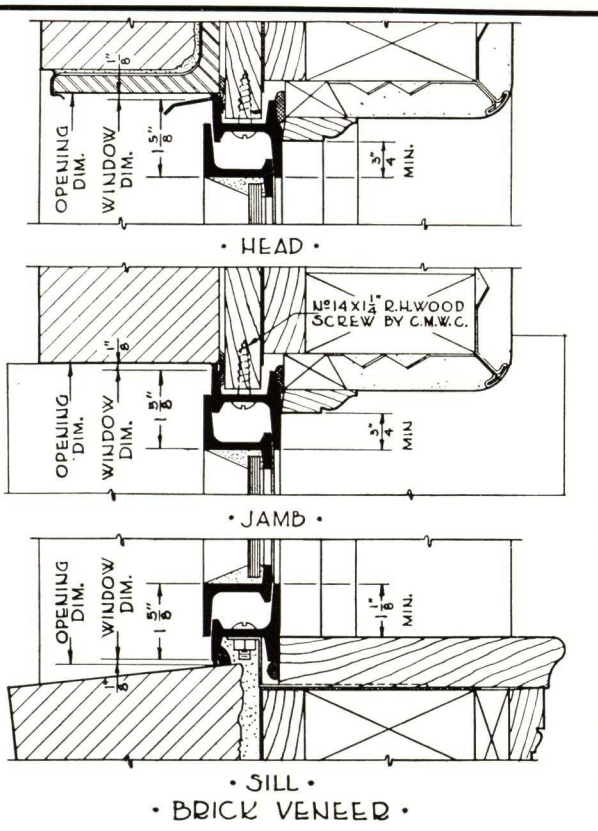
GLASS SIZE DATA

Standard Glass Sizes Are For Windows Without Sight Lines.

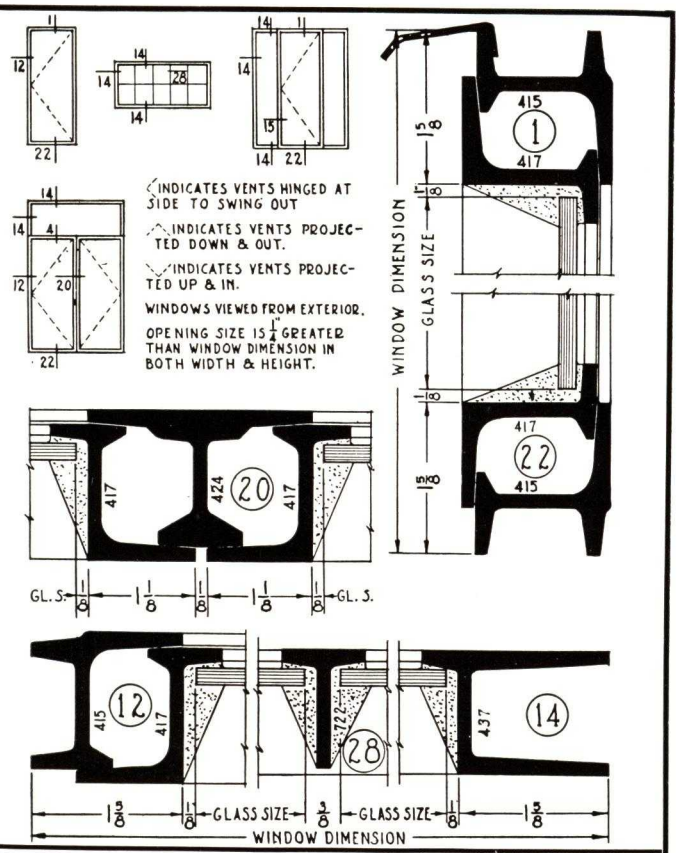
	Standard Glass Sizes	Masonry Sight Lines	Masonry & Interior Sight Lines
A	11⅝ X 12¾	10 X 11	10 X 11
B	11⅝ X 11⅞	10 X 11	10 X 11
C	11⅝ X 11	10 X 11	10 X 11
D	11⅝ X 10¾	10 X 9⅞	10 X 9⅞
E	11⅝ X 11⅜	10 X 11⅛	10 X 11⅛
F	11⅝ X 11⅞	10 X 11⅞	10 X 11
G	11⅝ X 10⅞	10 X 10	10 X 10
H	10 X 11	10 X 11	10 X 11
I	9 X 12¾	8 X 11	8 X 11
J	9 X 11⅞	8 X 11	8 X 11
K	9 X 11	8 X 11	8 X 11
L	9 X 10¾	8 X 9⅞	8 X 9⅞
M	9 X 11⅜	8 X 11⅛	8 X 11⅛
N	9 X 11⅞	8 X 11⅞	8 X 11
O	9 X 10⅞	8 X 10	8 X 10
P	8 X 9⅞	8 X 9⅞	8 X 9⅞
Q	8 X 8¾	8 X 8¾	8 X 8¾
R	18⅜ X 24⅛	16⅜ X 22⅜	16⅜ X 22⅜
S	18⅜ X 17⅜	16⅜ X 16¹¹⁄₁₆	16⅜ X 16¹¹⁄₁₆
T	18⅜ X 15¹¹⁄₁₆	16⅜ X 14¹³⁄₁₆	16⅜ X 14¹³⁄₁₆
U	18⅜ X 14¾	16⅜ X 14¾	16⅜ X 14¾
V	16⅜ X 22⅜	16⅜ X 22⅜	16⅜ X 22⅜
W	16⅜ X 16¹¹⁄₁₆	16⅜ X 16¹¹⁄₁₆	16⅜ X 16¹¹⁄₁₆
X	16⅜ X 14¹³⁄₁₆	16⅜ X 14¹³⁄₁₆	16⅜ X 14¹³⁄₁₆
Y	16⅜ X 14¾	16⅜ X 14¾	16⅜ X 14¾
Z	9⅛ X 12¾	9⅛ X 11	9⅛ X 11
A1	9⅛ X 11⅞	9⅛ X 11	9⅛ X 11
B1	9⅛ X 10⅞	8⅛ X 10	8⅛ X 10
C1	9⅛ X 12	8⅛ X 12	8⅛ X 11
D1	9⅛ X 11	8⅛ X 11	8⅛ X 11
E1	9⅛ X 11⅞	8⅛ X 11	8⅛ X 11
F1	9 X 10⅞	9 X 10	8 X 10
G1	9⅛ X 11⅞	8⅛ X 11⅞	8⅛ X 11
H1	9⅛ X 10¾	8⅛ X 9⅞	8⅛ X 9⅞
I1	9 X 10¾	9 X 9⅞	8 X 9⅞
J1	9⅛ X 11⅜	8⅛ X 11⅛	8⅛ X 11⅛
K1	9 X 11⅜	9 X 11⅛	8 X 11⅛
L1	9⅛ X 10⅞	8⅛ X 10	8⅛ X 10
M1	8⅛ X 11	8⅛ X 11	8⅛ X 11
N1	9 X 11	9 X 11	9 X 11
O1	9⅛ X 10⅞	9⅛ X 10	8 X 10
P1	9⅛ X 10¾	9⅛ X 9⅞	8 X 9⅞
Q1	9⅛ X 11⅜	9⅛ X 11⅛	8 X 11⅛
R1	9⅛ X 8¾	9⅛ X 8¾	8 X 8¾
S1	16⅜ X 13⅞	16⅜ X 13⅞	16⅜ X 13⅞
T1	16⅜ X 13¹³⁄₁₆	16⅜ X 13¹³⁄₁₆	16⅜ X 13¹³⁄₁₆
U1	9 X 12¾	9 X 11	9 X 11
V1	8 X 10⅞	8 X 10	8 X 10
W1	9⅛ X 10	9⅛ X 10	9⅛ X 10
X1	9⅛ X 11	9⅛ X 11	9⅛ X 11
Y1	9 X 12	8 X 12	8 X 11
Z1	9 X 10⅞	9 X 10	8 X 10
A2	9⅛ X 10⅞	9⅛ X 10	8 X 10
B2	9⅛ X 11⅞	9⅛ X 11⅞	9⅛ X 11
C2	9⅛ X 10⅞	9⅛ X 10	9⅛ X 10
D2	9 X 11⅞	9 X 11	9 X 11
E2	To Template	To Template	To Template

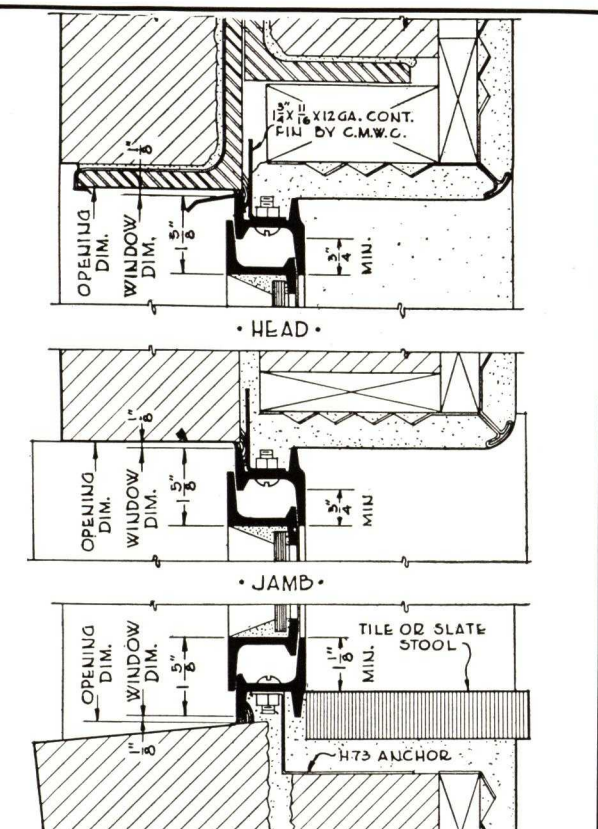
CAMPBELL CUSTOM CASEMENTS

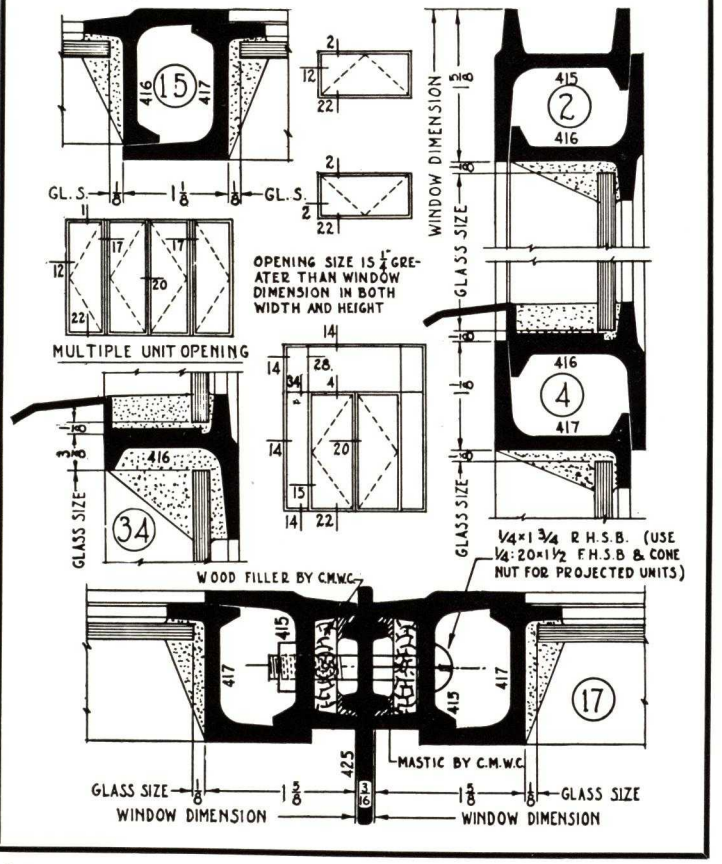
INSTALLATION DETAILS
(Scale — 3" = 1'-0")



DETAILS SIDE HINGED TYPE
(Scale — 6" = 1'-0")

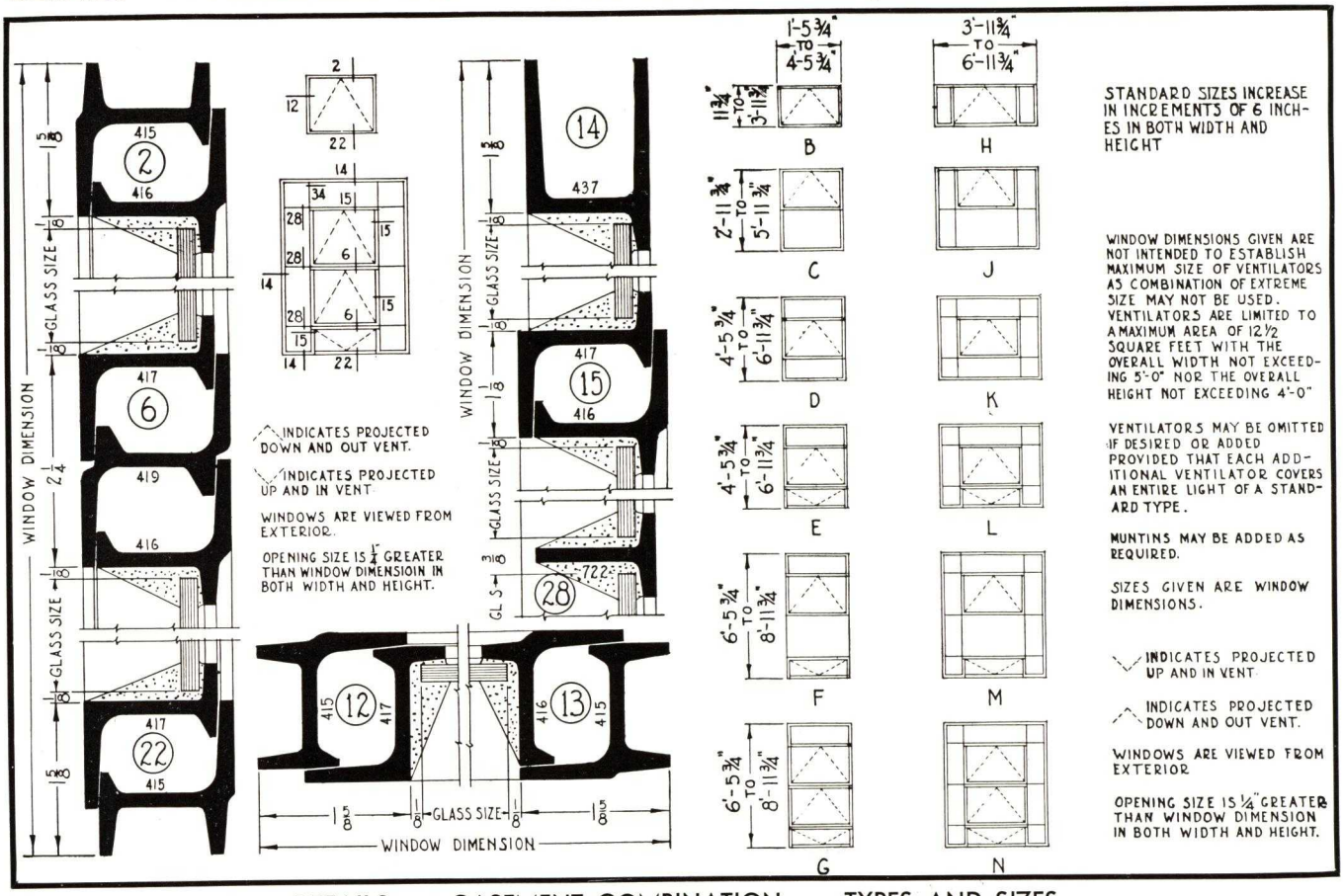




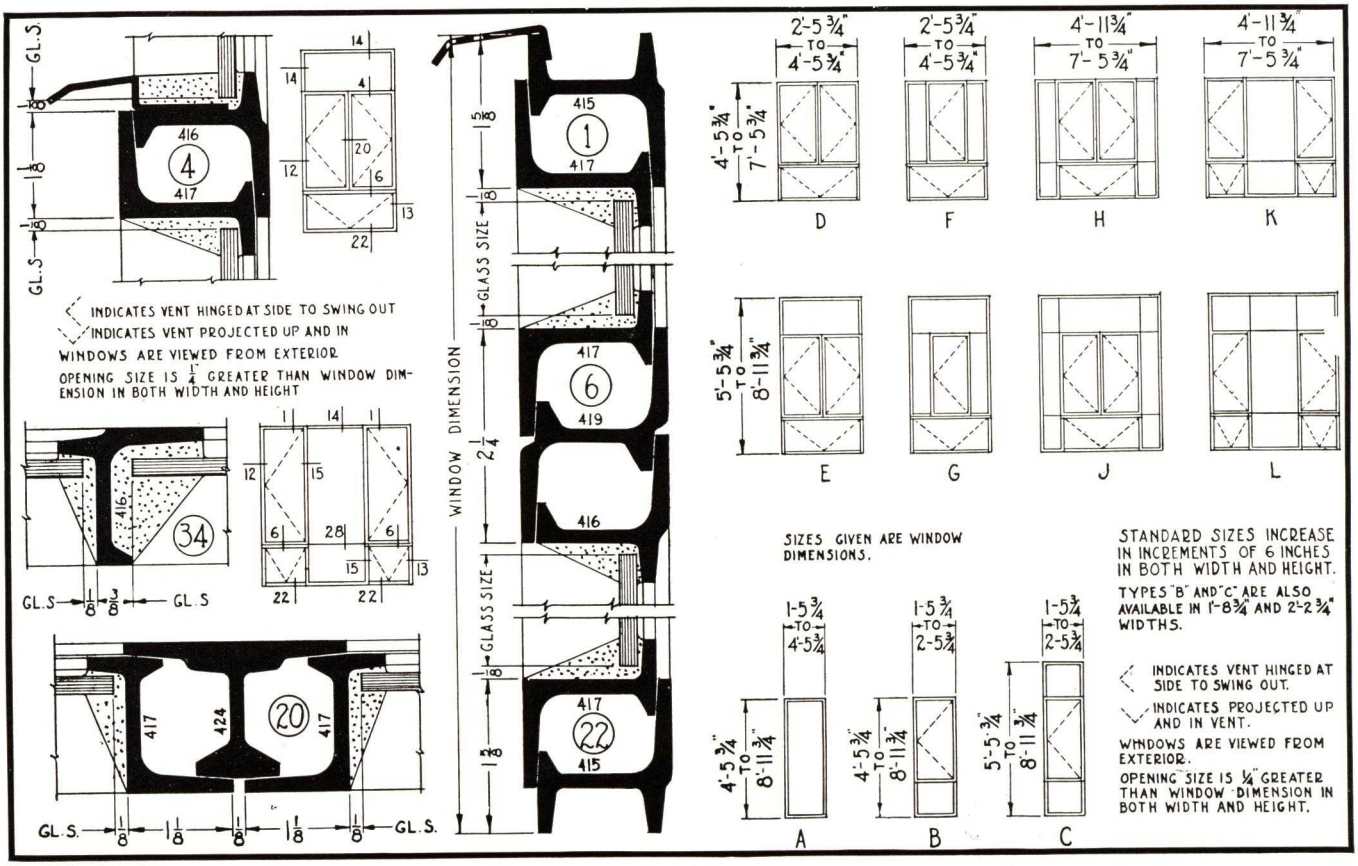


CAMPBELL CUSTOM CASEMENTS

DETAILS - - - PROJECTED TYPE - - - TYPES AND SIZES - - - (SCALE OF DETAILS 6" = 1' - 0")



DETAILS - - - CASEMENT COMBINATION - - - TYPES AND SIZES



CAMPBELL CUSTOM CASEMENTS

CONDENSED SPECIFICATIONS

Specify

Side Hinged (or Projected or Combination) type Casement Windows manufactured by Campbell Metal Window Corporation of Baltimore, Md.

Material

Members shall be solid section, one-piece, hot rolled, new billet steel shapes, not less than 1/8" in scheduled thickness. They shall be especially designed with wide baffle legs and heavy fillets.

Drip members shall be formed of 16 gauge steel, electro-galvanized.

Fixed Light Frame Members shall be equal leg channel members not less than 1-5/16" deep.

Frame Members where vents occur shall be equal leg channel members not less than 1-7/16" deep.

Vent Members shall be Zee or Tee members not less than 1-7/16" deep.

Combined Weight of frame and vent members, exclusive of glazing beads, shall be not less than 3.55 pounds per lineal foot.

Muntins shall be especially designed Tee members, not less than 1¼" deep nor more than ⅞" across the face.

Mullions and Transom Bars provided between adjacent units set in the same opening shall be hot rolled steel members.

Construction

The corners of Frames and Vents shall be accurately mitred or coped and welded, with exposed and contact surfaces ground smooth. The Meeting Rails and Stiles shall be tenoned, mortised and riveted to frame members. Frame and Vent Assemblies shall be true and square. Muntin intersections shall be coped flush and securely locked with a weld at the base of the stem.

Windows shall be designed for Glazing either (a) from the exterior with glass held in place by spring wire glazing clips, or (b) from the interior with glass held in place by continuous, hot rolled glazing beads neatly coped and fitted and attached with oval head bronze screws.

Fins

Fins of 12 gauge steel shall be applied to the head and jambs of all windows not set in wood, stone or metal subframes.

Hardware

Extension hinges shall be of steel with bronze bushed steel pins providing friction adjustment. Close up hinges shall be of steel, five knuckle, half surface, butt type.

Projected vents shall be hung on sliding pivots with heavy compression springs and bronze shoes and balanced by two heavy steel supporting arms securely attached to frame and vent members with bronze pins.

Fasteners shall be of solid bronze.

Underscreen Operators shall be of the gear type that will permit opening and closing of vents without removing screens. Operator arm and gear shall be machined from one piece of steel. A shoe attached to end of arm shall operate in a guide securely attached to under side of vent. Driving worm shall be constantly in mesh with not less than three teeth in ring gear. Crank handle shall be solid bronze. Arm, shoe and guide shall be cadmium plated. Housing shall be die cast zinc alloy, granodized and finished in dark gray enamel.

Screens

Interior Flat Type Screens shall be 9/16" deep, attached to the window with steel clips.

Exterior Screens shall be ¾" deep hung on pivots at each end of top rail and held in place by two spring bolts near the bottom.

Sliding Panel Screens shall be 1" deep, attached to the window with steel clips and shall have a built-in, vertically sliding screen panel located in center to provide access to vent locking device.

Screen frames shall be .037" thick cold rolled steel. Screen cloth shall be of .0113" diameter antique finish, bronze wire woven to 16 mesh and held in place with removable splines.

Screens shall be readily removable from the inside of the building.

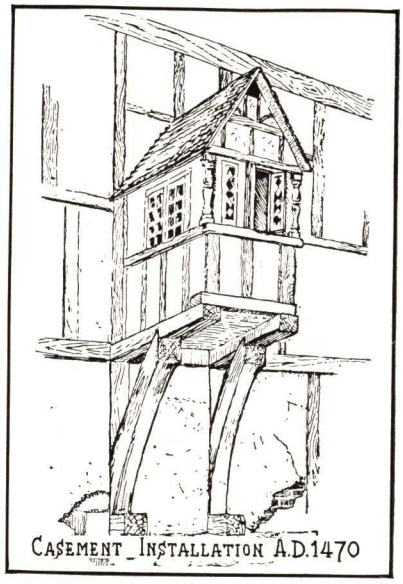
Screen frames shall be given one shop coat of dark gray enamel, baked on.

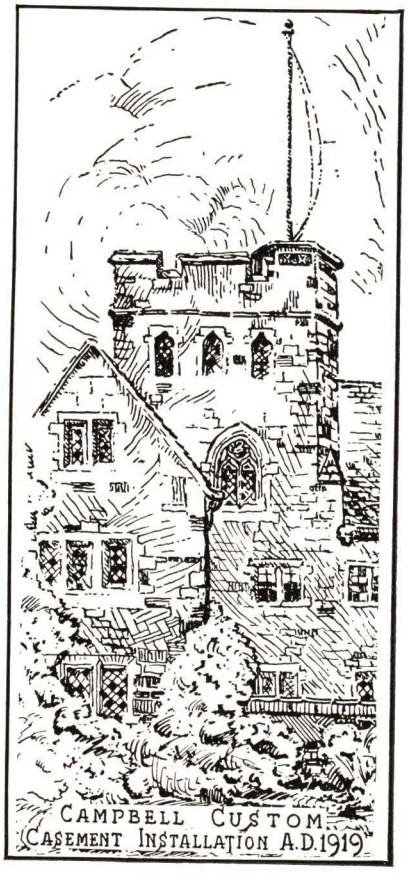
Finish

All windows shall be given one prime coat of gray rust resisting paint at the factory.

Mastic

The window manufacturer shall supply one pound of mastic for each six lineal feet of window unit perimeter.





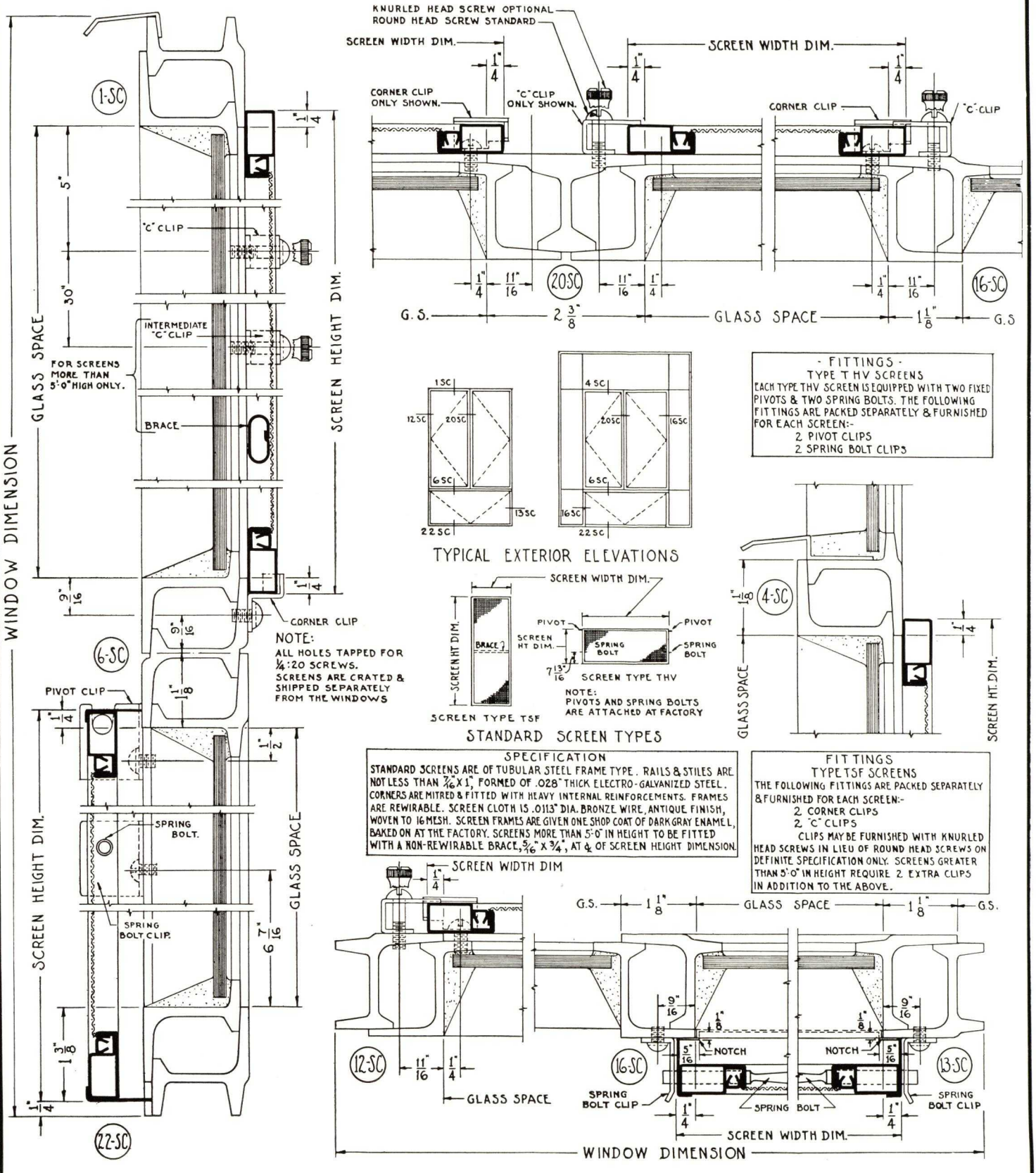
HARDWARE AND SCREEN TABLE

TYPE OF VENT	ROUGH HARDWARE	FINISHED HARDWARE	SCREENS
Side Hinged (Standard Type)	2 Extension, Friction Hinges per Vent	Bronze Fastener and Strike	None
Side Hinged (Folder Type No Fixed Meeting Rail)	2 Extension, Friction Hinges per Vent	Bronze Fastener for Active Leaf. Casement Shoot Bolts at top and Bottom of Inactive Leaf. (Cremorne Bolts and Finger pulls substituted at extra cost)	None
Side Hinged (With Underscreen Operator)	2 Extension Hinges per Vent. 3 per Vent over 5'0" high.	Underscreen Operator. Bronze through-section type vent Fastener and Keeper	1 interior Flat Type Screen per Vent
Top Hinged (Standard Type)	2 Steel, Five Knuckle, half surface, butt Hinges per Vent	Standard Peg Stay	None
Bottom Hinged	2 Steel, Five Knuckle, Half Surface, Butt Hinges per Vent	Bronze Fastener or Ring Catch and Friction Adjustor	1 Exterior Flat Type Screen per Vent
Projected Down and Out	2 Sliding Pivots with Compression Springs and Bronze Shoes. 2 Steel Arms attached with Bronze Pins	Bronze Fastener and Pole Ring Omit Pole Ring when screens are required)	1 sliding Panel Type or Box Type Screen per Vent
Projected Up and In	2 Sliding Pivots with Compression Springs and Bronze Shoes. 2 Steel Arms attached with Bronze Pins	Bronze Fastener or Ring Catch	1 Exterior Flat Type Screen per Vent
Horizontally Pivoted	2 Bronze, Friction Pivots	Bronze Fastener or Ring Catch	None
Vertically Pivoted	2 Bronze, Non-friction Pivots	Bronze Fastener Friction Adjustor	None

NOTE: Side hinged vents greater than 5'0" in height are equipped with 3 hinges per Vent and with duplex fasteners. Top or Bottom Hinged Vents greater than 4'0" in width are equipped with 3 hinges per Vent.

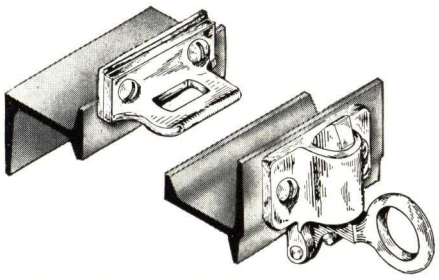
CAMPBELL CUSTOM CASEMENTS

SCREENS — (SCALE OF DETAILS — 6" = 1'-0")

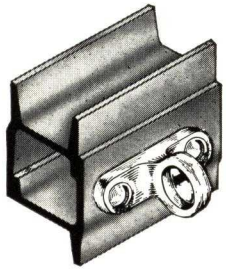


CAMPBELL CUSTOM CASEMENT HARDWARE

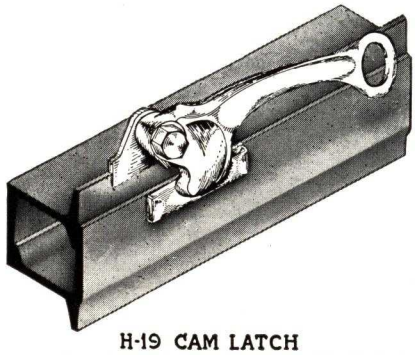
(SHOWN APPROXIMATELY ONE-THIRD FULL SIZE)



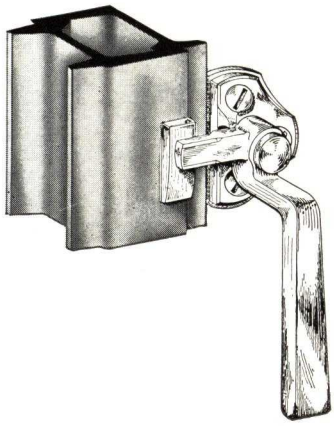
H-18 SPRING CATCH & KEEPER
FOR UP & IN VENTS OUT OF REACH



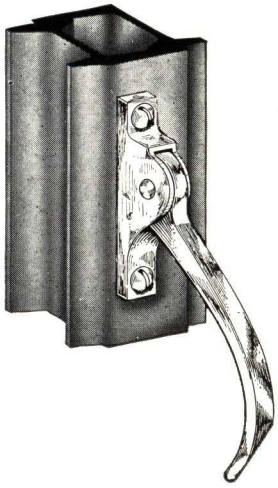
H-66 POLE RING
USED WITH H-19 CAM LATCH ON DOWN AND OUT VENTS



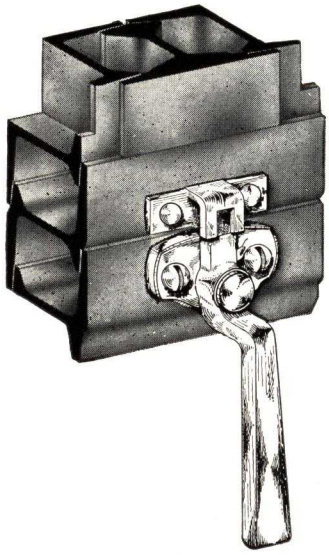
H-19 CAM LATCH
FOR PROJECTED DOWN-AND-OUT VENTS



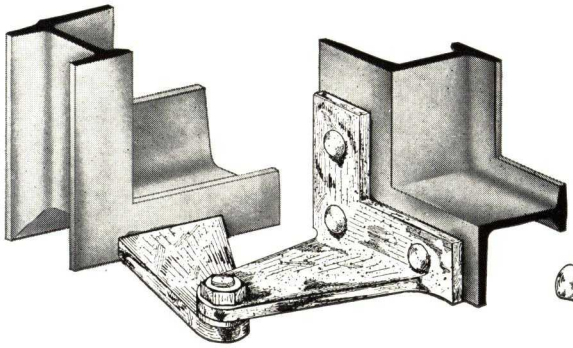
H-362 FASTENER
FOR NON-SCREENED VENTS



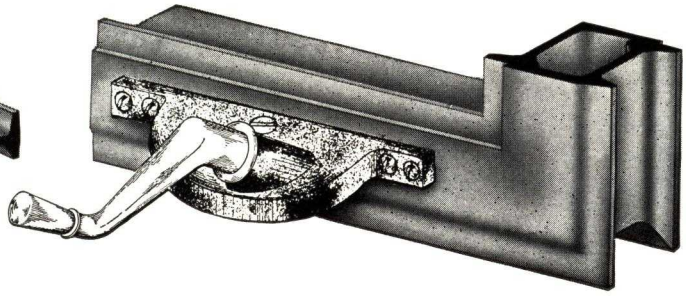
H-273 THROUGH-SECTION FASTENER
(USED WITH UNDERSCREEN OPERATOR)



H-368 FASTENER & KEEPER
FOR HOPPER VENTS

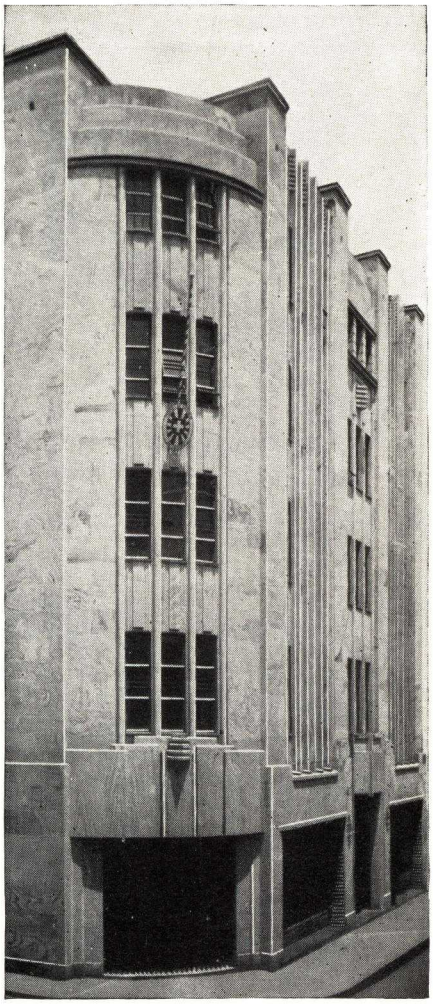


EXTENSION HINGE
FRICTION OR NON-FRICTION TYPE



H-271 UNDERSCREEN OPERATOR

CAMPBELL ORNAMENTAL PROJECTED WINDOWS



Compania Columbiana de Seguros Building, Bogota, Columbia, S.A.

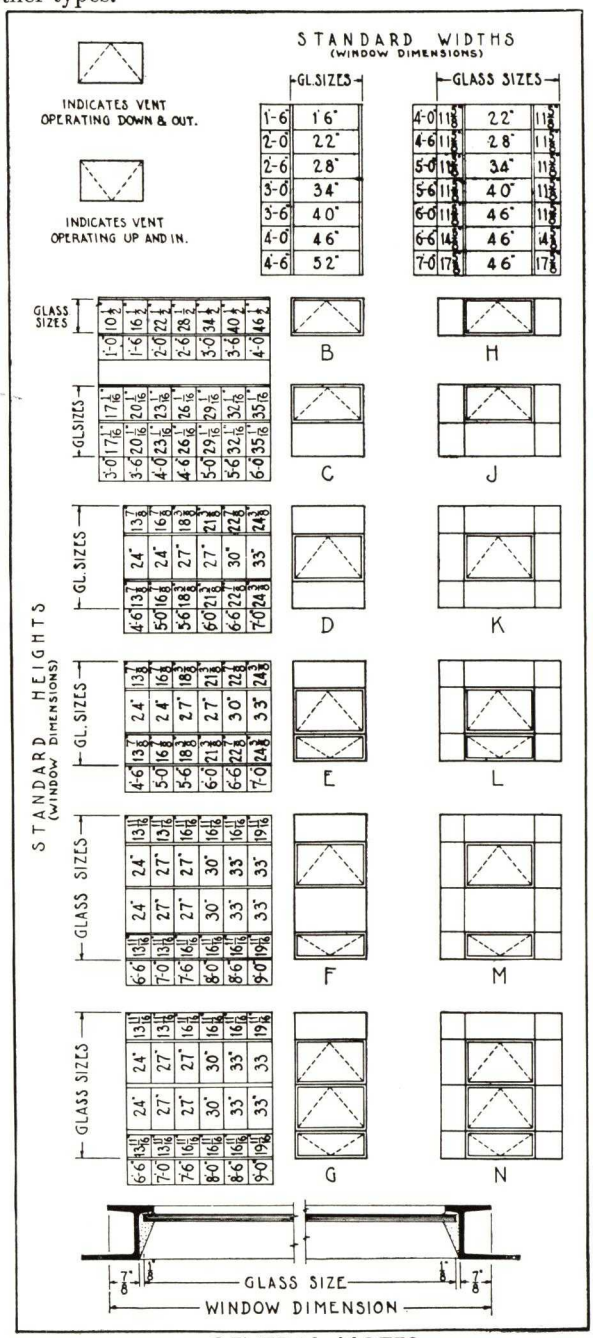
The Ornamental Projected Window is an exclusive Campbell design. It answers the demands of many architects for a *better window* of the projected type.

The window is fabricated from hot rolled members throughout. The frame section is 1½" deep and the vent section 1⅝" deep.

Wide baffle legs assure positive, flat contact between vents and frames.

The combined weight of frame and vent members is 4.66 lbs. per lineal foot.

Designers of fine buildings find the Ornamental Projected Windows meet their exacting requirements at a cost which, quality considered, represents a worthwhile saving over other types.



CONDENSED SPECIFICATIONS

Specify

Ornamental Projected Windows manufactured by Campbell Metal Window Corporation, Baltimore, Md.

Material

Members shall be solid section hot rolled, new billet steel shapes, not less than ⅛" in scheduled thickness. Frame Members shall be unequal leg channel members not less than 1½" deep and providing not less than ¾" bearing against the adjacent building construction. Vent Members shall be especially designed shapes, not less than 1⅝" deep, incorporating integral baffle legs. THE COMBINED WEIGHT of Frame and Vent members shall be not less than 4.66 lbs. per lineal foot. Muntins shall be Tee members not less than 1½" deep and not less than ⅞" across the table.

Construction

Joints of all abutting members shall be accurately coped, mortised, tenoned and air-hammer riveted. Corners of Frames and Vents shall be welded with exposed surfaces ground smooth. Muntins shall be continuous from head to sill and jamb to jamb except where vents occur. Muntins shall be coped flush and locked by a weld at the base of the stem at all intersections. Provide continuous, flat Weathering contact not less than 5/16" wide at baffle legs of ventilators. Ventilators shall be hung on sliding pivots having compression springs to equalize the friction between the bronze shoes and frame guides. They shall be balanced on two heavy steel arms which shall be securely riveted to frame and vent members with bronze rivets.

Glazing Provision

Windows shall be designed for setting glass from the exterior. Glass shall be held in place with copper-plated steel wire glazing clips, not less than 4 per light.

Hardware

Down-and-Out Vents shall be equipped with a solid bronze cam handle, and solid bronze pole ring located at the top of the vent. Up-and-In Vents within reach of floor shall be equipped with a solid bronze, hand operated spring catch and keeper. All other Up-and-In Vents shall be equipped with a solid bronze, pole operated, ring catch and keeper.

Screens

(See Architectural Projected Specifications—Page 35.)

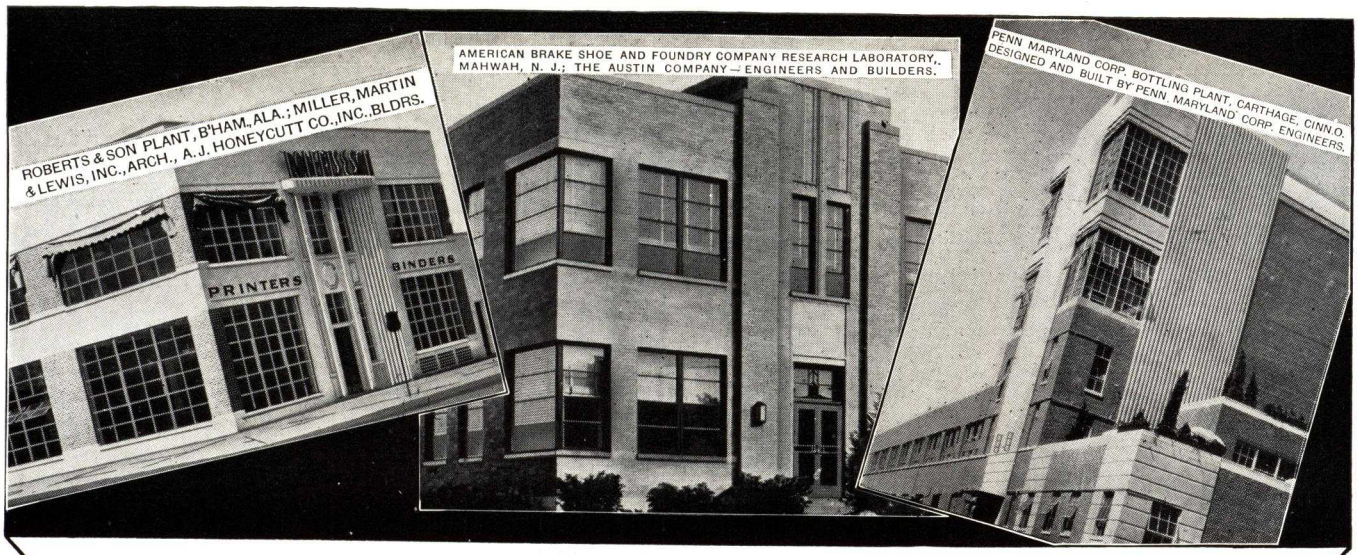
Shop Finish

All windows and mullions shall be given one prime coat of red oxide paint at the factory.

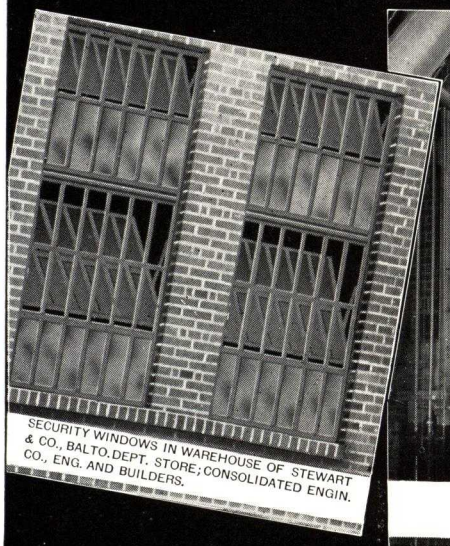
GENERAL NOTES

Glass sizes shown are for fixed lights. Sizes of glass in Ventilators are 2" smaller in both width and height.

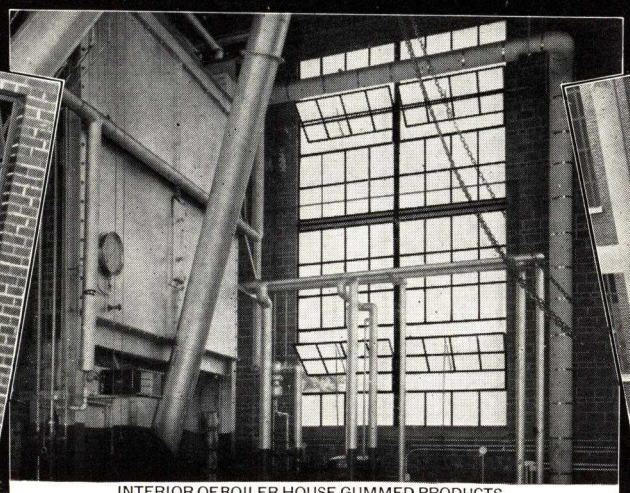
Glass Dimensions given are not intended to establish maximum size of ventilators, as combinations of extreme size may not be used. Ventilators are limited to a maximum area of 12½ square feet with the overall width not exceeding 5'0" and the overall height not exceeding 4'0".



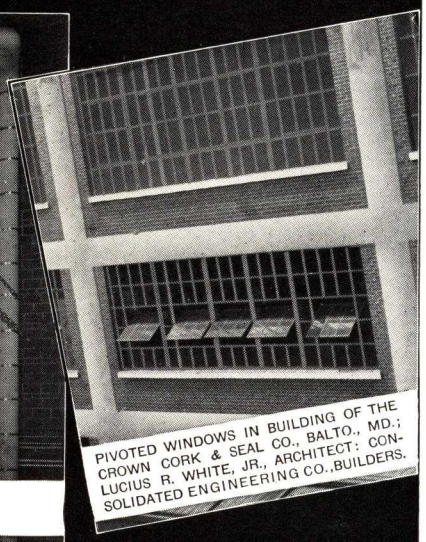
CAMPBELL MAKES THE RIGHT WINDOW FOR EVERY TYPE OF INDUSTRIAL BUILDING



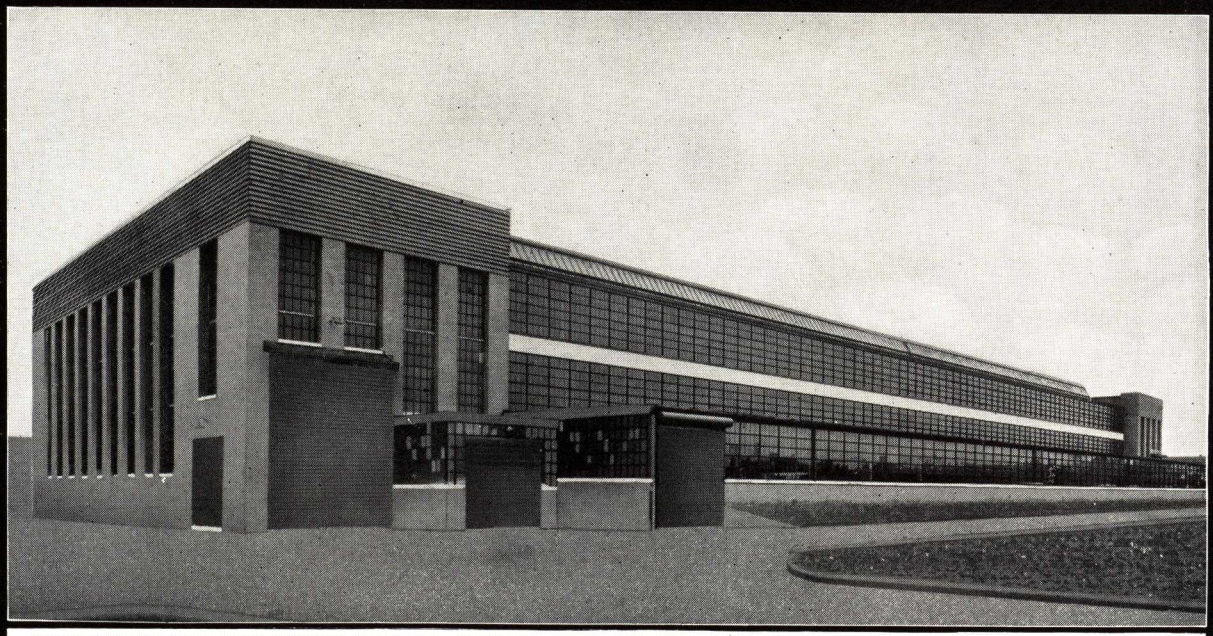
SECURITY WINDOWS IN WAREHOUSE OF STEWART & CO., BALTO. DEPT. STORE; CONSOLIDATED ENGIN. CO., ENG. AND BUILDERS.



INTERIOR OF BOILER HOUSE GUMMED PRODUCTS CO., TROY, O.; JOHN HENRI DEEKIN, ARCHITECT: THE GILLMORE—CARMICHAEL—OLSON CO.



PIVOTED WINDOWS IN BUILDING OF THE CROWN CORK & SEAL CO., BALTO., MD.; LUCIUS R. WHITE, JR., ARCHITECT: CONSOLIDATED ENGINEERING CO., BUILDERS.

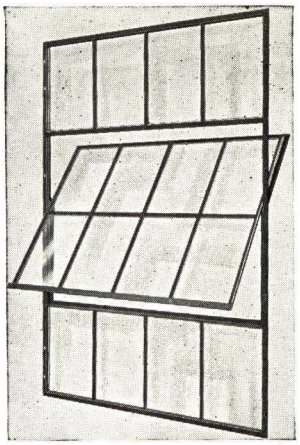


AMERICAN BLOWER CORPORATION BUILDING, DETROIT, MICH.; ALBERT KAHN, INC., ARCHITECT:—O. W. BURKE CO., BUILDERS.

CAMPBELL PIVOTED WINDOWS

TYPES AND SIZES

Sizes given are Window Dimensions. Window Opening sizes are identical. Windows are viewed from exterior.



TYPE 44181. Exterior view.

CONDENSED SPECIFICATIONS

Specify

Campbell Industrial Pivoted and Fixed Windows manufactured by Campbell Metal Window Corp., Baltimore, Md.

Material

Members shall be solid section, hot rolled, low carbon, open hearth steel bars not less than 1/8" in scheduled thickness. Applied weathering shall be of formed steel not less than #12 U. S. Standard Gauge or of hot rolled angles.

Construction

Frames shall be constructed of members not less than 1½" deep. Abutting members shall be accurately coped, tenoned, mortised and air hammer riveted.

Ventilators shall be hung on heavy stamped steel pivots located at sides 1 15/16" above center. Pivot pins shall be STAINLESS STEEL, not less than ⅜" in diameter.

Continuous Two-Point Contact shall be provided between vents and frames.

Muntins shall be Tee members, not less than 1½" deep nor less than ⅞" across table. They shall be continuous from jamb to jamb and from head to sill except where vents occur. Muntin intersections shall be coped flush and locked by a weld on the stem.

Glass Ledge shall be uniform and not less than ⅜" high nor less than 5/32" deep. Glass to be set from interior and to be held in place by copper plated steel wire clips.

Hardware. Vents located 6'-0" or less above the floor shall be equipped with a cam action, locking, painted steel Push Bar notched to hold vent open in several positions. Vents more than 6'-0" above floor shall be equipped with a Parkerized steel Spring Catch, Chain Operated.

Vertical Mullions. Shall be slotted to permit horizontal adjustment of windows.

Shop Finish

Shall be one prime coat of red oxide paint applied at factory.

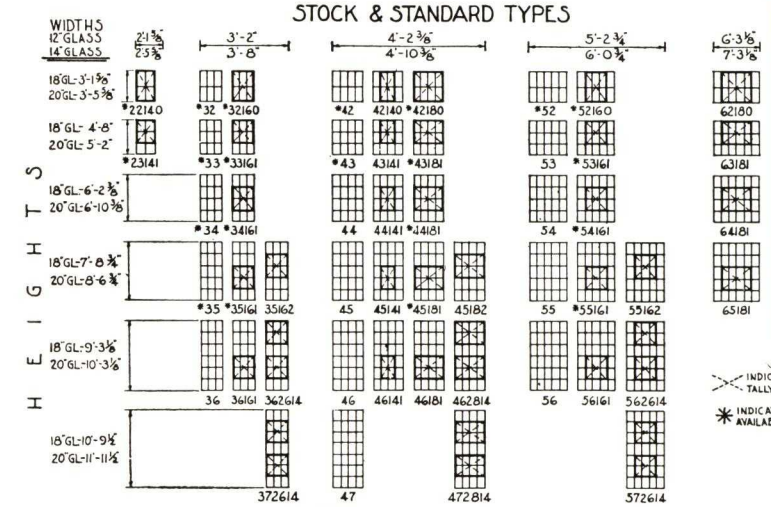
Screens

Ring catch and keeper hardware shall be applied to all vents. Two complete screen frames shall be furnished for each vent. One frame shall be attached to the outside of window for upper half of vent, the other inside for lower half of vent, with curved contact plates at horizontal lines of pivot. Screen cloth shall be .0113" diameter, antique finish bronze wire, woven to 16 mesh and held in frames by removable splines.

UNDERWRITERS LABELS

All rectangular types and sizes shown may be furnished with labels certifying approval of the Underwriters Laboratories. Labelled windows are equipped with glazing angles for glazing from interior.

STOCK & STANDARD TYPES



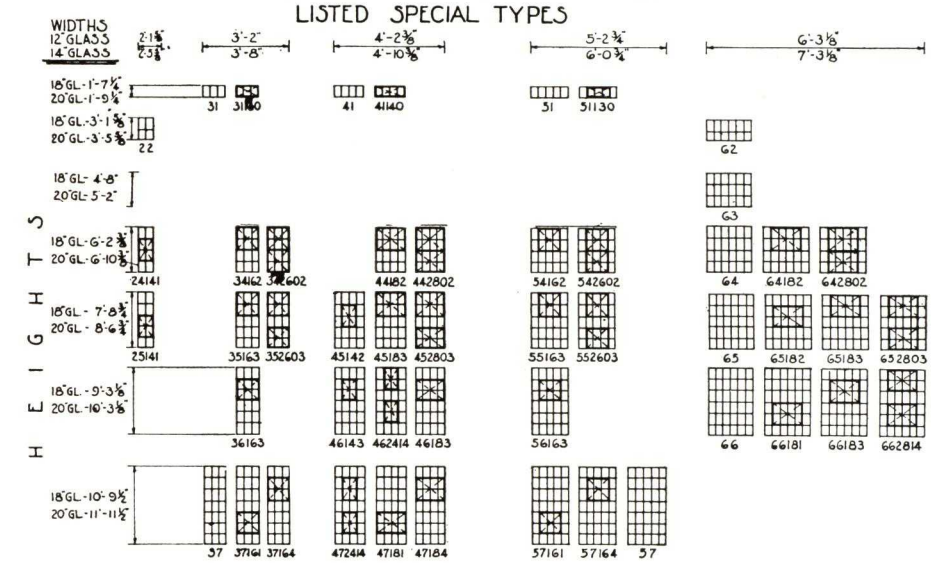
INDICATES VENTILATOR HORIZONTALLY PIVOTED 2" ABOVE CENTER.

✱ INDICATES COMMODITY STOCK TYPES AVAILABLE FOR IMMEDIATE SHIPMENT.

GLASS SIZES

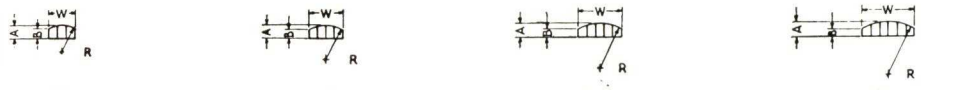
Standard glass combinations are 12" x 18" and 14" x 20" only. 12" x 18" and 14" x 20" glass sizes refer to fixed lights only. Deduct 1" around perimeter of ventilators to obtain size of lights in movable portion.

LISTED SPECIAL TYPES



CAMBER TYPE

ALL GLASS SIZES TO TEMPLATE



C-31	12"X18"	14"X20"
	3'-2" W	3'-8"
	1'-6⅛" A	1'-8⅛"
	1'-1" B	1'-2¼"
	3'-2" R	3'-8"

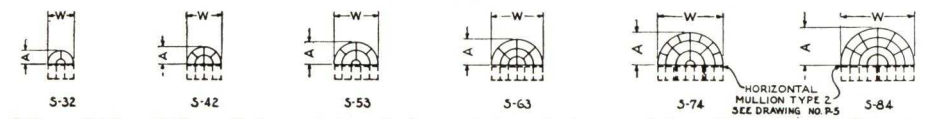
C-41	12"X18"	14"X20"
	4'-2⅜" W	4'-10⅜"
	1' 6⅛" A	1'-8⅛"
	0'-11⅜" B	1'-0⅝"
	4'-2⅜" R	4'-10⅜"

C-51	12"X18"	14"X20"
	5'-2¾" W	6'-0¾"
	1'-6⅛" A	1'-8⅛"
	0'-9⅛" B	0'-10⅜"
	5'-2¾" R	6'-0¾"

C-61	12"X18"	14"X20"
	6'-3⅛" W	7'-3⅛"
	1'-6⅛" A	1'-8⅛"
	0'-8⅛" B	0'-8 7/16"
	6'-3⅛" R	7'-3⅛"

SEMI-CIRCULAR TYPE

ALL GLASS SIZES TO TEMPLATE



5-32	12"X18"	14"X20"
	3'-2" W	3'-8"
	1'-7" A	1'-10"

5-42	12"X18"	14"X20"
	4'-2⅜" W	4'-10⅜"
	2'-1⅛" A	2'-5⅛"

5-53	12"X18"	14"X20"
	5'-2¾" W	6'-0¾"
	2'-7⅛" A	3'-0⅜"

5-63	12"X18"	14"X20"
	6'-3⅛" W	7'-3⅛"
	3'-1 7/16" A	3'-7⅛"

5-74	12"X18"	14"X20"
	7'-9¼" W	8'-11¼"
	3'-10⅝" A	4'-5 5/16"

5-84	12"X18"	14"X20"
	8'-6¾" W	9'-10¾"
	4'-3⅜" A	4'-11⅜"

CAMPBELL COMMERCIAL PROJECTED WINDOWS

TYPES AND SIZES

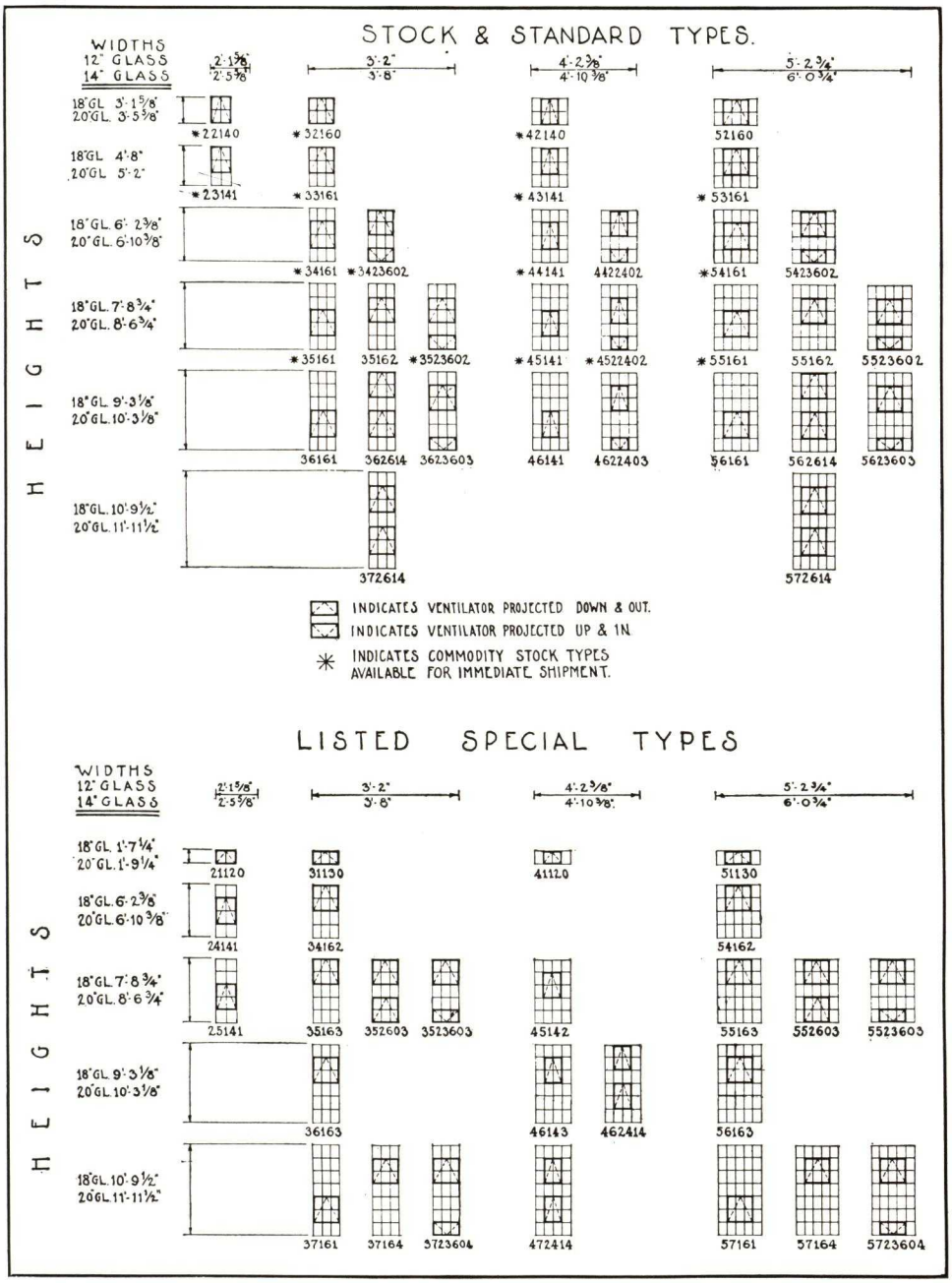
Sizes given below are window dimensions. Window opening sizes are identical. Windows are viewed from exterior.

Commercial Projected Windows are made of the same sturdy sections which give extra strength to the Pivoted Windows shown on Page 30, opposite.

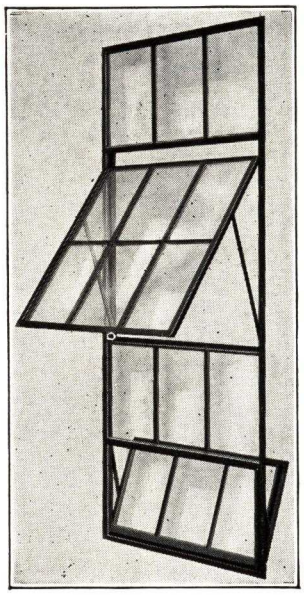
They differ in the method of ventilator operation, hardware and screening. Commercial Projected Windows offer two types of ventilators. The Projected down-and-out ventilator extends outward when open, giving an "awning" effect that makes it possible to admit air while deflecting rain. The projected up-and-in ventilator is usually used at the sill for draftless air control.

The types and sizes shown below provide for inside putty glazing. Outside putty glazing can be furnished if desired.

Ventilators may be projected opposite to direction shown when so specified on order.



Glass Sizes—Standard glass combinations are 12" x 18" and 14" x 20" only. 12" x 18" and 14" x 20" glass size refer to fixed lights only. Deduct 1" around perimeter of ventilators to obtain size of lights in movable portion.



TYPE 3523602

View showing ventilators open, indicating "awning" rain protection feature of upper, down-and-out ventilator and draftless air control of the hopper vent (up-and-in) at the sill.

CONDENSED SPECIFICATIONS

Specify—Commercial Projected Windows Manufactured by Campbell Metal Window Corp., Baltimore, Md.

USE SPECIFICATIONS OF PIVOTED WINDOWS, PAGE 30, OPPOSITE, SUBSTITUTING THE FOLLOWING THREE PARAGRAPHS FOR THOSE GIVEN:

Ventilators

Shall be hung on sliding pivots having compression springs to equalize the friction between the bronze shoes and the frame guides. They shall be balanced on two, heavy, steel arms which shall be securely riveted to frame and ventilator members with bronze pins. Removable stops shall be provided to limit opening of Down-and-Out ventilators to approximately 40 degrees, Up-and-In ventilators to approximately 35 degrees.

Hardware

Down-and-Out Ventilators shall be equipped with a malleable iron cam handle and pole ring. Up-and-In Ventilators, 1 light high and located at sill of window, shall be equipped with a malleable iron hand operated fastener. All other Up-and-In ventilators shall be equipped with a malleable iron ring catch and keeper. All hardware to be Parkerized and given an oil finish.

Screens

Down-and-Out ventilators shall be provided with an extension box and screen, hinged at top of box to swing in at bottom. Screens for Up-and-In ventilators shall be attached to outside face of windows and shall be removable from inside of building. Screen cloth shall be .0113" diameter antique finish bronze wire, woven to 16 mesh and held in frames by removable splines.

Underwriters Labels

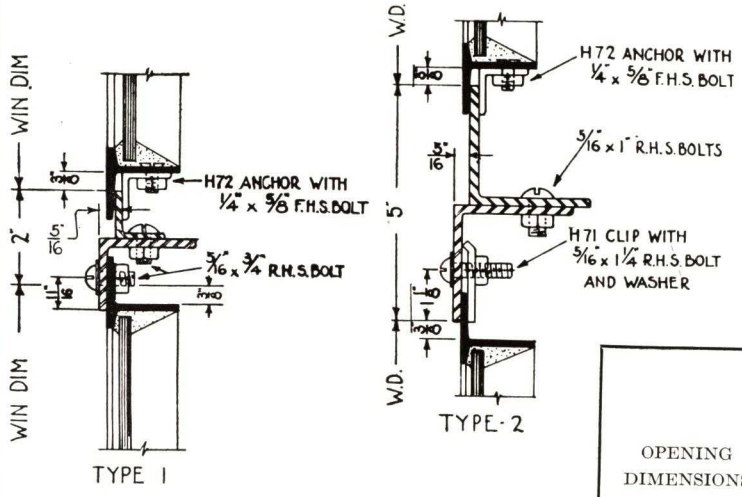
All types and sizes shown may be furnished with labels certifying approval of the Underwriters Laboratories. Labelled windows are equipped with glazing angles for glazing from interior.

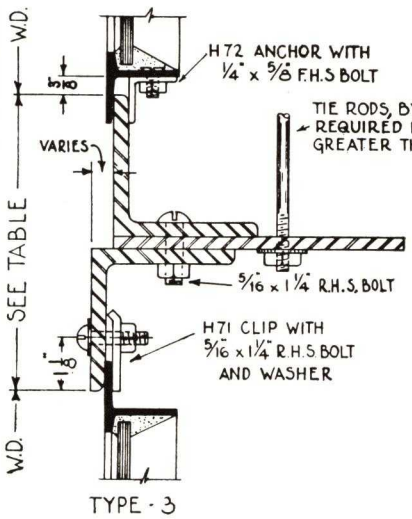
CAMPBELL PIVOTED AND COMMERCIAL PROJECTED WINDOWS

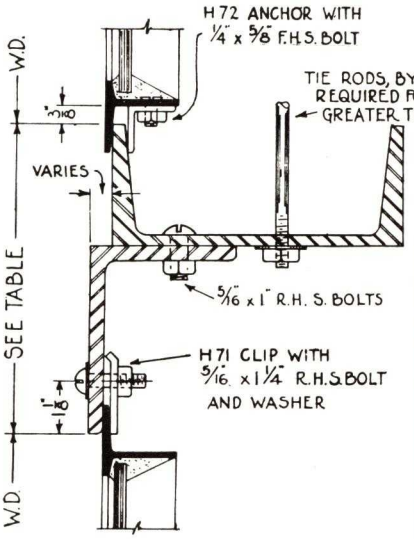
COMBINATION OPENINGS

(SCALE OF DETAILS 3"=1'0")

HORIZONTAL MULLIONS







SYMMETRICAL COMBINATIONS

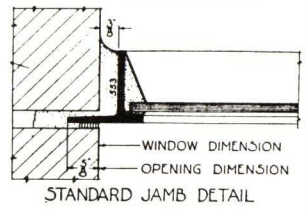
OPENING DIMENSIONS	
18" HEIGHTS	
Lights	Dim.
2	3'-1 5/8"
3	4'-8"
4	6'-2 3/4"
5	7'-8 3/4"
6	9'-3 1/8"
7	10'-9 1/2"
20" HEIGHTS	
Lights	Dim.
2	3'-5 5/8"
3	5'-2"
4	6'-10 3/4"
5	8'-6 3/4"
6	10'-3 1/8"
7	11'-11 1/2"

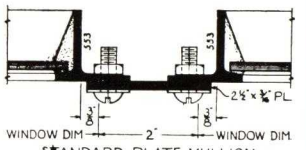
OPENING DIMENSIONS		NO. UNITS IN OPENING	NO. LIGHTS IN OPENING	ARRANGEMENT OF UNITS IN OPENING Figures Indicate the Number of Lights in Width of Each Unit
12"Widths	14"Widths			
2'- 1 5/8"	2'- 5 5/8"	1	2	2
3'- 2"	3'- 8"	1	3	3
4'- 2 3/8"	4'-10 3/8"	1	4	4
4'- 5 1/4"	5'- 1 1/4"	2	4	2, 2
5'- 2 3/4"	6'- 0 3/4"	1	5	5
6'- 3 1/8"	7'- 3 1/8"	1	6	6
6'- 6"	7'- 6"	2	6	3, 3
8'- 6 3/4"	9'-10 3/4"	2	8	4, 4
9'-10"	11'- 4"	3	9	3, 3, 3
10'- 7 1/2"	12'- 3 1/2"	2	10	5, 5
10'-10 3/8"	12'- 6 3/8"	3	10	3, 4, 3
11'-10 3/4"	13'- 8 3/4"	3	11	3, 5, 3
11'-10 3/4"	13'- 8 3/4"	3	11	4, 3, 4
12'- 8 1/4"	14'- 8 1/4"	2	12	6, 6
12'-11 1/8"	14'-11 1/8"	3	12	4, 4, 4
13'- 2"	15'- 2"	4	12	3, 3, 3, 3
13'-11 1/2"	16'- 1 1/2"	3	13	4, 5, 4
13'-11 1/2"	16'- 1 1/2"	3	13	5, 3, 5
14'-11 7/8"	17'- 3 7/8"	3	14	4, 6, 4
14'-11 7/8"	17'- 3 7/8"	3	14	5, 4, 5
15'- 2 3/4"	17'- 6 3/4"	4	14	3, 4, 4, 3
16'- 0 1/4"	18'- 6 1/4"	3	15	5, 5, 5
16'- 0 1/4"	18'- 6 1/4"	3	15	6, 3, 6
16'- 6"	19'- 0"	5	15	3, 3, 3, 3, 3
17'- 0 5/8"	19'- 8 5/8"	3	16	5, 6, 5
17'- 0 5/8"	19'- 8 5/8"	3	16	6, 4, 6
17'- 3 1/2"	19'-11 1/2"	4	16	4, 4, 4, 4
17'- 3 1/2"	19'-11 1/2"	4	16	3, 5, 5, 3
17'- 6 3/8"	20'- 2 3/8"	5	16	3, 3, 4, 3, 3
18'- 1"	20'-11"	3	17	6, 5, 6
18'- 6 3/4"	21'- 4 3/4"	5	17	3, 4, 3, 4, 3
19'- 1 3/8"	22'- 1 3/8"	3	18	6, 6, 6
19'- 4 1/8"	22'- 4 1/4"	4	18	3, 6, 6, 3
19'- 4 1/4"	22'- 4 1/4"	4	18	4, 5, 5, 4
19'- 7 1/8"	22'- 7 1/8"	5	18	3, 4, 4, 4, 3
20'- 7 1/2"	23'- 9 1/2"	5	19	3, 5, 3, 5, 3
21'- 5"	24'- 9"	4	20	5, 5, 5, 5
21'- 5"	24'- 9"	4	20	4, 6, 6, 4
21'- 7 7/8"	24'-11 7/8"	5	20	4, 4, 4, 4, 4
21'-10 3/4"	25'- 2 3/4"	6	20	3, 3, 4, 4, 3, 3

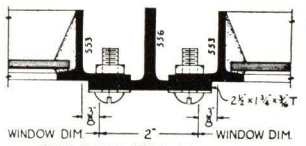
HORIZONTAL MULLION TYPES

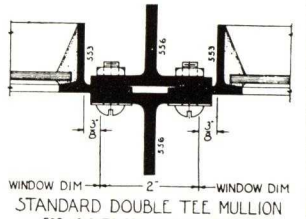
Lights Wide	Mullion Type No.	ANGLES Req'd	ANGLES Size	Plate or Channel	Estimated Weight of Mull per Ft	Between Window Dimensions
Single Unit Openings	1	1	1"x1"x1/8"	None	3.0 lbs.	2"
		1	2"x1 1/2"x3/16"			
12" x 18" SIZE GLASS						
3 to 9	2	2	2 1/2"x2 1/2"x3/16"	None	6.2 lbs.	5"
10 to 13	3	2	2 1/2" x2 1/2"x3/16"	6"x1/4" Plt	11.3 lbs.	5 1/4"
10 to 13	4	1	3 1/2"x2 1/2"x1/4"	4"Channel	10.0 lbs.	5 1/4"
14 to 18	3	2	3"x3"x5/16"	6"x1/4" Plt	17.2 lbs.	6 1/8"
14 to 18	4	1	4"x3"x5/16"	6"Channel	15.4 lbs.	6 1/8"
14" x 20" SIZE GLASS						
3 to 8	2	2	2 1/2"x2 1/2"x3/16"	None	6.2 lbs.	5"
9 to 11	3	2	2 1/2"x2 1/2"x3/16"	6"x1/4" Plt	11.3 lbs.	5 1/4"
9 to 11	4	1	3 1/2"x2 1/2"x1/4"	4"Channel	10.0 lbs.	5 1/4"
12 to 16	3	2	3"x3"x5/16"	6"x1/4" Plt	17.2 lbs.	6 1/8"
12 to 16	4	1	4"x3"x5/16"	6"Channel	15.4 lbs.	6 1/8"

VERTICAL MULLIONS

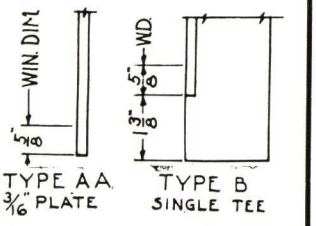


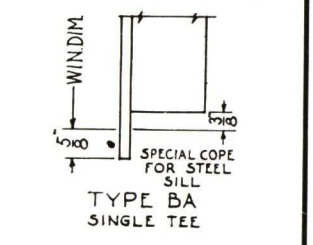


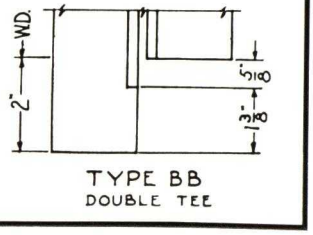




SILL CONDITIONS

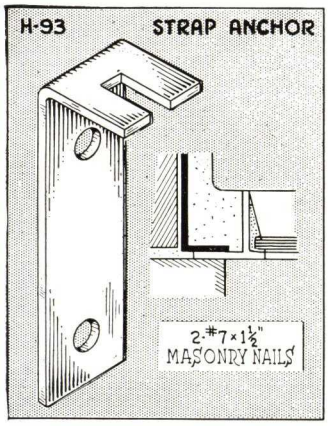


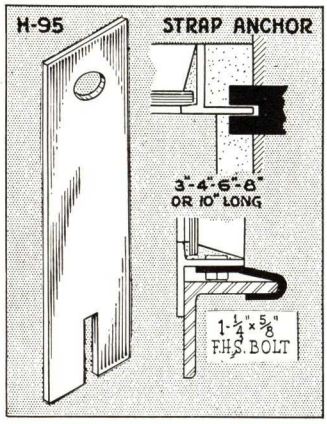


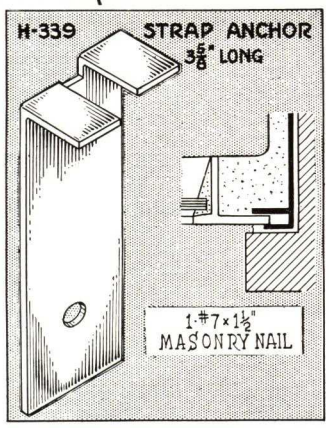


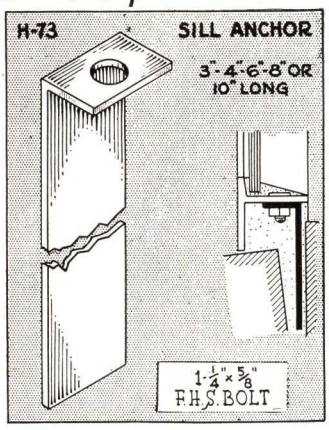
CAMPBELL INDUSTRIAL WINDOWS

INSTALLATION DETAILS AND FITTINGS (Scale of Details—3"=1'-0")





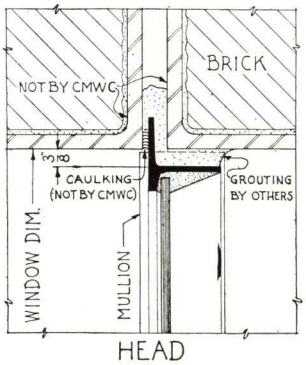




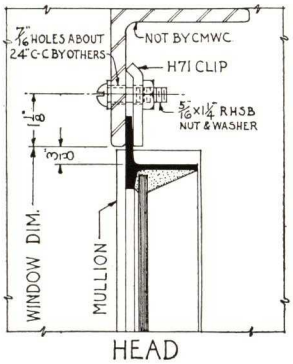
INSTALLATION DETAILS

THREE TYPICAL BUILDING CONDITIONS ARE SHOWN BELOW. THESE COVER A LARGE PROPORTION OF THE OPENINGS FOR WHICH PIVOTED AND COMMERCIAL PROJECTED WINDOWS ARE USED. CORRUGATED IRON SIDING, FOR INSTANCE, REQUIRES STEEL FRAME WORK WHICH MAKES THE WINDOW INSTALLATION PROCEDURE SIMILAR TO THE STEEL DETAILS SHOWN BELOW.

ABOVE & TO THE RIGHT ARE SHOWN THE INSTALLATION FITTINGS WHICH ARE FURNISHED, AS REQUIRED, WITH THE WINDOWS. CLIP H-71, ANCHOR H-72 AND SILL ANCHOR H-73 WILL TAKE CARE OF MOST CONDITIONS. THE H-74 HOOK BOLT AND THREE TYPES OF STRAP ANCHORS! FURNISHED IN SEVERAL LENGTHS AS REQUIRED ARE ALSO AVAILABLE. A SMALL DETAIL SKETCH IS INCLUDED TO INDICATE AN APPLICATION OF EACH.



HEAD



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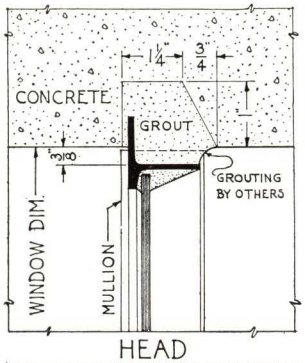
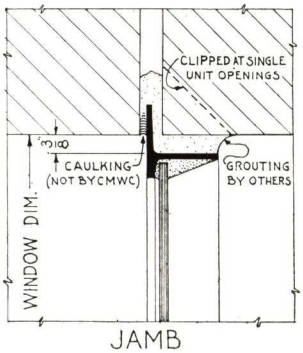


HEAD
JAMB SIMILAR FOR MULTIPLE UNIT OPENINGS



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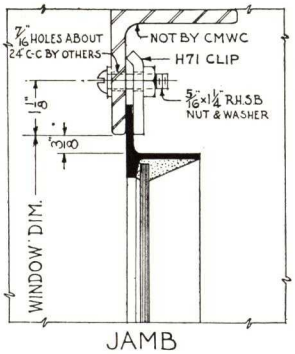

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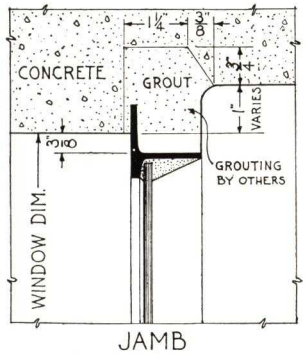
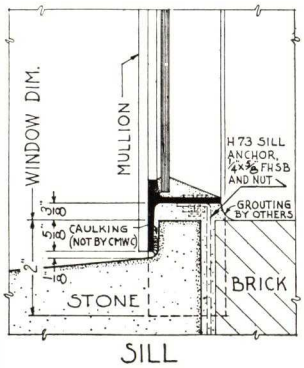
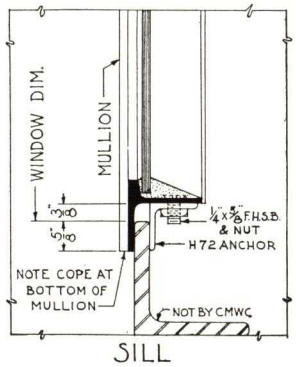


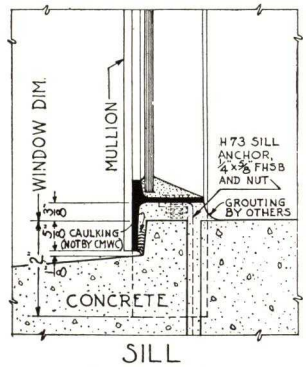
JAMB
SINGLE UNIT OPENINGS



SILL
BRICK

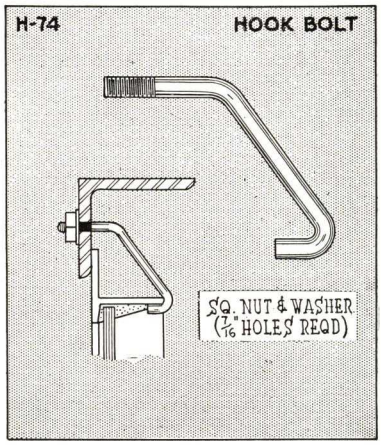


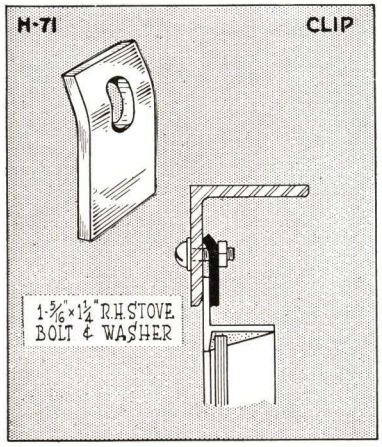
SILL
STEEL

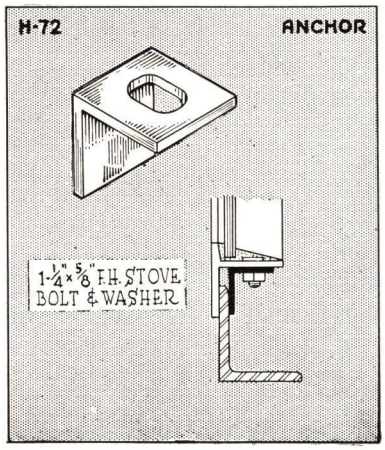


SILL
CONCRETE

SCALE 3"=1'-0"

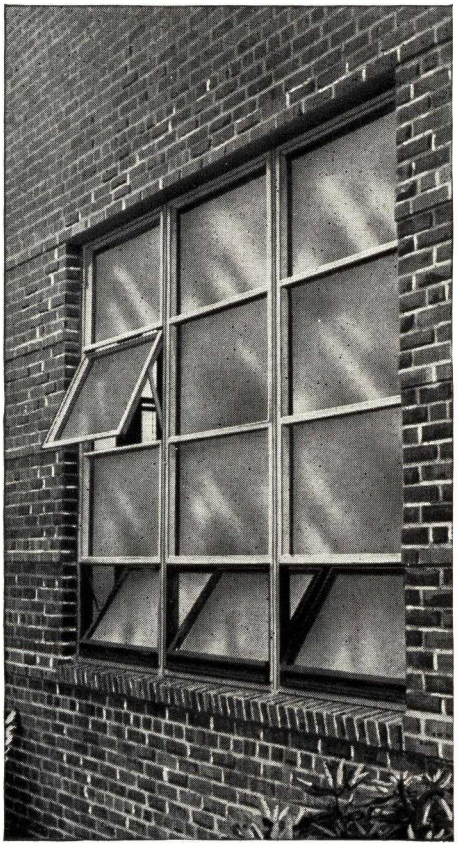






CAMPBELL ARCHITECTURAL PROJECTED WINDOWS

TYPES AND SIZES - - - FIXED LIGHT GLASS SIZES



Exterior view of group of three Architectural Projected windows installed

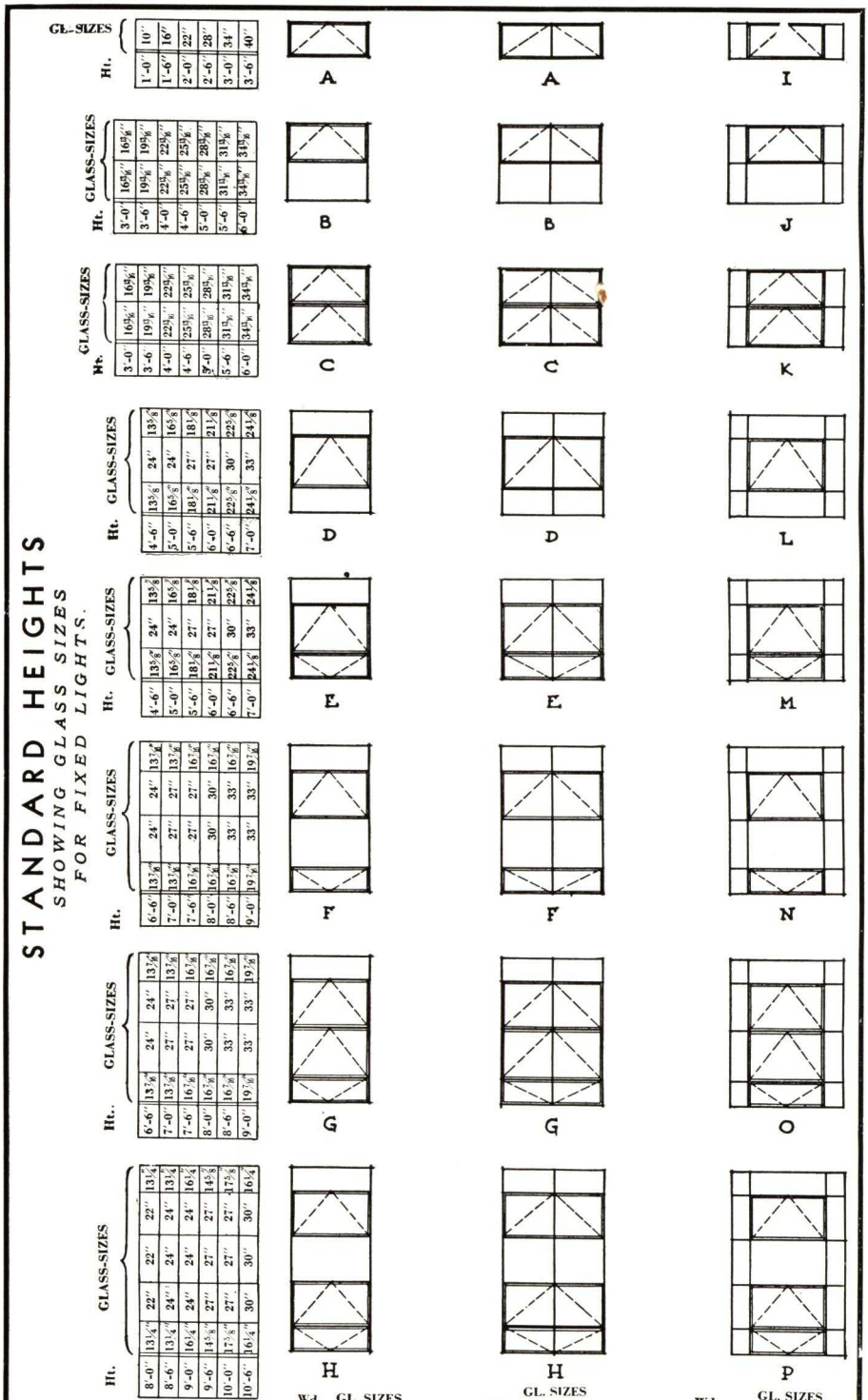
The Projected method of ventilator operation which offers rain protection in Down-and-Out ventilators and draftless air control of sill vents opening Up-and-In, has been developed to a high point in the inexpensive Campbell Architectural Projected Window. It is particularly adaptable to use in schools, office buildings or offices of factories using Commercial Projected or Pivoted Windows in the rest of the building. In addition to their excellent method of ventilation Campbell Architectural Projected Windows offer an ease of screening because the ventilators operate completely inside or outside the frame.

The sections used in this window are 1½" deep and are especially rolled for Projected Window construction. Bronze hardware is standard on all windows in keeping with their high quality.

Standard screens are available for all types, either in hinged or sliding panel screens for the projected down-and-out ventilators and close up flat screens for projected up-and-in ventilators.

STANDARD HEIGHTS

SHOWING GLASS SIZES FOR FIXED LIGHTS.



INDICATES VENT PROJECTED DOWN & OUT

INDICATES VENT PROJECTED UP & IN

Wd.	GL. SIZES
1'-6"	16"
2'-0"	22"
2'-6"	28"
3'-0"	34"
3'-6"	40"

Wd.	GL. SIZES	
4'-0"	22⅝"	22⅝"
4'-6"	25⅝"	25⅝"

Wd.	GL. SIZES		
4'-0"	11⅝"	22"	11⅝"
4'-6"	11⅝"	28"	11⅝"
5'-0"	11⅝"	34"	11⅝"
5'-6"	11⅝"	40"	11⅝"
6'-0"	11⅝"	46"	11⅝"
6'-6"	14⅝"	46"	14⅝"
7'-0"	17⅝"	46"	17⅝"

STANDARD WIDTHS

SHOWING GLASS SIZES FOR FIXED LIGHTS.

TO OBTAIN VENTILATOR GLASS SIZES, DEDUCT 1" AT TOP, BOTTOM AND SIDES OF VENTS FROM DIMENSIONS SHOWN FOR FIXED LIGHTS.

CAMPBELL ARCHITECTURAL PROJECTED WINDOWS

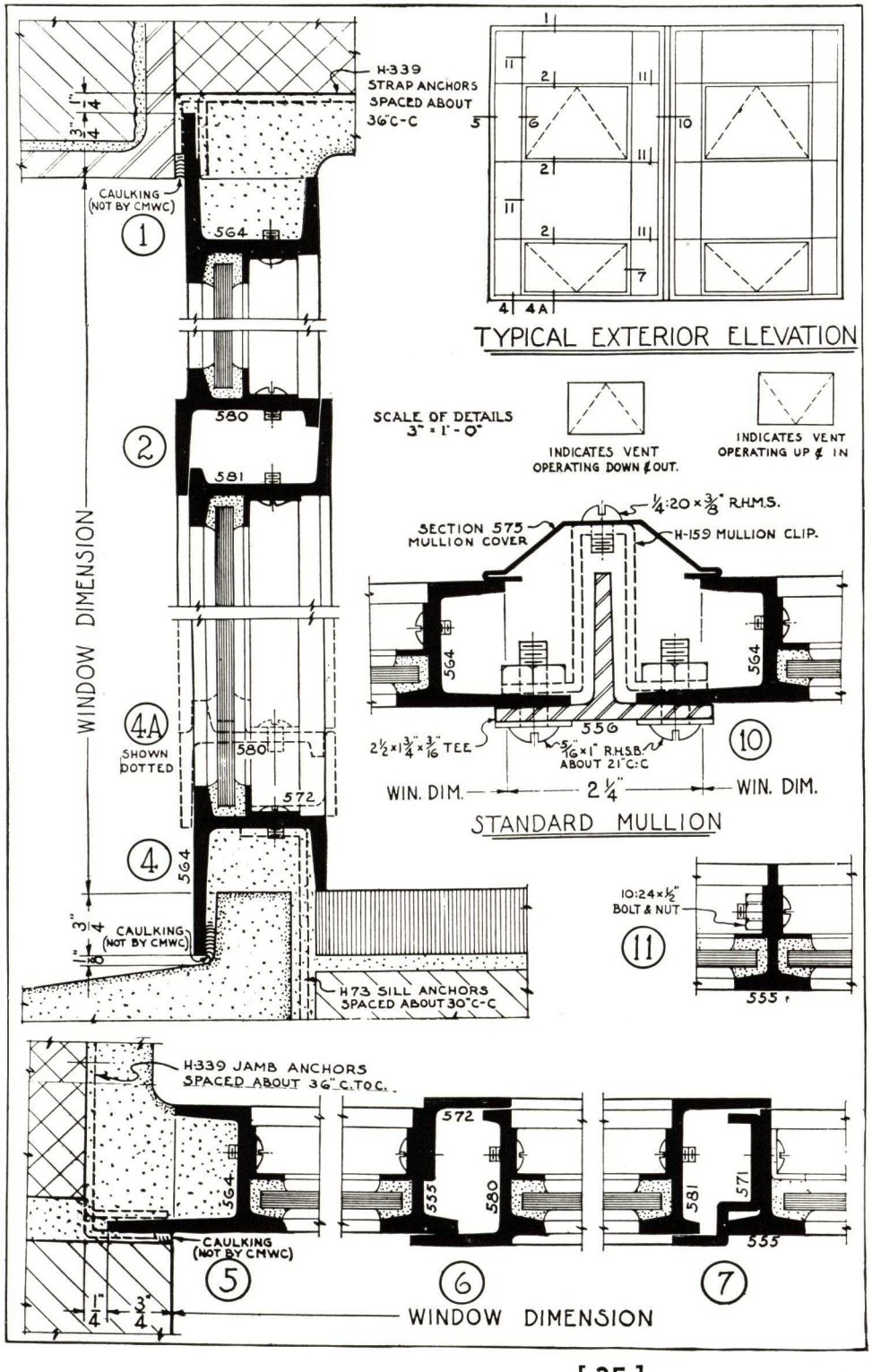
TYPICAL DETAILS—(Scale 6"=1'-0")

The details shown below are for the inside angle glazed type of window which is standard.

The window may be built for outside putty glazing when required. Sight lines may be added where specified at slight additional cost.

In addition to the standard mullion shown, an alternate mullion of the double plate type is available for use in openings not exceeding 10′ 6″ in height.

Standard corner mullions can also be supplied where the windows are used with the cantilever type of floor construction.



CONDENSED SPECIFICATIONS

Specify

Architectural Projected Windows manufactured by the Campbell Metal Window Corporation, Baltimore, Md.

Material

Members shall be solid section hot rolled new billet steel shapes not less than 1/8" in scheduled thickness. They shall be specially designed with wide baffle legs rolled integrally with the ventilator members. Applied weathering shall be of formed low carbon steel not less than #12 U. S. Standard Gauge or hot rolled angles.

Frame Members shall be unequal leg channel members not less than 1 1/2" deep and providing not less than 3/4" bearing against the adjacent building construction.

Ventilator Members shall be specially designed shapes incorporating integral baffle legs and not less than 1 5/8" deep.

Glass Ledges shall be not less than 3/8" high nor less than 5/32" thick.

Muntins shall be especially designed Tee members not less than 1 1/2" deep and not less than 7/8" across the table.

Construction

Corners of Frames and Vents shall be solidly welded with the exposed surfaces ground smooth. The joints of abutting members shall be accurately coped, mortised, tenoned and air hommer riveted. Continuous two point flat contact Weathering not less than 5/16" wide shall be provided at baffle legs of ventilators. Windows are to be designed for Glazing from the interior using 5/8" x 3/8" x 16 gauge steel continuous glazing angles applied with galvanized steel bolts and nuts. (Alternate glazing from the exterior, if specified, shall be with copper-plated steel wire glazing clips not less than four per light.) Ventilators shall be hung on sliding pivots having compression springs to equalize the friction between the bronze shoes and frame guides. They shall be balanced on two heavy steel arms which shall be securely riveted to the frames and ventilator members with bronze pins.

Hardware

Down-and-Out ventilators shall be equipped with a solid bronze cam handle, and a solid bronze pole ring. Up-and-In ventilators located within reach from the floor shall be equipped with solid bronze, hand operated spring catch and keeper. All other Up-and-In ventilators shall be equipped with solid bronze, pole operated ring catch and keeper.

Screens

Windows shall be prepared to receive insect screens.

Screens for Projected Down-and-Out ventilators shall be (a) of the close-up flat type. Each screen fitted with a built-in vertically sliding screen panel located in the center to provide access to the ventilator locking device, or (b) shall be of the top hinged type with extension box of sufficient depth to clear the ventilator locking device.

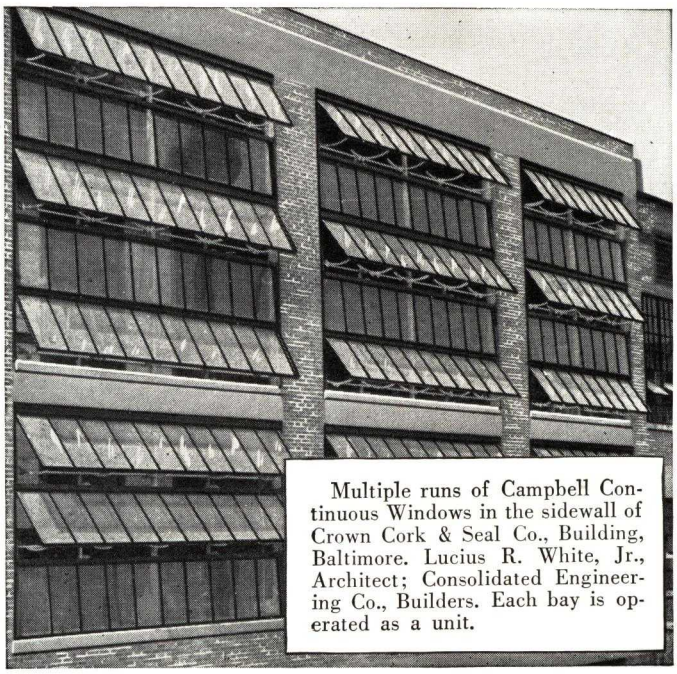
Screens for Projected Up-and-In ventilators shall be attached to the outside face of the windows and shall be removable from the inside of the building.

Painting

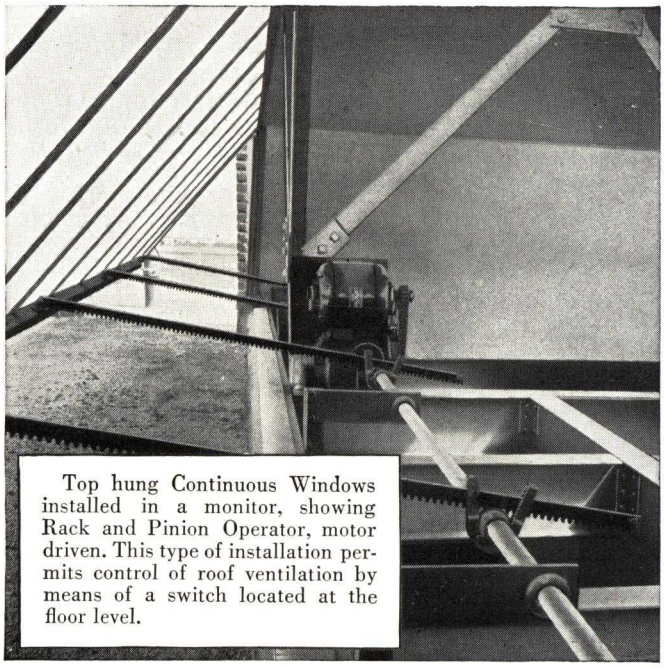
All windows shall be given one prime coat of red oxide paint at the factory.

CAMPBELL CONTINUOUS WINDOWS

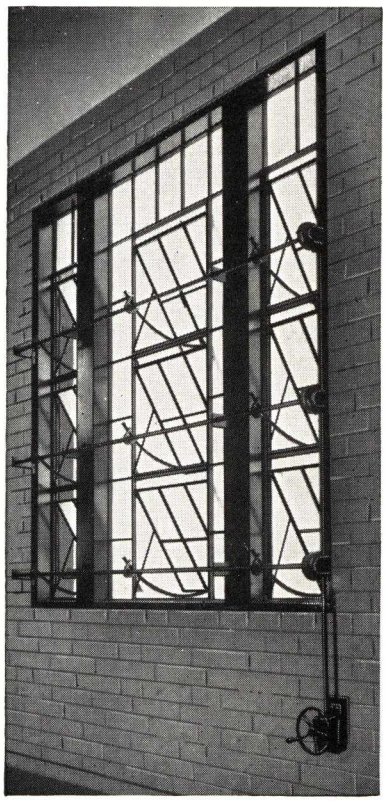
MECHANICAL OPERATORS FOR INDUSTRIAL WINDOWS



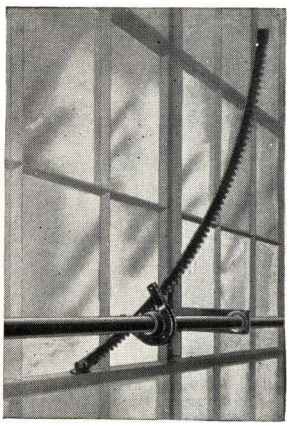
Multiple runs of Campbell Continuous Windows in the sidewall of Crown Cork & Seal Co., Building, Baltimore. Lucius R. White, Jr., Architect; Consolidated Engineering Co., Builders. Each bay is operated as a unit.



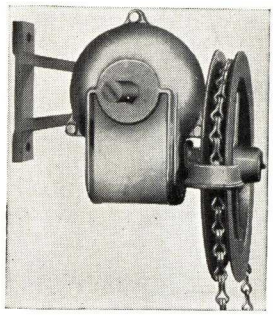
Top hung Continuous Windows installed in a monitor, showing Rack and Pinion Operator, motor driven. This type of installation permits control of roof ventilation by means of a switch located at the floor level.



Three rows of ventilators in Campbell Commercial Projected Windows are operated as a unit, by a single hand power, in this arrangement of Campbell Rack and Pinion Operator.



This close-up of the Rack and Pinion Operator shows a convex arm attached to the sill of a Campbell Pivoted Window ventilator. Where clearances demand it, a concave arm may be attached to the head of the ventilator.



(At Right) An enclosed type Hand Power for the Rack and Pinion Operator is shown as used with a hand chain. This Power is usually used for operating vents which are out of reach. For vents within reach of the floor a similar Power may be supplied with Hand Wheel operation.

CAMPBELL CONTINUOUS WINDOWS

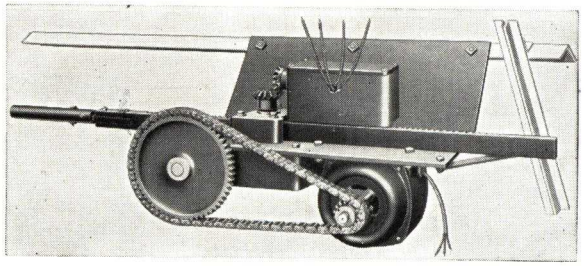
The use of Continuous Windows in roofs or sidewalls is essentially a subject for engineering survey. A steel layout designed for windows of standard size is an obvious economy and Campbell Engineers are in a position to give valuable assistance in this matter.

CAMPBELL MECHANICAL OPERATORS

Mechanical Operation of Industrial Windows presents a similar problem. Campbell offers a widely diversified line of Operators, a few of which are shown on this page.

The exceptional strength and capacity of these Operators suggests the advisibility of consultation with Campbell Engineers who, in nearly every instance, can insure proper operation of windows at a substantial saving.

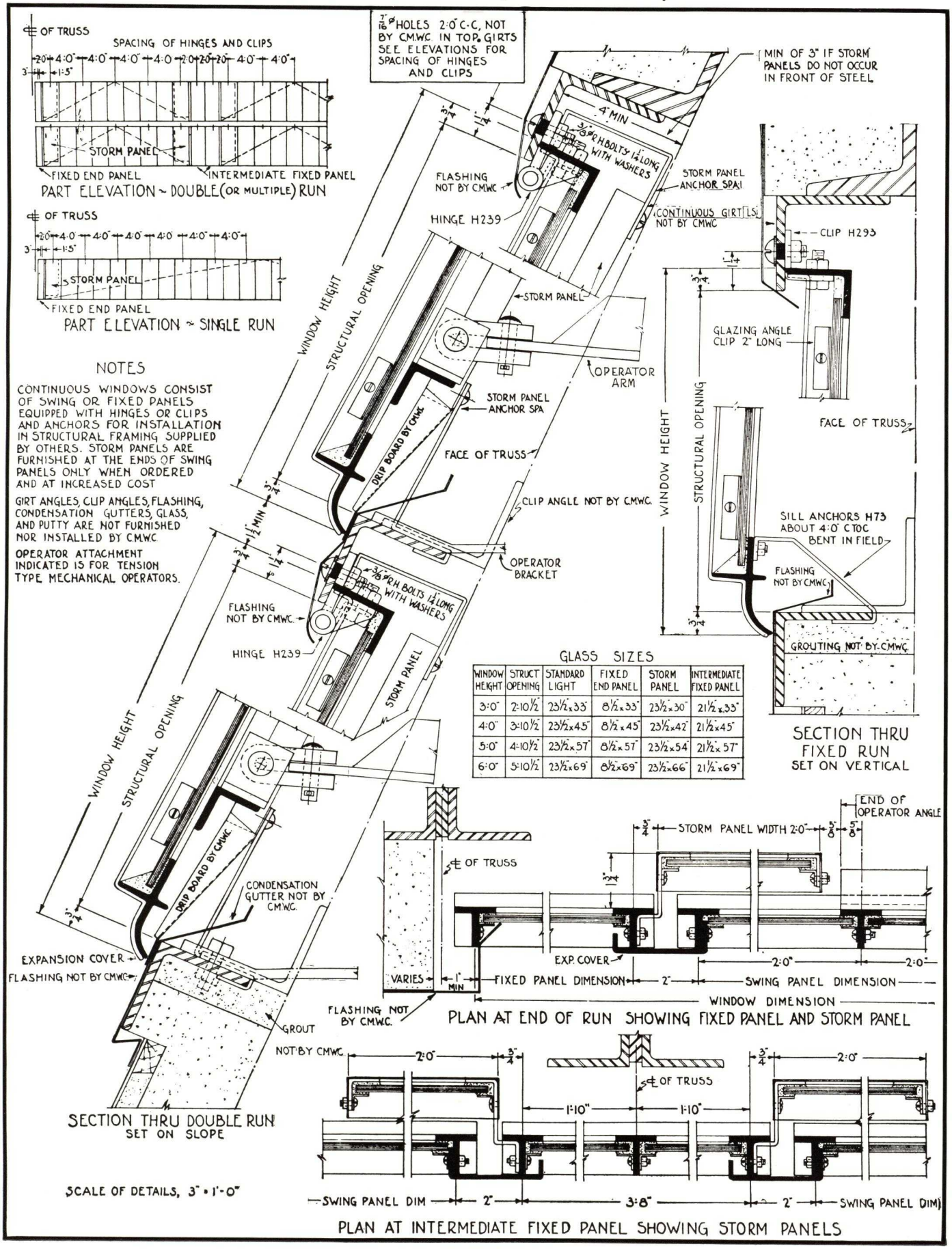
This Tension Arm assembly is used for long runs of Continuous Windows. The attachment at the right is made to the operating shaft, the one at the left to the steel work while the upper end of the arm is attached to the sill member.



Motorized Powers are available for larger groups of operated ventilators. The one shown is designed for Tension Operators and is controlled by a switch at the floor level. Automatic, limit switch control is also available.

CAMPBELL CONTINUOUS WINDOWS

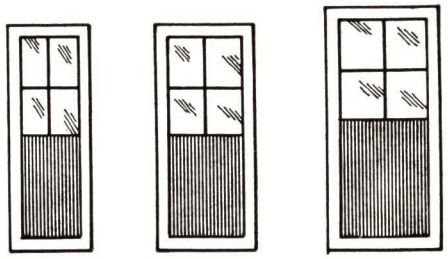
STANDARD DETAILS (Scale—3"=1'-0")



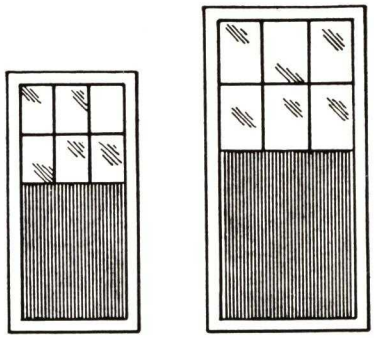
CAMPBELL INDUSTRIAL DOORS

SWING — STOCK TYPES — SLIDE

SINGLE LEAF

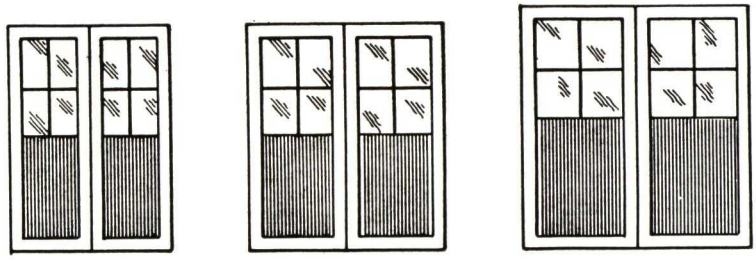


27 37 38

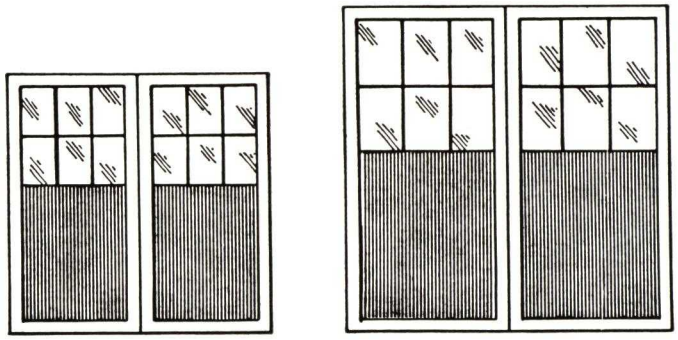


48 510

DOUBLE LEAF



47 67 68



88 1010

Campbell Industrial Doors are carried in stock in two types, Swing and Slide, and in five sizes each of single and double leaf units.

The design makes these doors exceptionally sturdy. Reinforced corners on all doors, 16 gauge metal in the tubing for stiles and rails and for the panels, all welded joints, and husky hardware contribute to long life at negligible maintenance cost.

Standard Pressed Steel Frames are supplied at extra cost.

Standard hardware is furnished with all doors and mortise cylinder locks are available at extra cost.

Construction details are shown on page 39 opposite.

SPECIFICATIONS

SIZE—Single Openings Maximum Height—10'0" Maximum Width— 5'0"

SIZE—Double Openings Max. Height or Width 10'0"

MATERIAL—Stiles & Rails 4½" x 1½" #16 Ga. Steel Formed Tubing

Reinforcements in Corners extend 8" in Each Direction (See Cut)

PANELS—#16 Ga. Steel

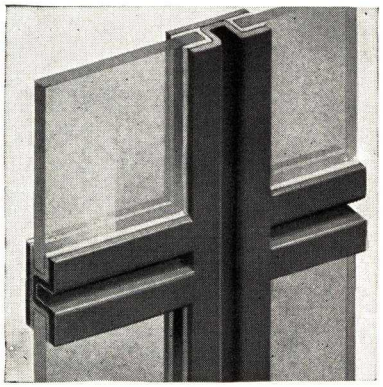
JOINTS—All welded Exposed surfaces are ground smooth.

HARDWARE—Swing Doors 3 Heavy Half-Surface Butt Hinges. Lever Latch & Padlock Brackets (Mortise Cylinder Lock may be substituted at Extra Cost). Top & Bottom Bolts.

Slide Doors—Tracks, 4 wheel, Heavy Duty, Double Trolleys, Guides, Handles, Hasp and Staple.

STOCK SIZES

NO	SIZE OF OPENING				NO.	GLASS	SIZE OF DOOR	
	SWING TYPE		SLIDE TYPE			SIZE OF	BOTH TYPES	
	Width	Height	Width	Height	LTS.	LIGHTS	Width	Height
	SINGLE LEAF							
27	2'-6"	7'-0"	2'-3¼"	6'-10½"	4	8½" x 18"	2'-5⅝"	6'-11¼
37	3'-0"	7'-0"	2'-9¼"	6'-10½"	4	11½" x 18"	2'-11⅝"	6'-11¼
38	3'-6"	7'-6"	3'-3¼"	7'-4½"	4	14½" x 18"	3'-5⅝"	7'- 5¼
48	4'-0"	8'-0"	3'-9¼"	7'-10½"	6	11½" x 18"	3'-11⅝"	7'-11¼
510	5'-0"	10'-0"	4'-9¼"	9'-10½"	6	15½" x 22"	4'-11⅝"	9'-11¼
	DOUBLE LEAF							
47	5'-0"	7'-0"	4'-9¼"	6'-10½"	8	8½" x 18"	4'-11⅝"	6'-11¼"
67	6'-0"	7'-0"	5'-9¼"	6'-10½"	8	11½" x 18"	5'-11⅝"	6'-11¼"
68	7'-0"	7'-6"	6'-9¼"	7'- 4½"	8	14½" x 18"	6'-11⅝"	7'- 5¼
88	8'-0"	8'-0"	7'-9¼"	7'-10½"	12	11½" x 18"	7'-11⅝"	7'-11¼
1010	10'-0"	10'-0"	9'-9¼"	9'-10½"	12	15½" x 22"	9'-11⅝"	9'-11¼



Specially formed Muntin Bars give neat, trim lines

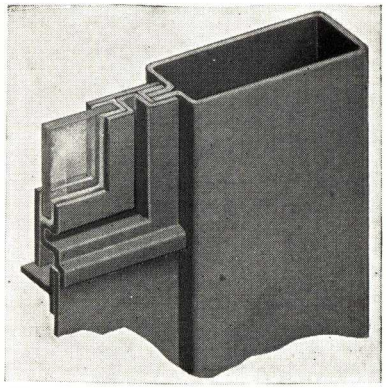
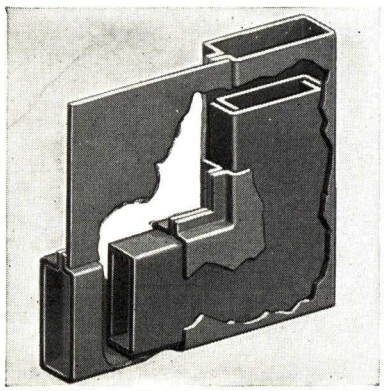


Plate Panels and Sash welded to Stile—smooth and strong

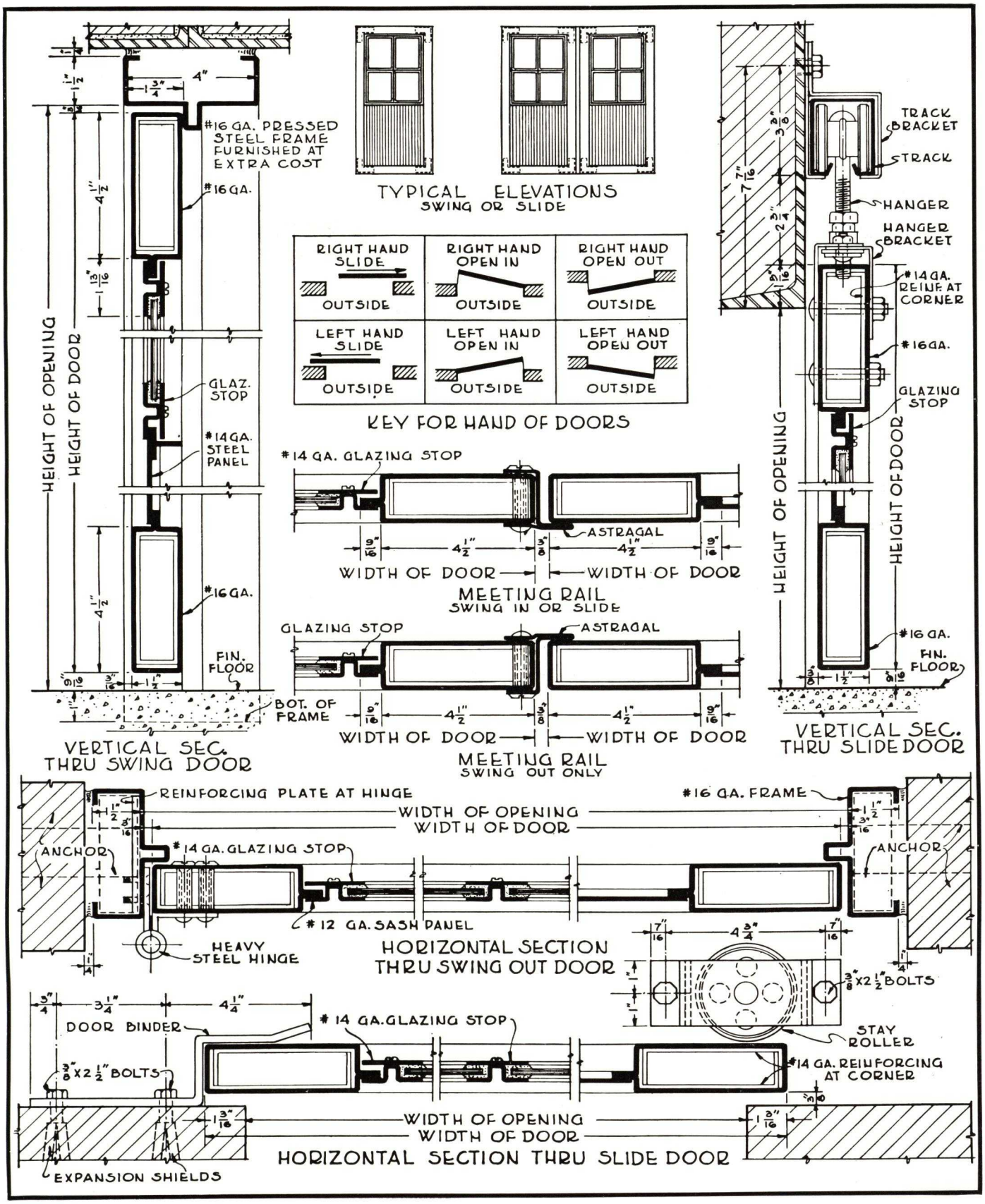


8" Corner Reinforcements in each direction

CAMPBELL INDUSTRIAL DOORS

SWING TYPE — DETAILS — SLIDE TYPE

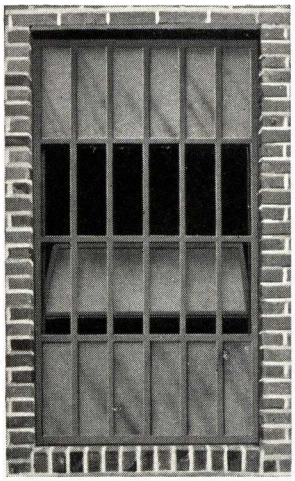
SCALE OF DETAILS 3"=1'-0"



CAMPBELL DETENTION WINDOWS

SECURITY TYPE

For Maximum Security Specify Main Frame Sections 1½" Deep.

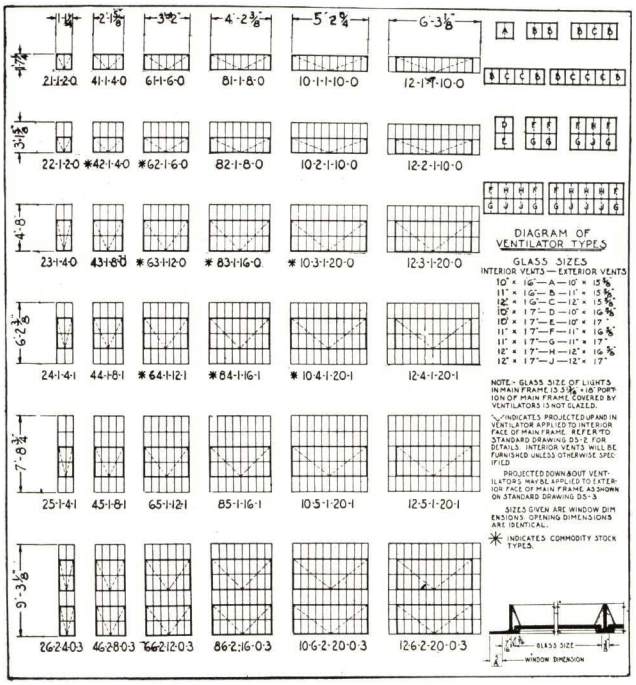


Campbell Security Type Windows offer a sturdy barrier to unauthorized entry. The extra heavy Campbell sections form a window with glass lights 5 13/16" wide by 18" high in which all muntins are coped and welded at intersections and are continuous from jamb to jamb and from head to sill.

To provide ventilation, yet retain the security feature, glass is omitted from lights in the main frame and a ventilator is applied to the unglazed portion of the window. The ventilator is glazed and is projected either up-and-in inside the frame, or down-and-out, outside the frame. The degree of opening may be limited in either case by removable stops.

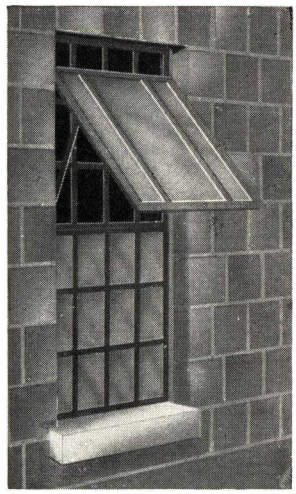
Eight types of Security Windows are carried in stock as Commodity Products for immediate shipment. These types are marked with an asterisk (*) in the plate below. Commodity Types have ventilators on the inside only.

TYPES AND SIZES



PROTECTION TYPE

For Maximum Protection Specify Main Frame Sections 1½" Deep



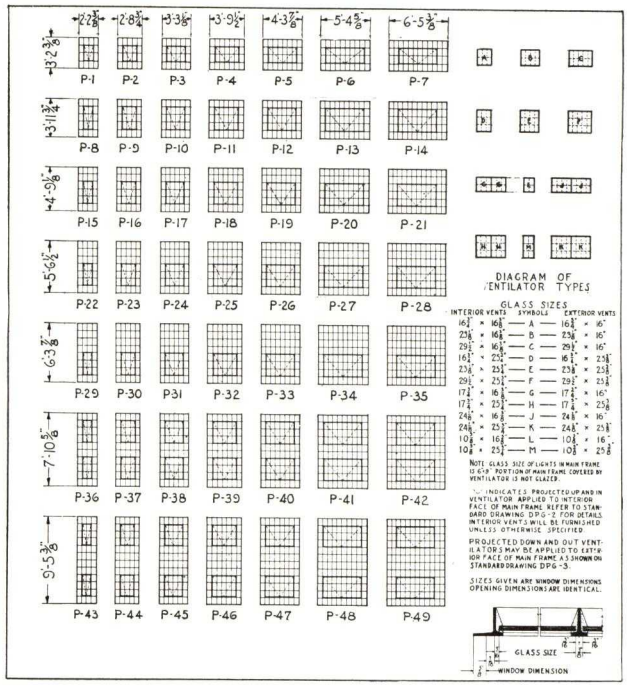
Campbell Protection Type Windows are similar in purpose, general design and construction to Security Type Windows. Additional protection is secured by decreasing the size of glass to approximately 6" x 9" lights. The greater number of muntins necessary for these small lights results in an exceptionally strong window which offers even greater protection against unauthorized entry.

Ventilators are welded to the unglazed portions of the frames and are projected up-and-in when attached to the interior, down-and-out when attached to the exterior. Interior, up-and-in vents will be furnished unless otherwise specified.

Removable stops are furnished which limit the opening of all vents.

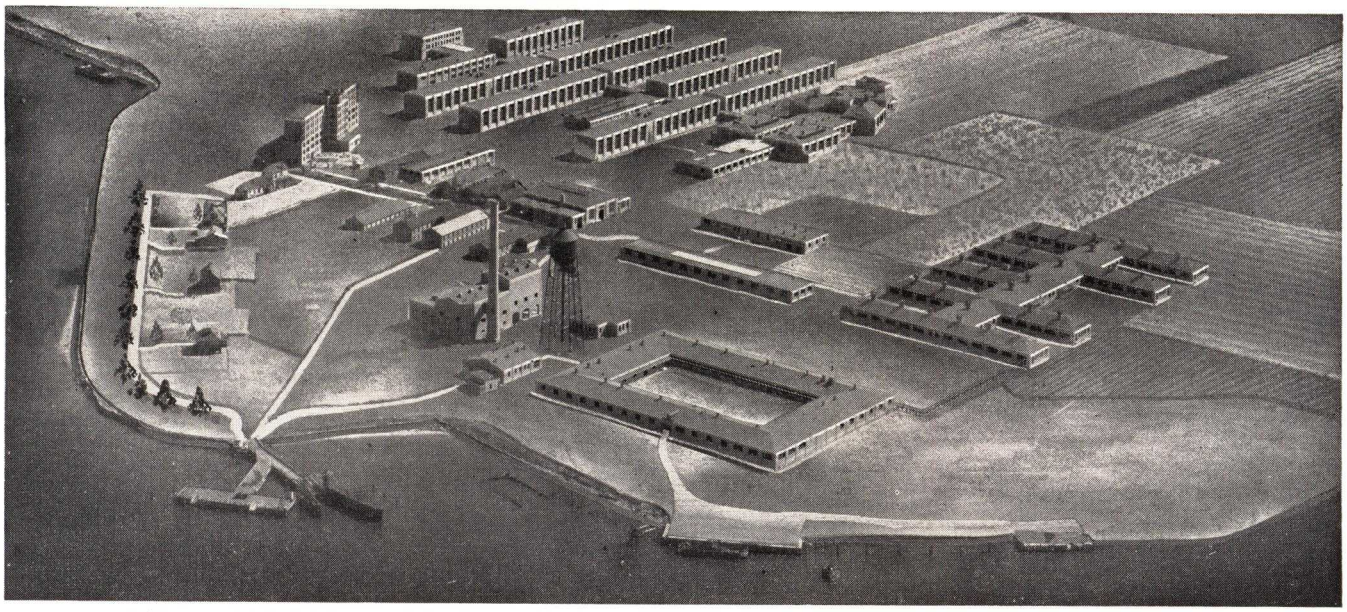
Campbell Protection Windows conform to the Treasury Department Regulations for the windows in U. S. Government Bonded Warehouses. They are therefore used to a considerable extent by distilleries and afford the necessary protection at a cost much less than that of other adequate means.

TYPES AND SIZES



CAMPBELL DETENTION WINDOWS

INTERMEDIATE GUARD TYPE SUPERBAR GUARD TYPE



Rikers Island (N. Y.) Penetentiary. Sloan and Robertson, Architects. The Builders, P. J. Carlin Construction Company.
3055 Campbell Detention Windows

Campbell Detention Windows incorporate two features essential to modern penology—a maximum of light and an abundance of ventilation—both of which have been secured while actually lessening the opportunity to escape.

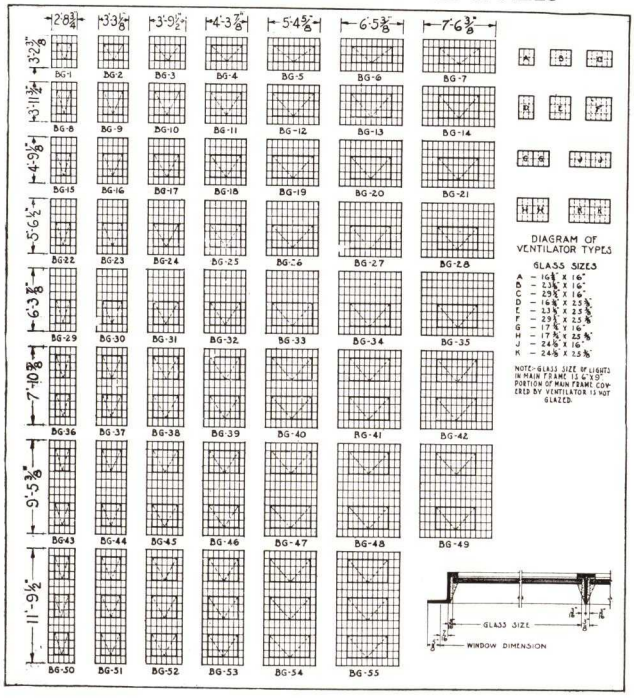
Campbell sections, because of their extra weight, are particularly well suited to use in detention windows.

The Intermediate Guard Type windows are glazed from the exterior and the whole frame is made a sturdy unit by welding all corners and all joints. Ventilators, securely welded to the interior of the main frame, may be either projected up-and-in or bottom hinged. All exposed screws are interrupted slot head detention type except in the case of hardware attachment where the screws are peined over.

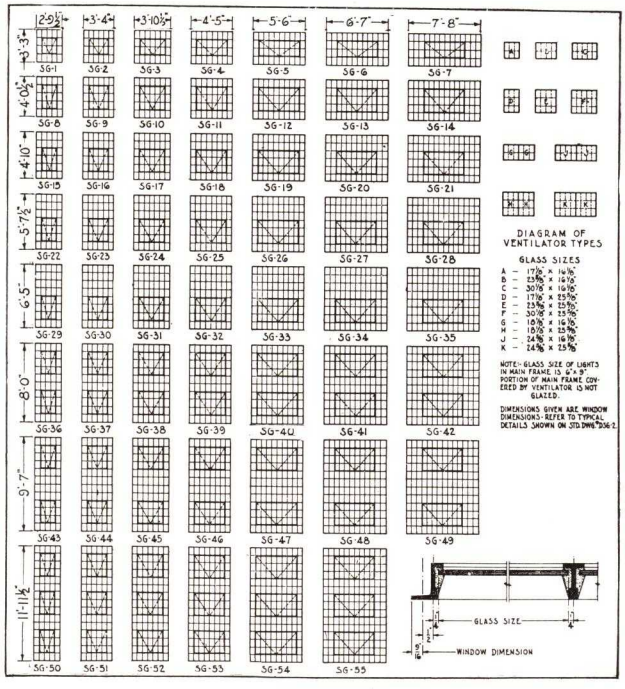
The Super-Bar Guard Type is made from even heavier sections with a modified bulb tee muntin member which effectively resists hand sawing and provides for putty retention. Frame members are Zee sections with additional metal on the interior surface to conform to the muntin contour.

These windows have been used in many outstanding penal institutions among which are Rikers Island, (N. Y.) Penetentiary (pictured above) Sing Sing (N. Y.) Prison, Fort Worth (Texas) Narcotic Farm, Attica (N. Y.) State Prison, Harrisburg (Pa.) Insane Hospital, Randolph County (Ala.) Jail. Auburn (N. Y.) State Prison, Illinois State Penetentiary (Menard, Ill.), Dixon (Ill.) State Hospital, El Reno (Okla.) Reformatory, Sandstone (Minn.) Federal Jail, Tallahassee (Fla.) Federal Jail, Hillsville (Va.) Jail and many others.

INTERMEDIATE GUARD—TYPES & SIZES



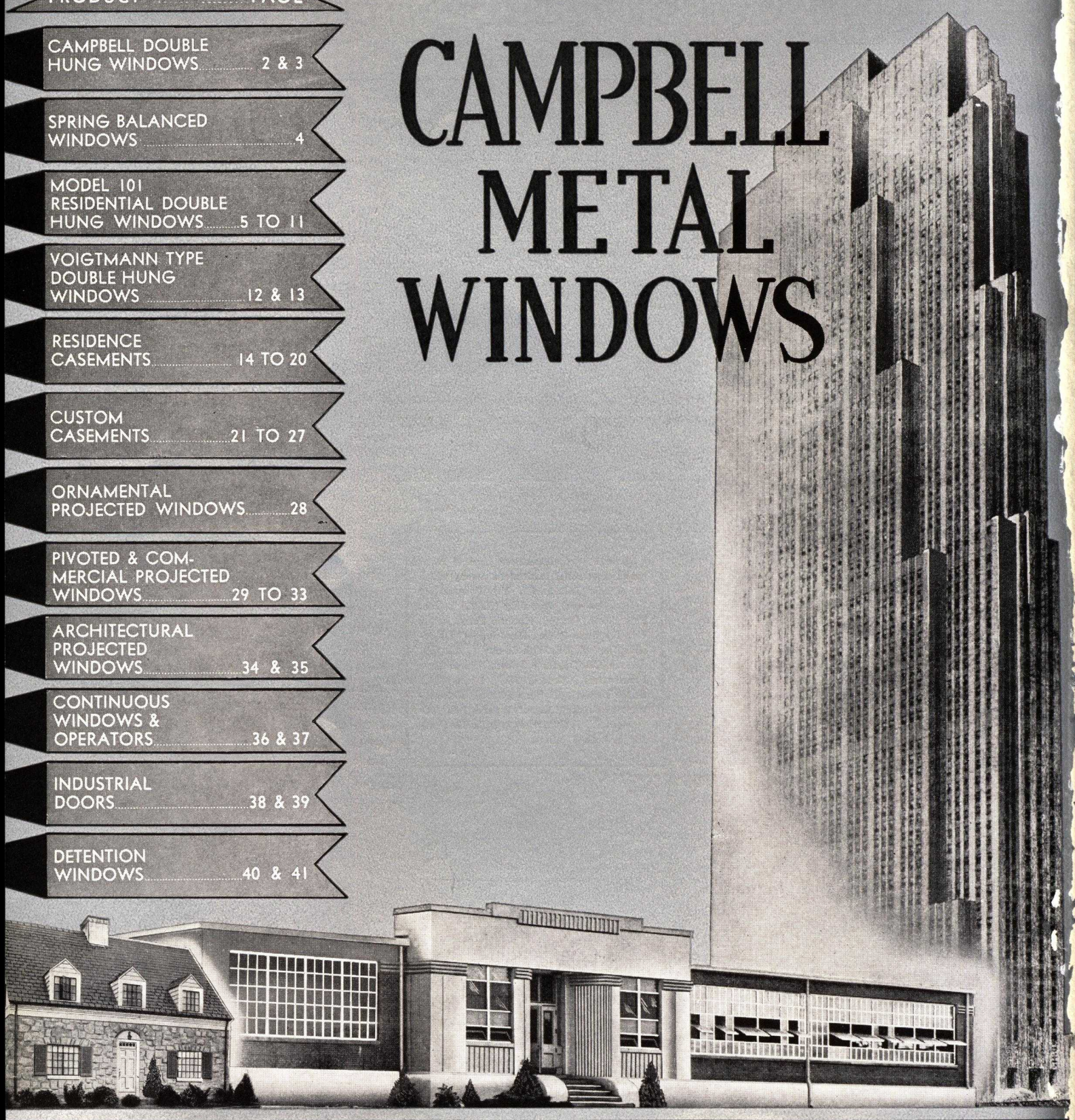
SUPERBAR GUARD—TYPES & SIZES



CAMPBELL MAKES THE RIGHT WINDOW FOR EVERY TYPE OF BUILDING

PRODUCT	PAGE
CAMPBELL DOUBLE HUNG WINDOWS	2 & 3
SPRING BALANCED WINDOWS	4
MODEL 101 RESIDENTIAL DOUBLE HUNG WINDOWS	5 TO 11
VOIGTMANN TYPE DOUBLE HUNG WINDOWS	12 & 13
RESIDENCE CASEMENTS	14 TO 20
CUSTOM CASEMENTS	21 TO 27
ORNAMENTAL PROJECTED WINDOWS	28
PIVOTED & COMMERCIAL PROJECTED WINDOWS	29 TO 33
ARCHITECTURAL PROJECTED WINDOWS	34 & 35
CONTINUOUS WINDOWS & OPERATORS	36 & 37
INDUSTRIAL DOORS	38 & 39
DETENTION WINDOWS	40 & 41

CAMPBELL METAL WINDOWS



CAMPBELL METAL WINDOW CORP.

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

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BLISS STEEL PRODUCTS CORPORATION

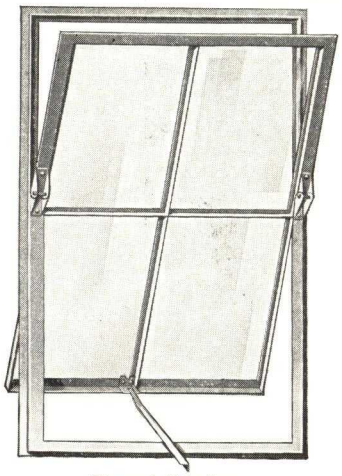
Manufacturers of Solid Section Steel Windows

EAST SYRACUSE, N. Y.

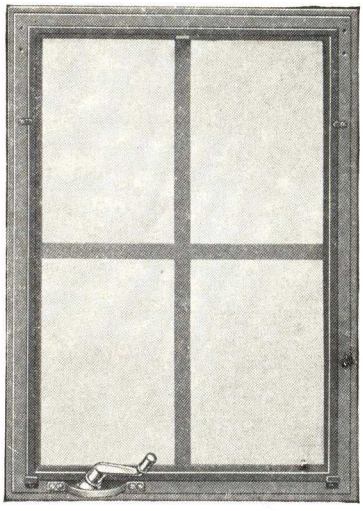
Member of Solid Section Steel Window Industry

BLISS PRODUCTS

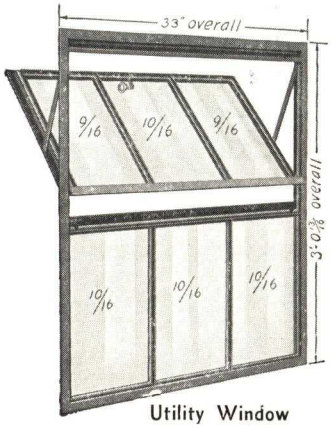
PIVOTED WINDOWS
PROJECTED WINDOWS
RESIDENCE CASEMENTS
BASEMENT WINDOWS
UTILITY WINDOWS
CONTINUOUS WINDOWS
STEEL TUBE DOORS



Pivoted Window



Residence Casement



Utility Window

Pivoted Windows

A window of guaranteed quality. Welded throughout, weather durable and made to withstand hard usage. Furnished with strong adjustable hinges allowing ventilator to open 90°. Cam and stay-bar hardware is standard but spring catch and chain may be furnished.

Architectural Projected Windows

An attractive and well-proportioned window welded throughout—all welds ground. It is designed with the utmost care for appearance, ventilation and screening. This window is ideal for office buildings, etc. (illustration at right).

Operation of ventilators and tightness guaranteed. Inside putty glazed for easy replacement of glass.

Commercial Projected Windows

These windows are fabricated from the same sections as pivoted windows with a slight difference in the operation of ventilators.

While slightly higher in cost than the unscreened pivoted type, if screening is necessary, the total cost of projected windows and screens is lower.

Residence Casements

Casements of artistic appearance combined with durability. These windows will add to the pride of ownership in any home. They are welded throughout and weathertight.

Basement Windows

The "Mostlite" Puttyless Basement Window (illustrated) includes many features: ventilator stays open in any position and can be instantly removed, glazed on cork, weathertight, welded and riveted throughout.

"Mostlite" Windows are made in sizes to fit cement or cinder blocks.

A fine window at a very reasonable price.

Heavy type basement windows can also be furnished. They are double weathered, top projecting and supported by spring steel arms.

Utility Windows

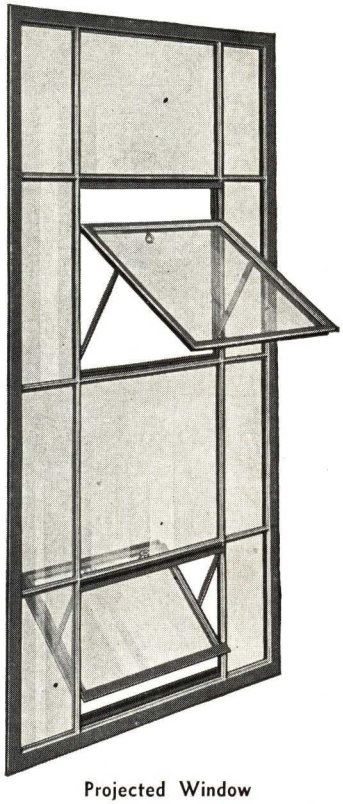
The "Manifold" is a fine utility steel window of good design, welded or riveted throughout. This window is very popular for private garages, penthouses, and small stores. A window that operates very easily and will give a lifetime of continuous service.

Continuous Windows

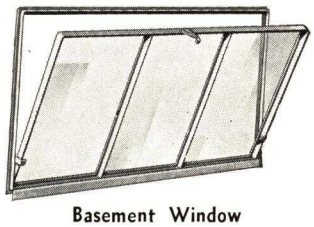
We have furnished this type of window for some of the country's largest manufacturers. These windows are welded throughout, and of rigid construction that will last. Furnished with mechanical operators of continuous chain type.

Steel Tube Doors

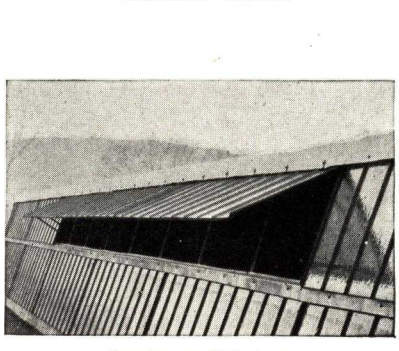
Doors of any type carefuly constructed of steel tube, welded and ground throughout.



Projected Window



Basement Window



Continuous Windows

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JOHN C. AUSTIN, JOHN PARKINSON AND ALBERT C. MARTIN, Associated Architects

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Stanwin Residential (Light Section) Casement and Doors

Norman (Medium Section) Casement and Doors

Universal Custom Built (Heavy Section) Casement and Doors

PROJECTED WINDOWS AND COMBINATION CASEMENT PROJECTED WINDOWS

CRITTALL DOUBLE HUNG WINDOW CO.

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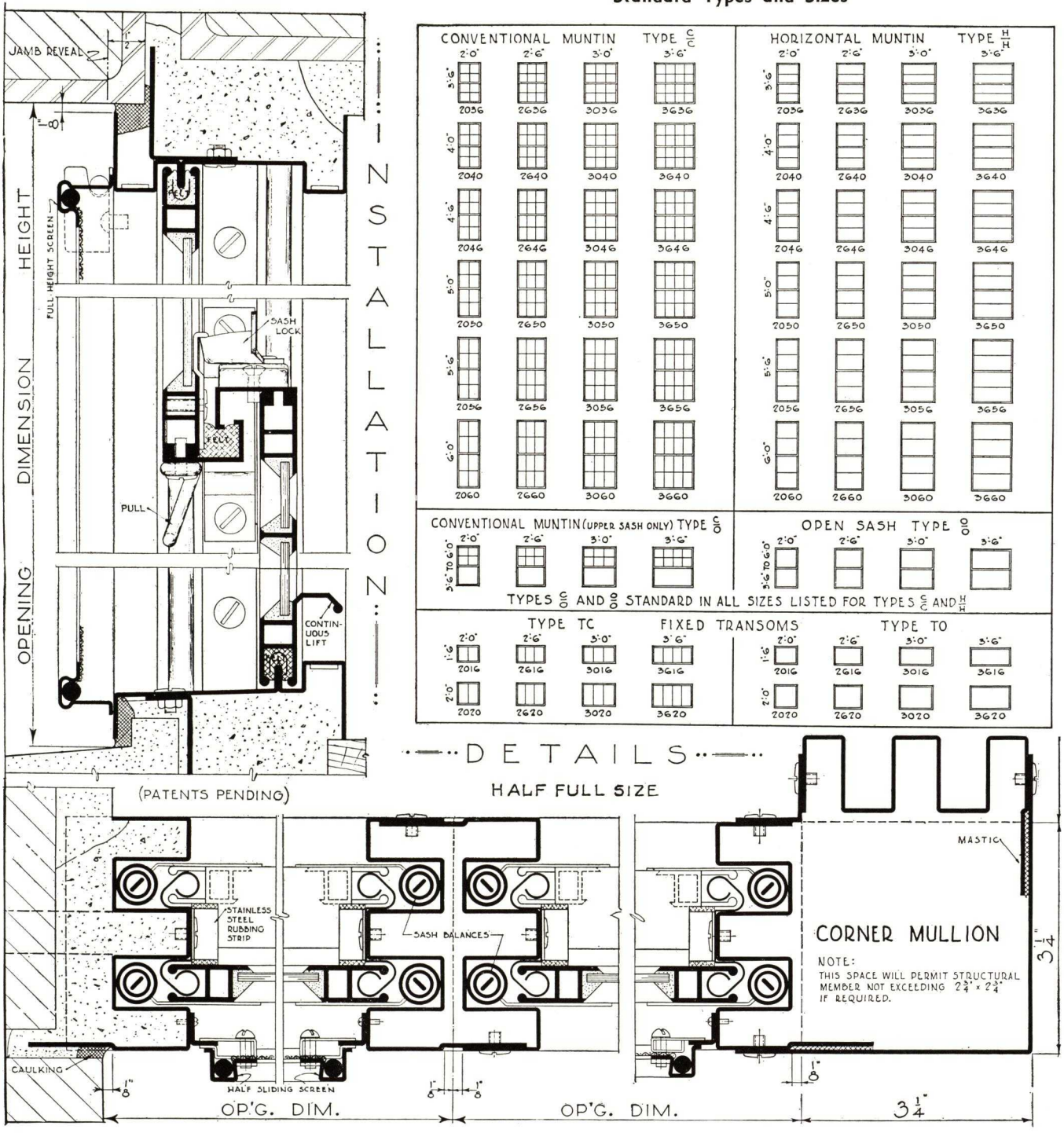

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AND SUBSIDIARY COMPANIES

Designers and Creators of Modern Steel Windows

JAMESTOWN, N. Y.

NEW YORK SALES OFFICE: 110 East 42nd Street

Croft Products

Croft Steel Windows and allied products are produced to conform to the highest standards of both workmanship and material.

Products include Residence, Intermediate, Projected, Combination and Heavy Casements, Casement Doors, Pivoted, Commercial Projected, Architectural Projected, Continuous and Basement Windows, Industrial Doors and Mechanical Operators.

All products receive heavy shop coat of metallic rust resisting paint before shipment.

Hardware

Hardware of solid bronze for all casement products is standard equipment even for the most inexpensive casement. All casement hardware is produced in our own foundry under strictest supervision to guarantee perfect fit and satisfaction.

Screens

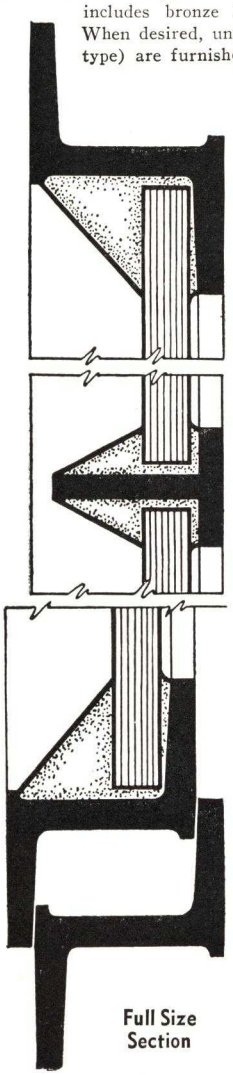
Screens of steel tubular frames covered with 16-mesh bronze wire (rewireable type) will be furnished for any type of window when desired. Finished in gray baked-on enamel.

Architect's Service Department

Architects are invited to call on our Service Department for preliminary estimates, complete suggestions, details, layouts and definite quotations.

Croft Residence and Apartment House Casements

Croft Residence and Apartment House Casements are modern windows of superior quality and craftsmanship. Single and combination casements in a wide range of sizes, with or without sill ventilators or transoms, permit a selection of exact types to meet individual requirements. Standard equipment includes bronze locking handles and extended friction hinges. When desired, underscreen operators (worm and gear or quadrant type) are furnished.



Full Size Section

Basement Windows

A complete stock of standard basement windows in various sizes is available at all times for immediate delivery from our warehouse.

Croft Replacement Windows

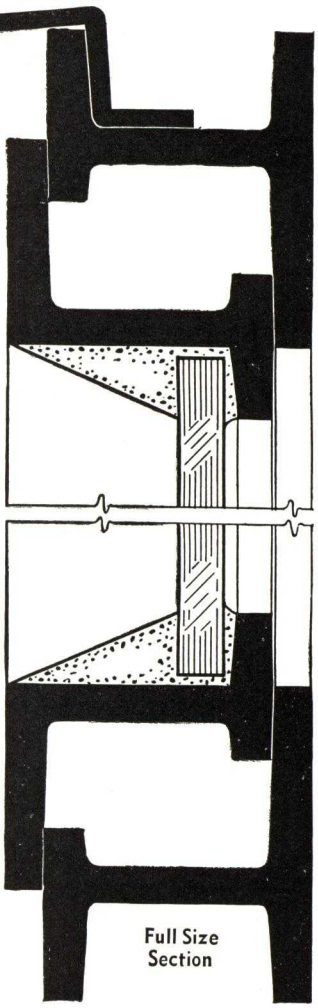
A wide range of standard sizes in an unusually low cost casement window is available for replacement of wood windows in inexpensive small houses.

Lemco Medium Heavy Casements—Standard and Custom Built

Medium heavy casements are designed to meet the requirements of a heavier type window for better class residences, apartments, public and semi-public buildings. A large range of standard sizes is available. These casements can be built to conform to any architectural design. Ventilators are made to hinge, project or pivot. Hardware of solid bronze in a selection of various patterns is furnished as standard equipment.

Lemco Extra Heavy Casements

Lemco extra heavy casements are designed to fill the need of an unusually heavy window. Full particulars sent upon request.



Full Size Section

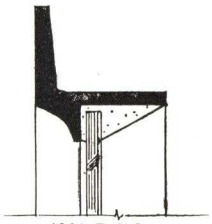
Croft Industrial Windows

Pivoted and Commercial Projected Windows—Furnished in a wide range of standard sizes. Standard hardware consists of iron pushbar, cam latch with pole ring, or spring catch and chain.

Architectural Projected—Designed for appearance as well as practibility. Solid bronze locking handles and continuous glazing angles are standard equipment.

Continuous Windows—Are most practical for industrial plants or buildings having monitors or sawtooth construction. Send for full particulars.

Mechanical operators for all types.



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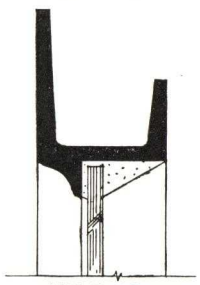
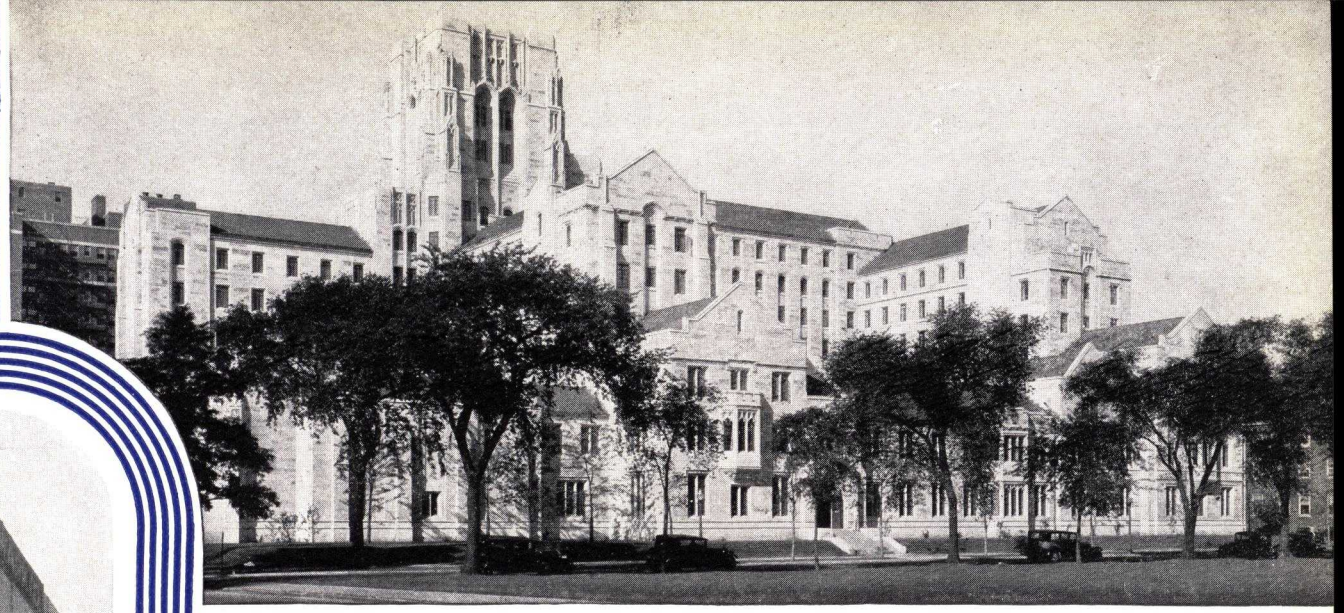
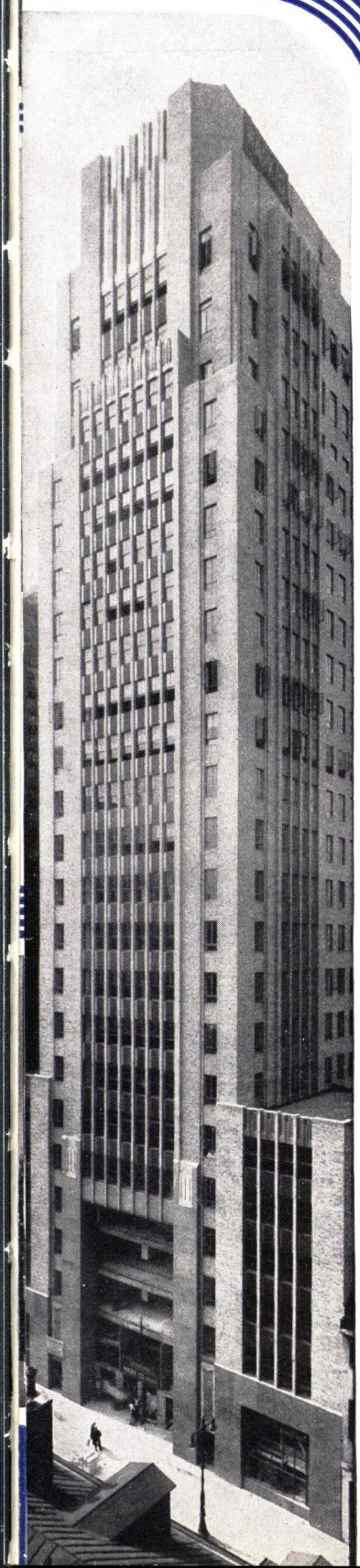


(½) Full Size

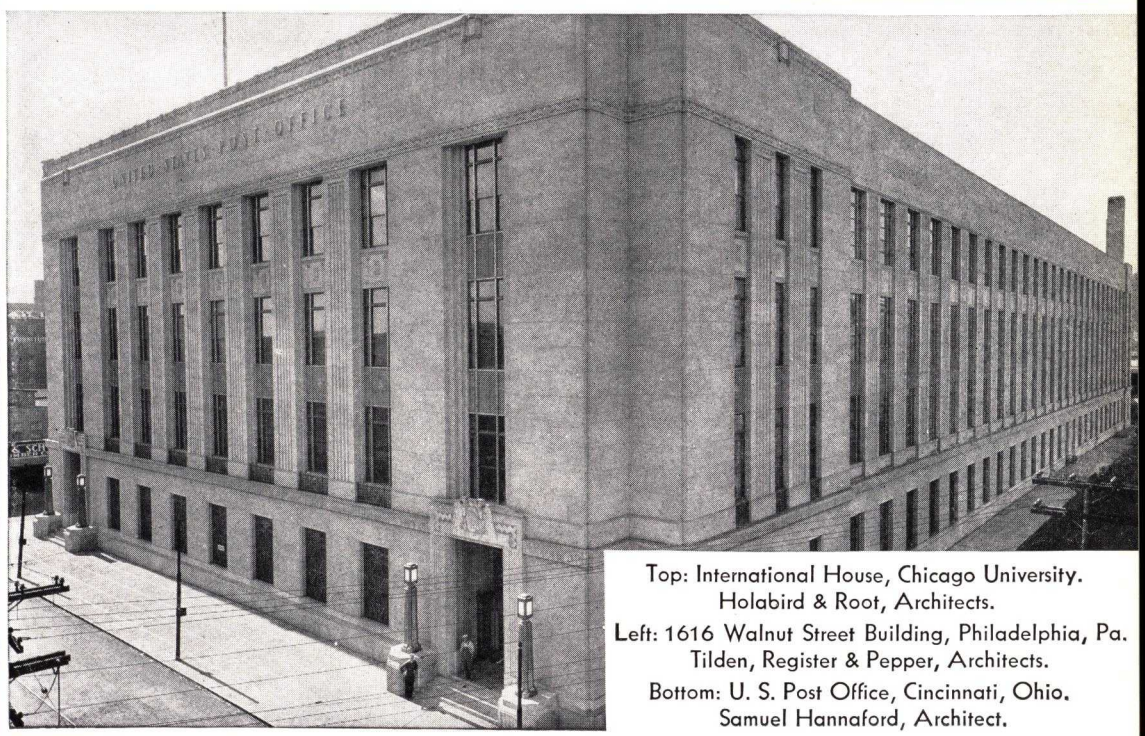
CATALOGS FOR ALL PRODUCTS SHOWING STANDARD TYPES, SIZES AND COMPLETE DETAILS SENT UPON REQUEST





Fenestra

BLUE BOOK OF STEEL WINDOWS



Top: International House, Chicago University.
Holabird & Root, Architects.

Left: 1616 Walnut Street Building, Philadelphia, Pa.
Tilden, Register & Pepper, Architects.

Bottom: U. S. Post Office, Cincinnati, Ohio.
Samuel Hannaford, Architect.

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Pier ..... DO 7
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ALHAMBRA, CAL.—A. W. Stephens
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BUFFALO, N. Y.—Eugene F. Lerch
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CHARLESTON, S. C.—Van-Smith Bldg. Mat. Co.
CHARLOTTE, N. C.—Southern Eng. Co.
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CHICAGO, ILL.—Detroit Steel Prod. Co.
CINCINNATI, OHIO—Detroit Steel Prod. Co.
CLEVELAND, OHIO—Detroit Steel Prod. Co.
COLUMBUS, OHIO—Alvan Tallmadge
CUYAHOGA FALLS, OHIO—Chas. Haas Co.

DANVILLE, ILL.—Material Fuel Co.
DALLAS, TEX.—Detroit Steel Prod. Co.
DALLAS, TEX.—S. A. Ellsberry Co.
DAVENPORT, IOWA—Austin Crabbs, Inc.
DAYTON, OHIO—F. G. Kemper Co.
DECATUR, ALA.—Decatur Iron & Steel Co.
DENVER, COLO.—R. T. MacCracken & Co.
DES MOINES, IOWA—Hawkeye Eng. Co.
DETROIT, MICH.—Detroit Steel Prod. Co.
DUBUQUE, IOWA—Daumgartner Sales Service
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EASTON, PA.—General Supply Co.
ELMIRA, N. Y.—Elmira Bldg. Units Inc.
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MEMPHIS, TENN.—Tri-State Iron Works
MIAMI BEACH, FLA.—B. F. Harris Co.
MILTON, PA.—Milton Steel & Supply Co.
MILWAUKEE, WIS.—Jackson & Fahey Co.
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SAN FRANCISCO, CAL.—Detroit Steel Prod. Co.
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Monumental Steel Windows

Fenestra

Residence Steel Windows

Manufactured by

DETROIT STEEL PRODUCTS COMPANY

2250 East Grand Boulevard, DETROIT, MICH.

FACTORIES: DETROIT, MICH., and OAKLAND, CALIF.

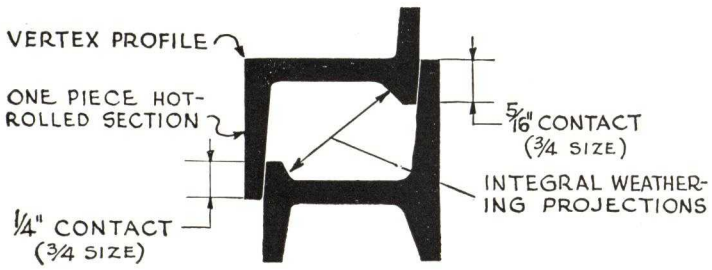
FENMARK—PROJECTED FENMARK—FENCRAFT—CUSTOM

GENERAL WINDOW SPECIFICATIONS

These specifications apply particularly to the windows named and are to be used in connection with the individual information regarding these windows given on succeeding pages.

1—SECTIONS

Sections are solid, hot rolled, vertex profile steel, especially designed for the manufacture of casement windows. Weathering projections are rolled INTEGRAL with the sections to provide overlapping, parallel surface contacts of not less than ¼" at both outside and inside points of closure. Movable sash make both outside and inside contacts against one-piece, hot rolled section at head, jambs and sill.

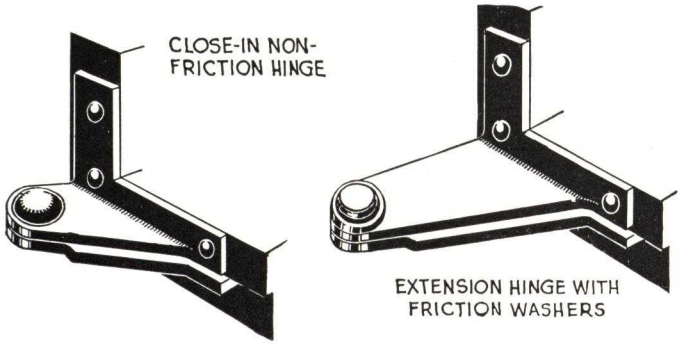


All sections are straightened by rerolling and are individually, electrically tested for straightness. Corners of all ventilators are electrically welded and ground smooth.

2—HINGES

Side Hung Ventilators are hung on "Extension Hinges" or on "Close In Hinges" of especially designed, vertex profile, solid, hot rolled steel. Hinge pins are solid bronze, accurately fitted into flanged bronze bushings. Top and Bottom Hung Ventilators are hung on flat, 5-knuckle hinges.

(Both "Extension" and "Close In" Hinges may be equipped with oil-impregnated, friction washers, eliminating the need of sill adjusters, but these "Friction" Hinges are not recommended where windows are to be screened, as they cannot be used with Fenestra Flat Screens.)



3—LOCKING HANDLES

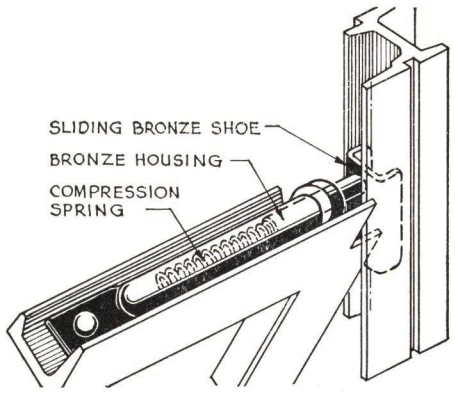
All Locking Handles are of Specification Solid Bronze unless otherwise specified and are of ornamental design attached to ornamental brackets either by screws or friction clevises.

Handles, on Side Hung, Screen Type swing leaves, are of hinged design to permit their being slipped through screen escutcheons. When windows contain ventilators or swing leaves beyond reach from the floor, handles suitable for pole operation are supplied.

(See Locking Handle designs under various window types.)

4—SLIDING SHOES

Projected Ventilators are supported on heavy, spring steel, bronze pivoted side arms and are equipped (each) with two bronze, sliding, friction shoes.



the friction being maintained by compression springs of heavy, rust-proofed, music wire, completely enclosed in bronze housings.

(Projected ventilators used at the sills of windows, tilt in from the top while sliding up from the bottom. Projected ventilators used above the sill usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

5—WINDOW CLEANING

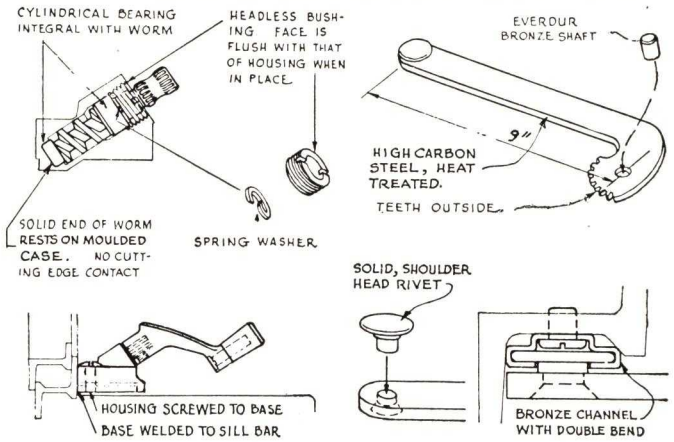
(Windows with projected ventilators or with single, side-hung ventilators on extension hinges, or with two, adjacent side hung ventilators on close-in hinges, may be cleaned on the outside from the inside. Windows with single ventilators on close-in hinges must be cleaned from the outside.)

6—ADJUSTERS

Side Hung Ventilators are either (a) Screened Type, equipped with non-friction hinges and Roto-Adjusters or (b) Standard Type, equipped with

friction hinges but no adjuster. Sliding Friction Adjusters can be supplied as specials if so specifed.

(The Fenestra Roto-Adjuster is attached at the sill of the casement to permit opening or closing the swing leaf without touching the screen. It consists of a hardened, solid steel shaft with machine cut teeth, the ends of the shaft formed



into cylindrical bearings. The upper end of the shaft carries a spring washer, a headless, Everdur Bronze bushing and a bronze Adjuster Handle.

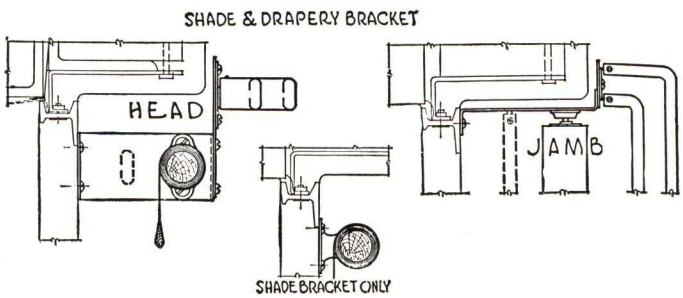
(The machine cut teeth are meshed with a gear and arm blanked from a single piece of heat treated, high carbon, cold rolled steel. The outer end of the arm carries a shoulder rivet which slides in an especially designed, drawn brass channel guide on the under side of the swing leaf.

(Worm shaft and gear are housed in a bronze case which rests on a solid, rolled steel bracket and is held by three screws. The bracket is solidly welded to the casement frame in such a position that the window stool is easily fitted without notching.)

Top Hung Ventilators are either (a) Screened Type with Underscreen, Notched Stay Adjusters or (b) Standard Type with Peg and Stay Adjusters. Projected Out Ventilators may be equipped with 15″ Underscreen, Stay Adjusters and Fenestra Flat Screens at extra cost when specified.

7—SHADING

Most windows are drilled at both jambs near the head for the attachment



of shade brackets—brackets to be supplied by the shading contractor. Shade bracket clips, accommodating any standard shade bracket can be supplied at extra cost where specified.

(Where inside swinging, sliding or rolling screens are used care should be taken to locate the shades and drapery brackets with due regard for screen clearance. See Section 9.)

8—MULLIONS—FINS

Mullions and Transom Bars are provided between adjacent windows where specified.

(In Fenmark or Projected Fenmark types, the mullions may be omitted where specified and narrow vertical lines may be secured by bolting the jambs of the adjacent windows together. See Plate G425.)

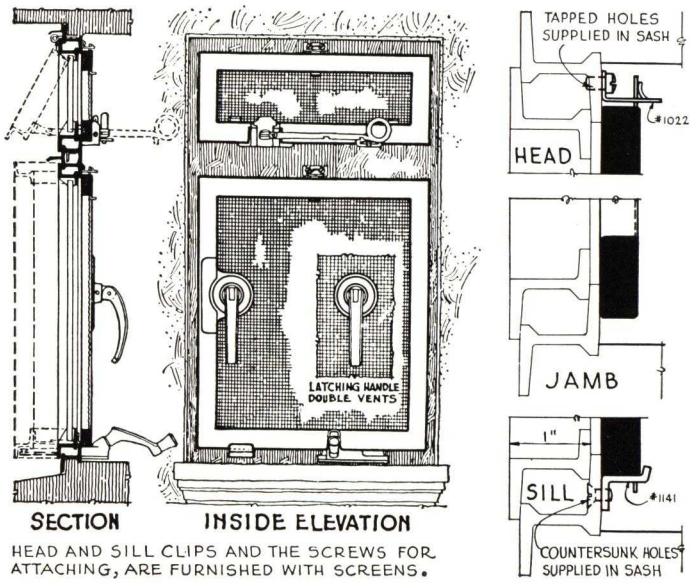
9—SCREENING

(Fenestra Screen Type Windows with Fenestra Flat Screens are recommended for all Fenmark, Fencraft and Custom Windows where screens are required. Fenestra Standard Type windows do not accommodate Flat Screens but, if necessary, may be screened with swinging, sliding or rolling screens. Fenestra Flat Screens are available for use on Projected Fenmark Windows.)

Fenestra Flat Screens for all Screened Type, Open-Out Ventilators lie flat against the inside of the window frame and permit complete operation of the swing leaves—opening, closing and locking—without touching the screen. Screens for all Open-In Ventilators are set flat against the outside of the window frame.

Screens have frames of cold rolled, rust-proofed steel, with continuous, internal, triangular reinforcement. Frames painted two coats of gray enamel, the first coat baked on. Cloth is 16-mesh, bronze wire. All screens are removable and rewirable. A circular aperture in each screen permits it to fit snugly over and around the locking handle.

(Screens are available with bronze frames or with aluminum frames and aluminum wire cloth. Also with finer than 16-mesh. Extra cost where specified.)



HEAD AND SILL CLIPS AND THE SCREWS FOR ATTACHING, ARE FURNISHED WITH SCREENS.

10—PAINTING

All windows receive adequate shop painting to protect them during transportation to the building site. Provision should be made for field painting by the painting contractor. One metal protective coating should be applied to thoroughly cleaned surfaces after erection and before glazing. Final painting should be deferred until about three weeks after glazing to allow the putty to set.

At slight extra cost, windows can be supplied with a new rust-resisting finish which includes Bonderizing, painting, and oven baking. See page 19.

11—MASTIC

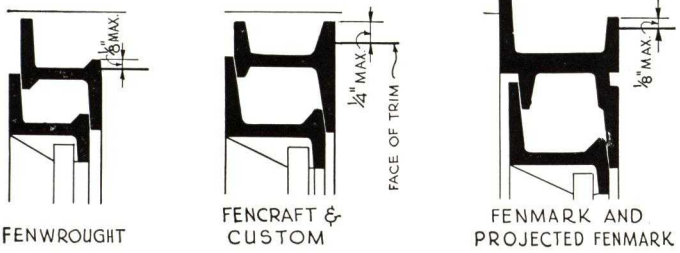
Mastic is supplied by the window manufacturer for sealing at masonry sills and at vertical or horizontal connections between all windows having UNEQUAL leg frame section; and for sealing the entire perimeter of windows having EQUAL leg frame section.

12—ERECTION

(Wherever possible, windows should be erected in prepared openings by the window manufacturer after all mason work has been completed.)

(Inside trim or plaster must be kept back to provide clearance for screens, fittings, etc., in accordance with "Trim Lap Allowances" below.)

TRIM LAP ALLOWANCES



FENWROUGHT | FENCRAFT & CUSTOM | FENMARK AND PROJECTED FENMARK

13—GLAZING

All windows should be glazed on the outside with high grade steel window putty, neatly applied. Each light should be bed-puttied, secured by spring glazing clips furnished by the window manufacturer, and then face puttied.

(Outside putty glazing is recommended in all cases, particularly for Fenmark and Projected Fenmark Windows. Glazing beads can be furnished at extra cost where specified and, when used, INSIDE glazing is advisable. Plate glass is recommended.)

14—ALUMINUM OR BRONZE WINDOWS

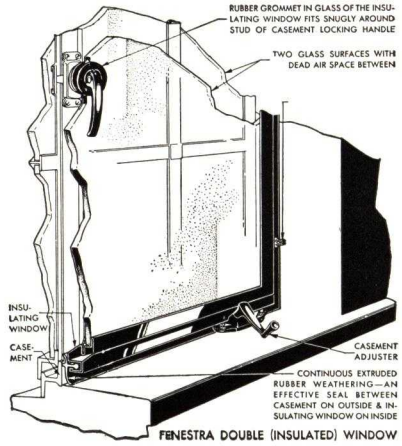
Fenmark, Projected Fenmark, Fencraft and Custom Windows may be secured in extruded aluminum sections equipped with white metal hardware and aluminum framed screens or in bronze sections equipped with bronze hardware and bronze frame screens. Consult the nearest Fenestra representative.

15—UNDERWRITERS' LABEL WINDOWS

Fenmark, Projected Fenmark, Fencraft and Custom Windows can be supplied bearing the Underwriters' Label. Glass sizes are limited to a maximum of 48″ in either dimension and an exposed glass area of 350 sq. in. In Fenmark and Projected Fenmark Types the ventilators may open in or out. In Fencraft Types the ventilators must open out. In all windows, ¼″ glass must be used. In other respects, labeled windows conform to standard Fenestra products.

16—INSIDE INSULATING WINDOWS

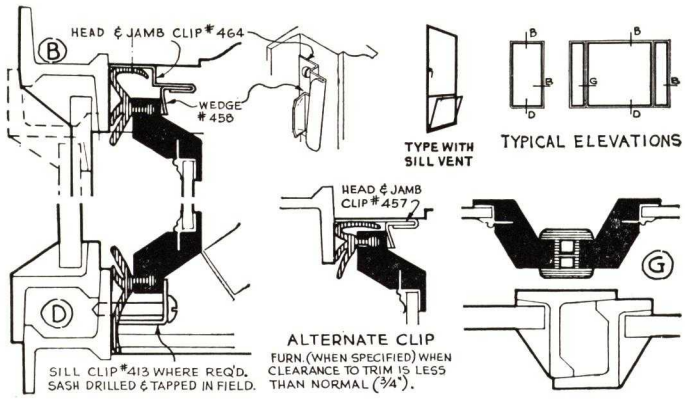
Designed to entirely cover Screened Types of Fencraft and Custom Casements and Screened, Standard and Economy types of Fenwrought Casements. Applied inside (when screens are removed) forming a "Double Window" with approximately 1″ of dead air space between glass surfaces.



FENESTRA DOUBLE (INSULATED) WINDOW

An effective, insulated, Double Window eliminating frost and condensation under all ordinary conditions (70 degrees and 40% relative humidity inside and 5 degrees above zero outside.) Heat loss through windows is reduced 60 per cent. A definite saving in fuel consumption is effected and sometimes an actual saving in the cost of heating equipment.

Easy to put on. Easy to take off. Preserves the attractive appearance of the window. Ventilated types available to provide restricted opening.



Frame is light weight, cold rolled, tubular steel with corners mitered, welded and reinforced. Shipped glazed with double strength glass held by spring bronze glazing splines.

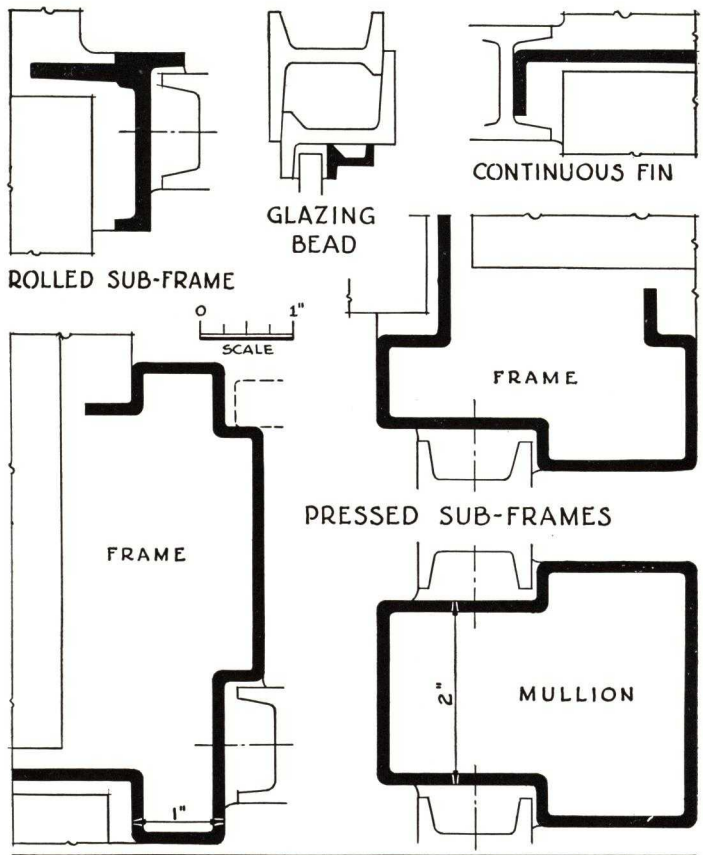
(Semi-circular head types have frames of extruded aluminum.)

An extruded rubber weathering seal around the entire perimeter presses tightly against and completely covers the casement frame insulating it against heat transmission. Moulded rubber grommet fits tightly around the casement locking handle.

Window is held in place by steel plated wedge clips applied on the inside or may be screwed direct to the casement frame, holes being drilled and tapped in the field.

17—METAL SUBFRAMES

Subframes of solid rolled steel or of 12-gauge pressed steel are available for use with Fenmark, Projected Fenmark, Fencraft or Custom Windows where specified. Consult the nearest Fenestra representative.



SUBFRAMES - FINS - GLAZING BEADS M-107

FENESTRA FENMARK WINDOWS

Fenmark Window With Fenestra Flat Screens (Muntins Omitted)

FRAMES 1½" DEEP

All General Specifications on Pages 1, 2 and 3 apply except Section 16.

Designed for use in Office Buildings, Hospitals and all types of monumental, educational and public buildings.

Vertical lines especially adapted to modern stepped back designs. Windows lend themselves to combination with metal stools and fully or semi-concealed radiation.

Supplied in Screened and Standard Types.

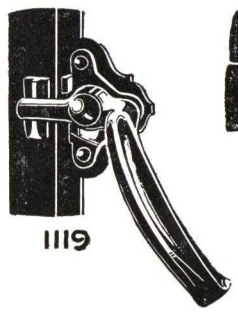
Frame sections are 1½" deep from front to back with unequal legs. Frame corners are mortised and tenoned, air hammer riveted and welded. Ventilator sections and muntins are 1¼" deep from front to back. Vent corners are electrically butt welded. Muntins often are omitted to permit the use of large single panes of plate glass.

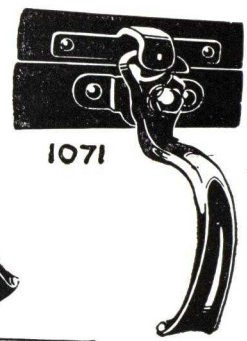
This window features a Projected-In ventilator at the sill which serves as a wind guard, deflecting drafts upward.

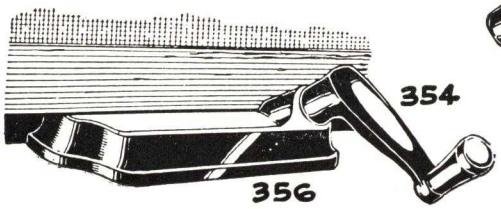
Transom Types may be either Projected In or Projected Out. Transoms and sill ventilators may be combined with side hung types by means of transom bars to provide windows of almost any height or width and almost any degree of ventilation up to 100%.

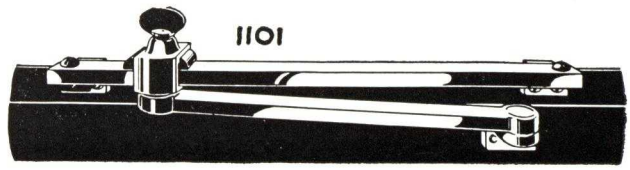
Specification, solid bronze hardware (SB) is standard. For Screened Types Handle 1023, Roto Adjuster 356, Adjuster Handle 354. (Adjuster 396 and Handle 397 on swing leaves over 2'0" wide. See Illustrations under "Custom".) For Standard Types, Handles 699, 1071 and 1220. Hardware available as special includes: Handles 1119, 1422, 1222; Adjuster Handle 355 and Thumb Screw Stay 1101.

We strongly recommend the use of Quick Shipment Types and Sizes shown on Page 5, supplied with standard hardware only.

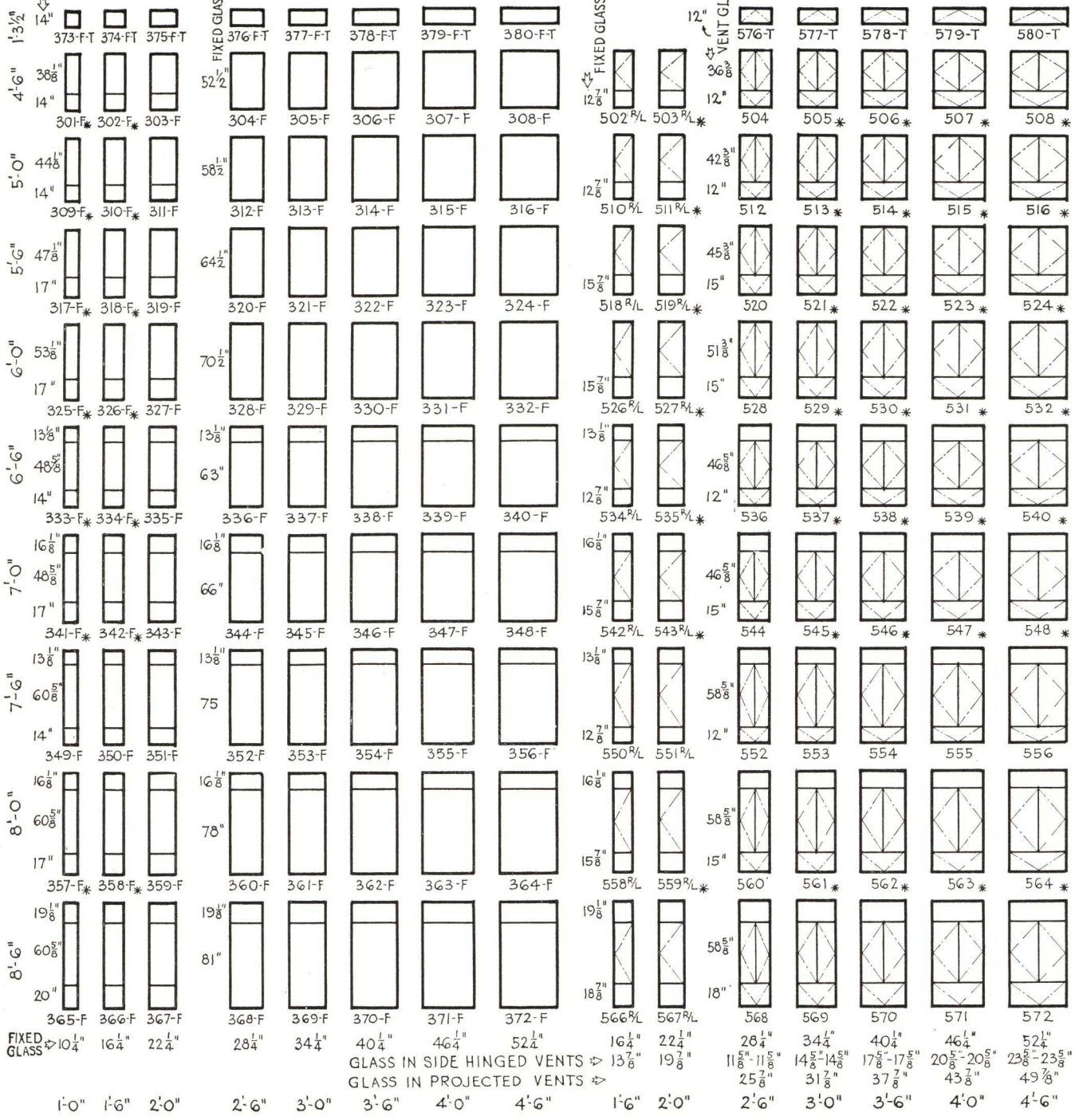




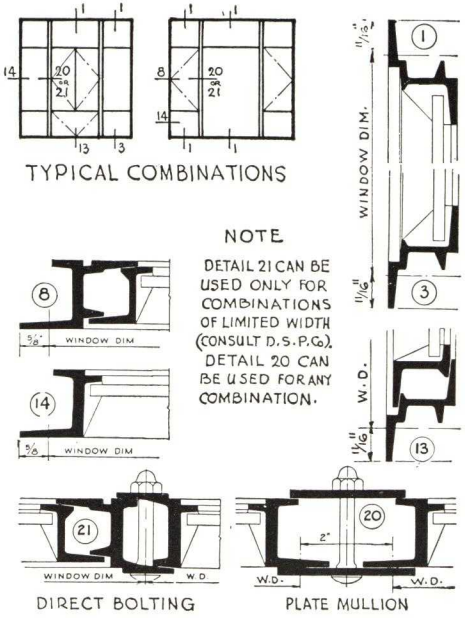




FENMARK WINDOWS ~ TYPES AND SIZES



QUICK SHIPMENT DETAILS



* INDICATES QUICK SHIPMENT TYPES

ALL QUICK SHIPMENT TYPES MUST INCLUDE DETAILS AS SHOWN ABOVE AND QUICK SHIPMENT HARDWARE AS SHOWN UNDER SPECIFICATIONS. NO OTHER DETAILS OR HARDWARE ARE AVAILABLE FOR QUICK SHIPMENT.

GENERAL NOTES

WINDOW & OPENING DIMENSIONS ARE SHOWN AT EXTREME LEFT AND AT THE BOTTOM BUT FRAME MEMBERS PROJECT BEYOND THESE POINTS FOR ANCHORAGE.

GLASS WIDTHS AND HEIGHTS ARE GIVEN BOTH FOR FIXED LIGHTS AND LIGHTS IN VENTILATORS. THESE VARY CONSIDERABLY DEPENDING ON THE TYPES.

BE CAREFULL TO USE THE PROPER "FIXED GLASS" HEIGHT WITH THE PROPER "FIXED GLASS" WIDTH AND THE PROPER "VENT GLASS" HEIGHT WITH THE PROPER "VENT GLASS" WIDTH.

T = TRANSOM FT = FIXED TRANSOM

R/L = RIGHT OR LEFT HAND SIDE HINGED VENT.

= SIDE HINGED = PROJECTED OUT = PROJECTED IN

PROJECTED FENMARK WINDOWS

FRAMES 1½″ DEEP

All General Specifications on Pages 1, 2 and 3 apply except Sections 2 and 16.

Designed for use in monumental, educational and public buildings, particularly where weather protection is desired while the ventilators are open. Projected Out Ventilators in an open position form a canopy above the opening. Projected In Ventilators shed water toward the outside.

Frame Sections are 1½″ deep from front to back with unequal legs. Frame corners are mortised and tenoned, air hammer riveted and welded. Ventilator Sections and Muntins are 1¼″ deep from front to back. Vent corners are electrically butt welded.

Projected Fenmark Windows are similar in construction to Fenmark Types except that all ventilators are of the "projected" type opening in or out as specified.

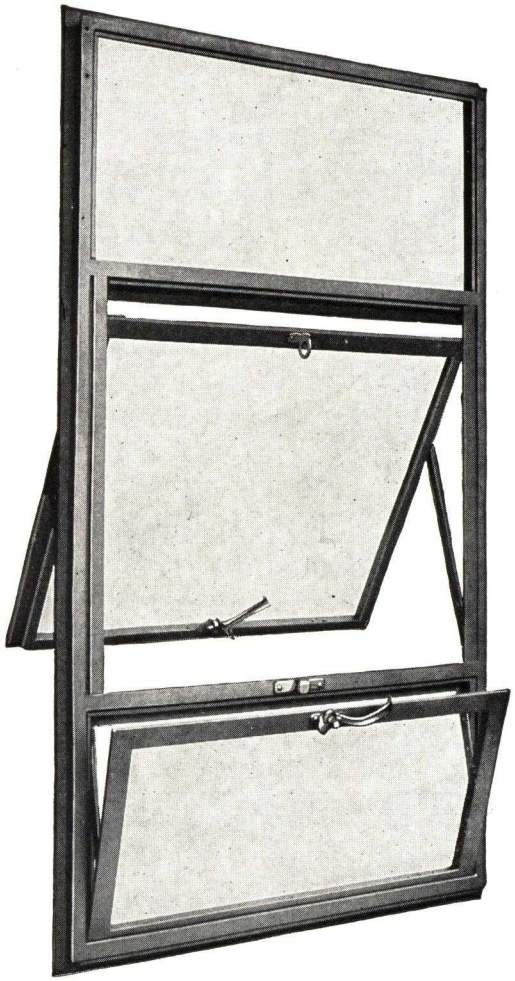
For operation of ventilators note particularly Section 4 of the General Specifications.

Where screens are desired with Projected Out Ventilators, Fenestra Flat Inside Screens and a 15″ Underscreen Stay Adjuster are available at slight extra cost. (See Sections 6 and 9, General Specifications.)

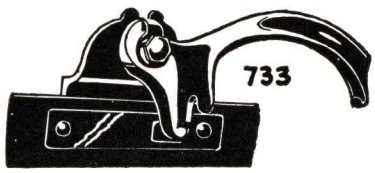
Ventilators usually are arranged so that all glass may be cleaned on both sides from inside the room.

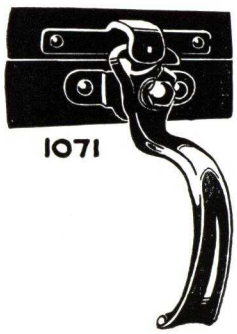
Specification, solid bronze hardware (SB) is standard. For Projected-Out Types, Handles 733 and 914, Pole Ring 151, friction shoes, alignment stops. For Projected-In Types, Handles 1071 and 1220, friction shoes. Hardware available as special includes: Handle 1422, Transom Stay 1108.

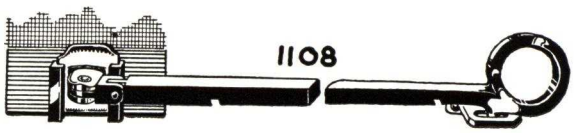
We strongly urge the use of Quick Shipment types and sizes shown on Page 7 supplied with standard hardware only.



Projected Fenmark Window With Projected-Out and Projected-In Ventilators







• PROJECTED FENMARK TYPES & SIZES •

FIXED GLASS

1'-3½" | 14" | FM-116-F-T | FM-117-F-T | FM-118-F-T | FM-119-F-T | FM-120-F-T | FM-121-F-T | FM-122-F-T | FM-123-F-T | 12" | FM-119-T | FM-120-T | FM-121-T | FM-122-T | FM-123-T

TYPES ABOVE THIS LINE ARE NOT QUICK SHIPMENT TYPES.

ALL TYPES BELOW THIS LINE ARE QUICK SHIPMENT TYPES.

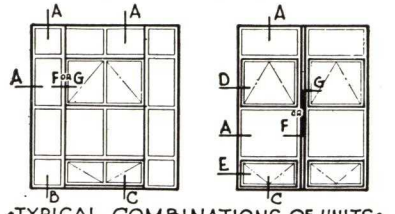
VENT GLASS

4'-6"	13⅝" 24" 14"	FM-1-F	FM-2-F	FM-3-F	FM-1	FM-2	FM-3	FM-4	FM-5	22" 12"	FM-46	FM-47	FM-48	FM-49	FM-50
5'-0"	13⅝" 30" 14"	FM-4-F	FM-5-F	FM-6-F	FM-6	FM-7	FM-8	FM-9	FM-10	28" 12"	FM-51	FM-52	FM-53	FM-54	FM-55
5'-6"	16⅝" 30" 17"	FM-7-F	FM-8-F	FM-9-F	FM-11	FM-12	FM-13	FM-14	FM-15	28" 15"	FM-56	FM-57	FM-58	FM-59	FM-60
6'-0"	19⅝" 30" 20"	FM-10-F	FM-11-F	FM-12-F	FM-16	FM-17	FM-18	FM-19	FM-20	28" 18"	FM-61	FM-62	FM-63	FM-64	FM-65
6'-6"	13¼" 24" 24" 14"	FM-13-F	FM-14-F	FM-15-F	FM-21	FM-22	FM-23	FM-24	FM-25	22" 22" 12"	FM-66	FM-67	FM-68	FM-69	FM-70	22" 24"	FM-91	FM-92	FM-93	FM-94	FM-95
7'-0"	16¼" 24" 24" 17"	FM-16-F	FM-17-F	FM-18-F	FM-26	FM-27	FM-28	FM-29	FM-30	22" 22" 15"	FM-71	FM-72	FM-73	FM-74	FM-75	22" 24"	FM-96	FM-97	FM-98	FM-99	FM-100
7'-6"	13¼" 30" 30" 14"	FM-19-F	FM-20-F	FM-21-F	FM-31	FM-32	FM-33	FM-34	FM-35	28" 28" 12"	FM-76	FM-77	FM-78	FM-79	FM-80	28" 30"	FM-101	FM-102	FM-103	FM-104	FM-105
8'-0"	16¼" 30" 30" 17"	FM-22-F	FM-23-F	FM-24-F	FM-36	FM-37	FM-38	FM-39	FM-40	28" 28" 15"	FM-81	FM-82	FM-83	FM-84	FM-85	28" 30"	FM-106	FM-107	FM-108	FM-109	FM-110
8'-6"	19¼" 30" 30" 20"	FM-25-F	FM-26-F	FM-27-F	FM-41	FM-42	FM-43	FM-44	FM-45	28" 28" 18"	FM-86	FM-87	FM-88	FM-89	FM-90	28" 30"	FM 111	FM 112	FM 113	FM 114	FM-115

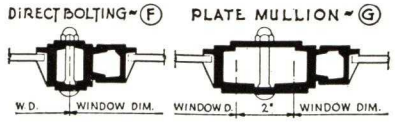
FIXED GLASS	10¼"	16¼"	22¼"	28¼"	34¼"	20" 20"	23" 23"	17⅞" 17⅞"	17⅞" 17⅞"						
VENT GLASS				26"	32"	18¾" 18¾"	21¾" 21¾"	16" 17⅞"	16"						
	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"		2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	
										2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	

GLASS SIZES SHOWN FOR TYPES IN GROUP AT LEFT APPLY AS WELL TO TYPES IN GROUPS ABOVE. FIXED & VENT GLASS SIZES APPLY AS PER TYPE DESIGN.

• COMBINATIONS AND SECTION DETAILS •



• TYPICAL COMBINATIONS OF UNITS •

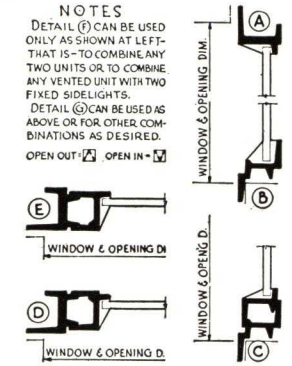


NOTES

DETAIL (F) CAN BE USED ONLY AS SHOWN AT LEFT-THAT IS-TO COMBINE ANY TWO UNITS OR TO COMBINE ANY VENTED UNIT WITH TWO FIXED SIDELIGHTS.

DETAIL (G) CAN BE USED AS ABOVE OR FOR OTHER COMBINATIONS AS DESIRED.

OPEN OUT ~ OPEN IN ~



Details as shown above are standard and are the only ones supplied on Quick Shipment Types.

Hardware for Projected Out Vents includes: Bronze Handles Nos. 733 or 914; Pole Ring No. 151; friction shoes; alignment stops.

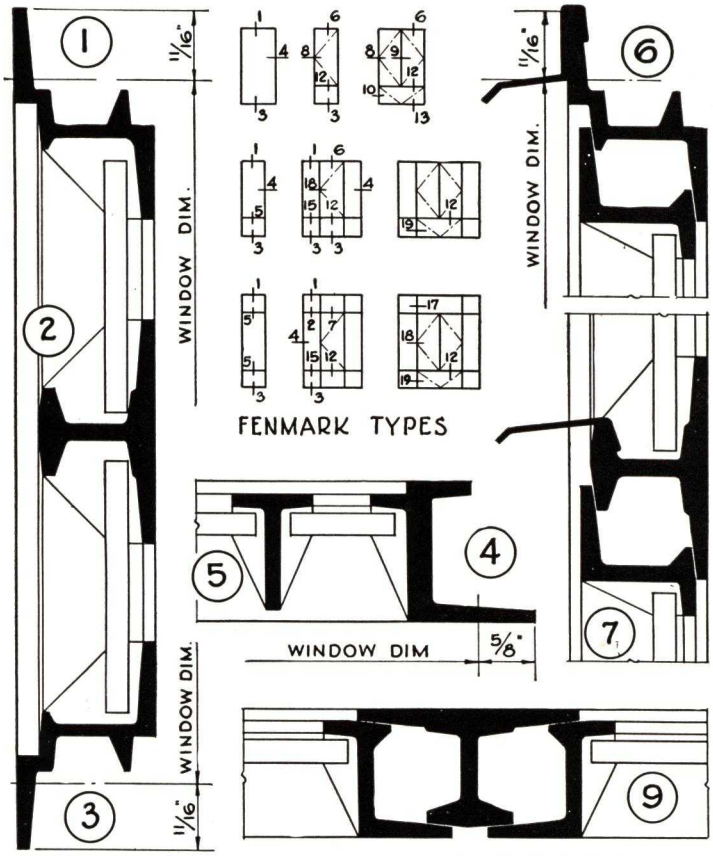
Hardware for Projected In Vents includes: Bronze Handles Nos. 1071 or 1220; friction shoes.

No other hardware is available on Quick Shipment Types.

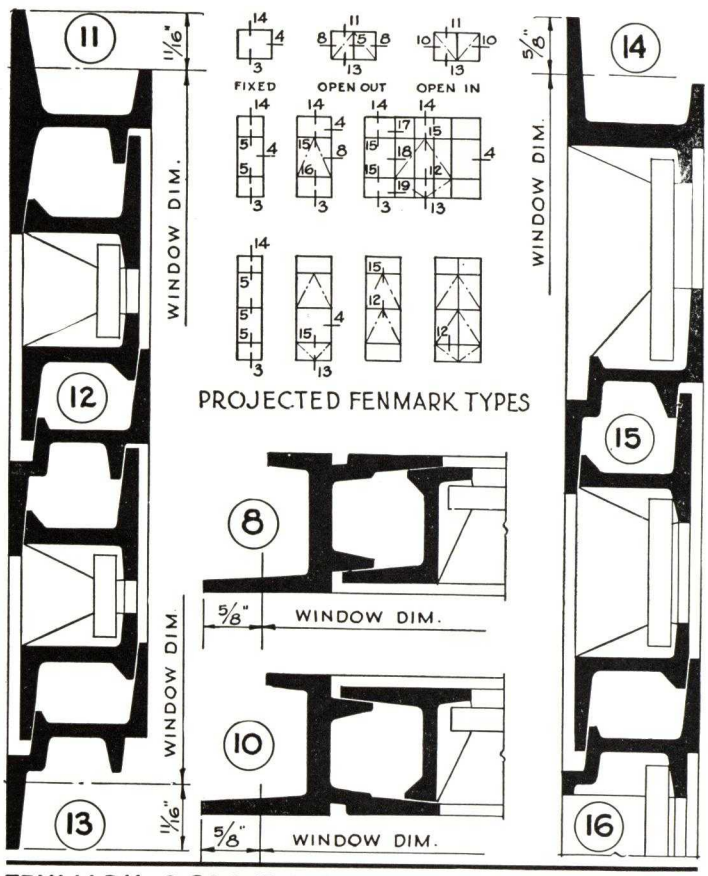
Units may be combined (see details F and G above), but sight lines will not be carried through. When units are combined by direct bolting (Detail F) nothing need be added to the dimensions of the units, but the maximum combined width must not be over 9' 0". When units are combined by plate mullion (Detail G) add 2" to the window dimensions for every mullion used.

Figures at extreme left and at the bottom are opening dimensions. Windows are equal to opening dimensions but frame members project beyond these dimension points for anchorage.

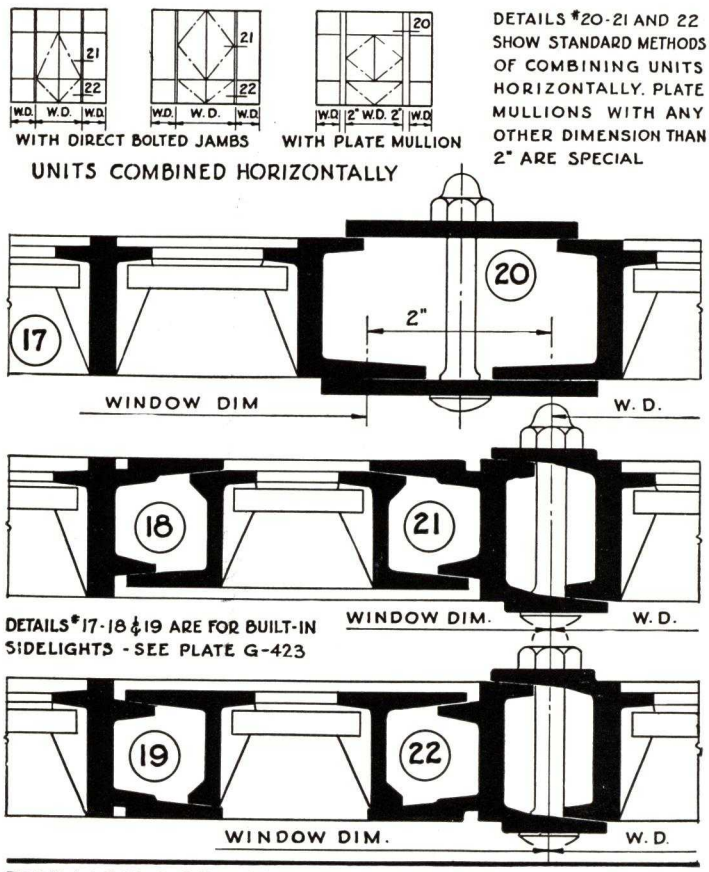
Glass widths and heights are given, both for fixed lights and for lights in ventilators. Be sure to use "Fixed Glass" widths with "Fixed Glass" heights and "Vent Glass" widths with "Vent Glass" heights.



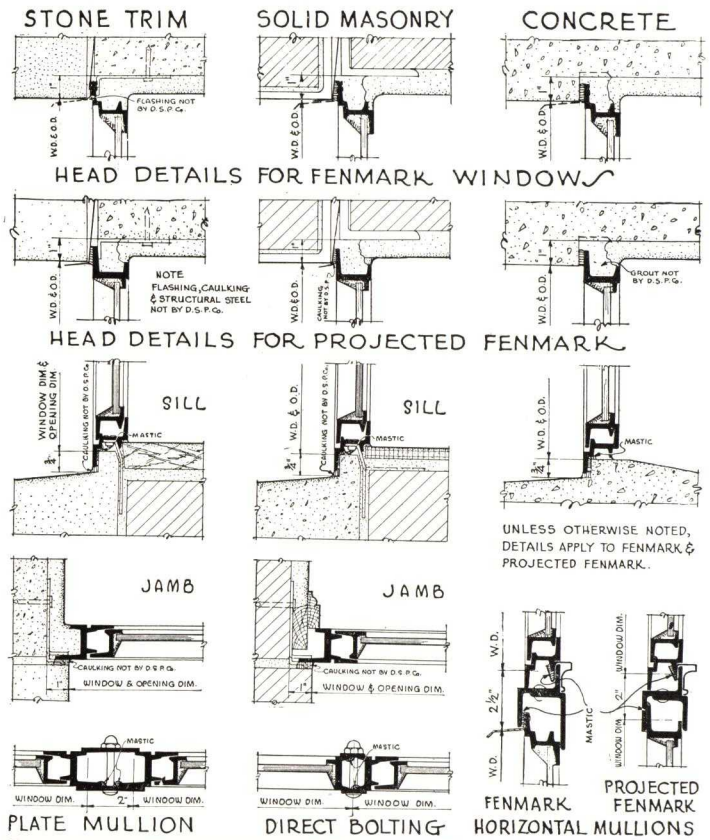
FENMARK & PROJECTED FENMARK G-423



FENMARK & PROJECTED FENMARK G-424

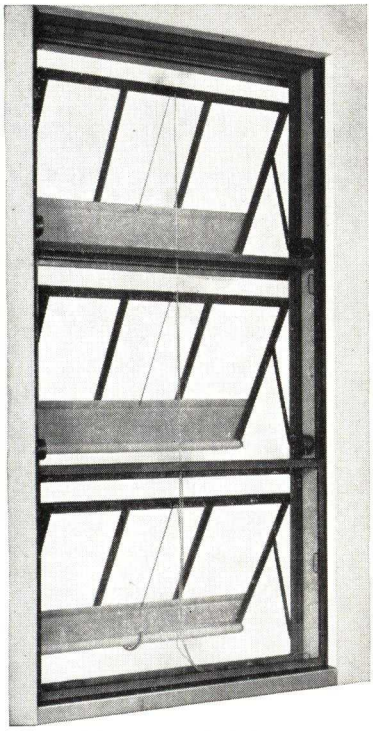


FENMARK & PROJECTED FENMARK G-425



FENMARK & PROJECTED FENMARK G-422

DALMO-FENMARK WINDOWS



Dalmo-Fenmark Window

FRAMES 1½" DEEP

All General Specifications on Pages 1, 2 and 3 apply except Sections 2 and 16.

Standard Projected Fenmark Windows with Dalmo operating mechanism are designed for 100% ventilation in schools, hospitals, and office type structures where unusual speed, ease and flexibility in opening and closing are essential.

All vents open simultaneously by opening the sill ventilator. The latter may then be closed leaving upper vents open. By reopening the sill vent all vents are automatically reconnected and may be closed by closing the sill vent. No clutch or lever mechanism necessary. No pressed metal, built-up or factory sections used anywhere. See Section 1 General Specifications.

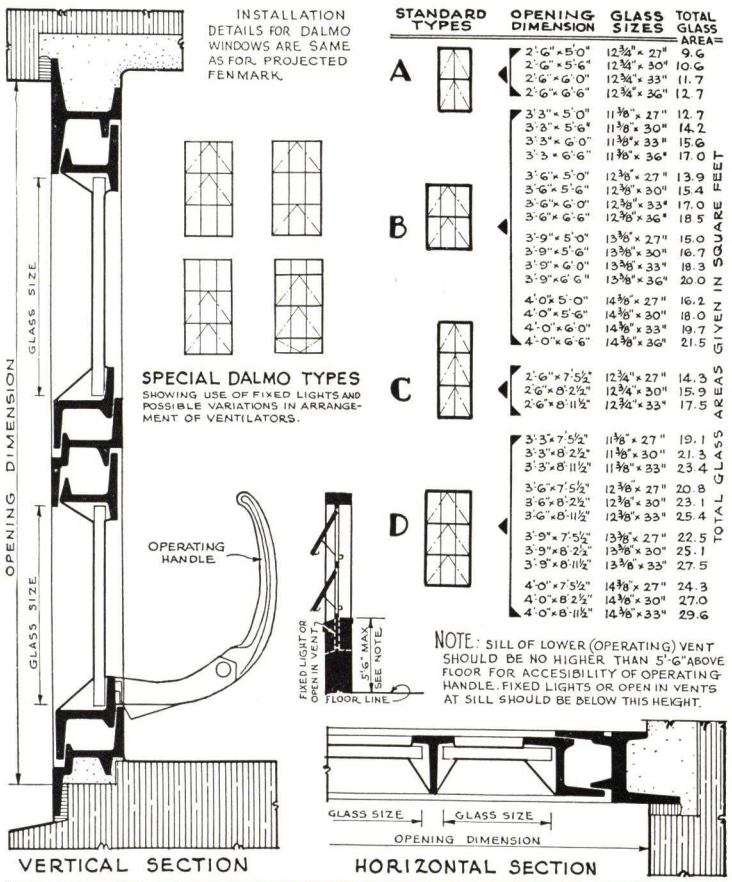
The Dalmo Fenmark is the only window on the market in which ventilators may be operated in unison by means of a mechanism entirely concealed.

Spring steel side arms supporting the upper vents are carried through the frame sections and pivoted into solid steel, welded, extension brackets, protrude only $3\frac{1}{16}$" inside the window and are concealed by steel housings. Side arms on sill vents are pivoted to the frame.

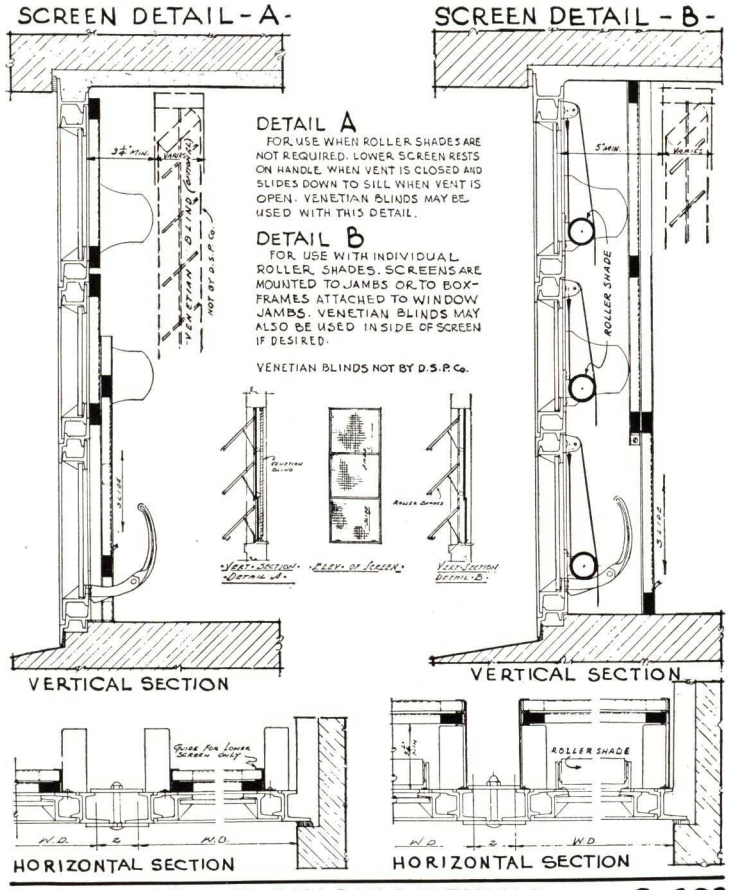
Ventilators are hung on U-shaped, vertically sliding shoes and are connected by concealed connecting bars. A bronze and aluminum trip mechanism is located on each jamb bar to automatically release the lower ventilator after all vents have been opened.

All ventilators are locked in a closed position by a bronze locking handle at the sill of the lower vent.

Each vent may be shaded on its under side to act as an awning. Metal shade guides for attachment at the ventilator jambs are available at extra cost. Vents are punched and shade brackets and cord rollers are included.



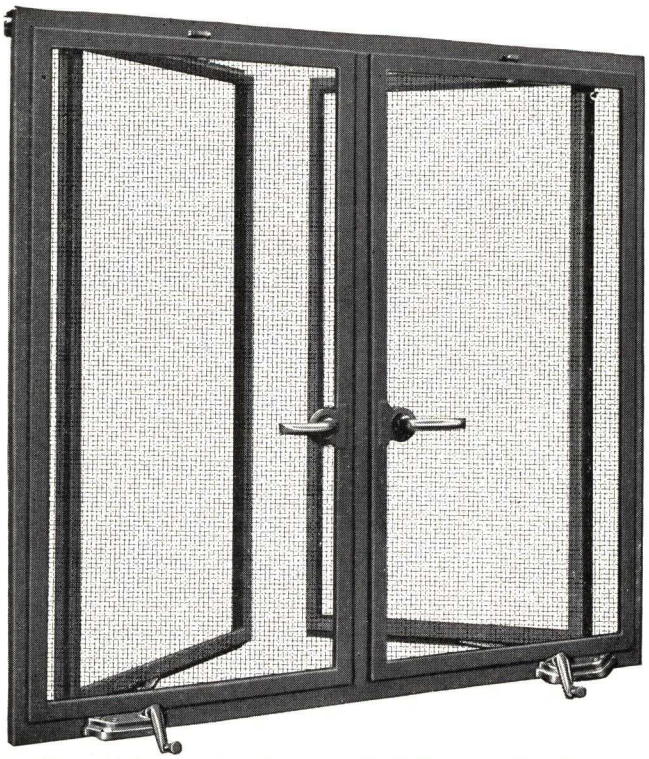
DALMO-FENMARK TYPES, SIZES, DETAILS G-602



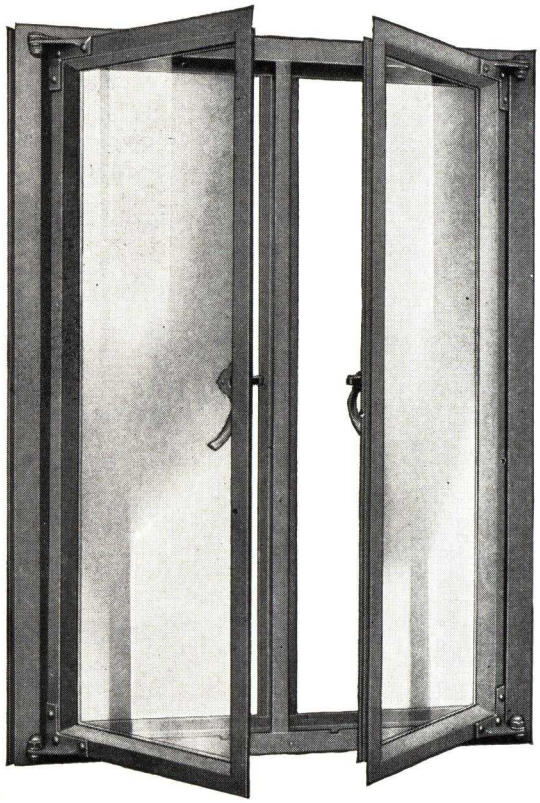
SCREENING AND SHADING DETAILS G-603

FENESTRA FENCRAFT CASEMENTS

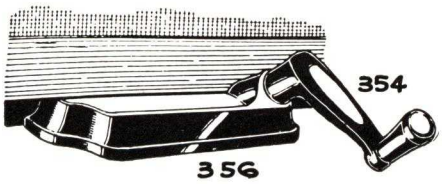
FRAMES 1¼" DEEP

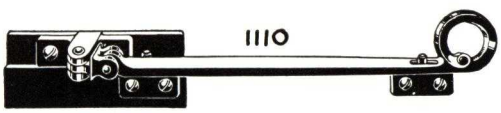


Fencraft Screen Type Casement With Fenestra Flat Screens.



Exterior of Fencraft Standard Type Casement





All General Specifications on Pages 1, 2 and 3 apply except Section 4

Designed for use in fine residences, clubs, apartments, theaters, churches, hospitals, dormitories, hotels, fraternities, schools and university buildings and all structures requiring windows of superior design and quality.

Supplied in both Screened and Standard Types.

(It is important to determine at the outset, which of these types is to be used.)

Frame and ventilator sections are 1¼" deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered, electrically butt welded and ground to a smooth finish. Frame sections may be equipped with continuous steel fins for anchorage if required.

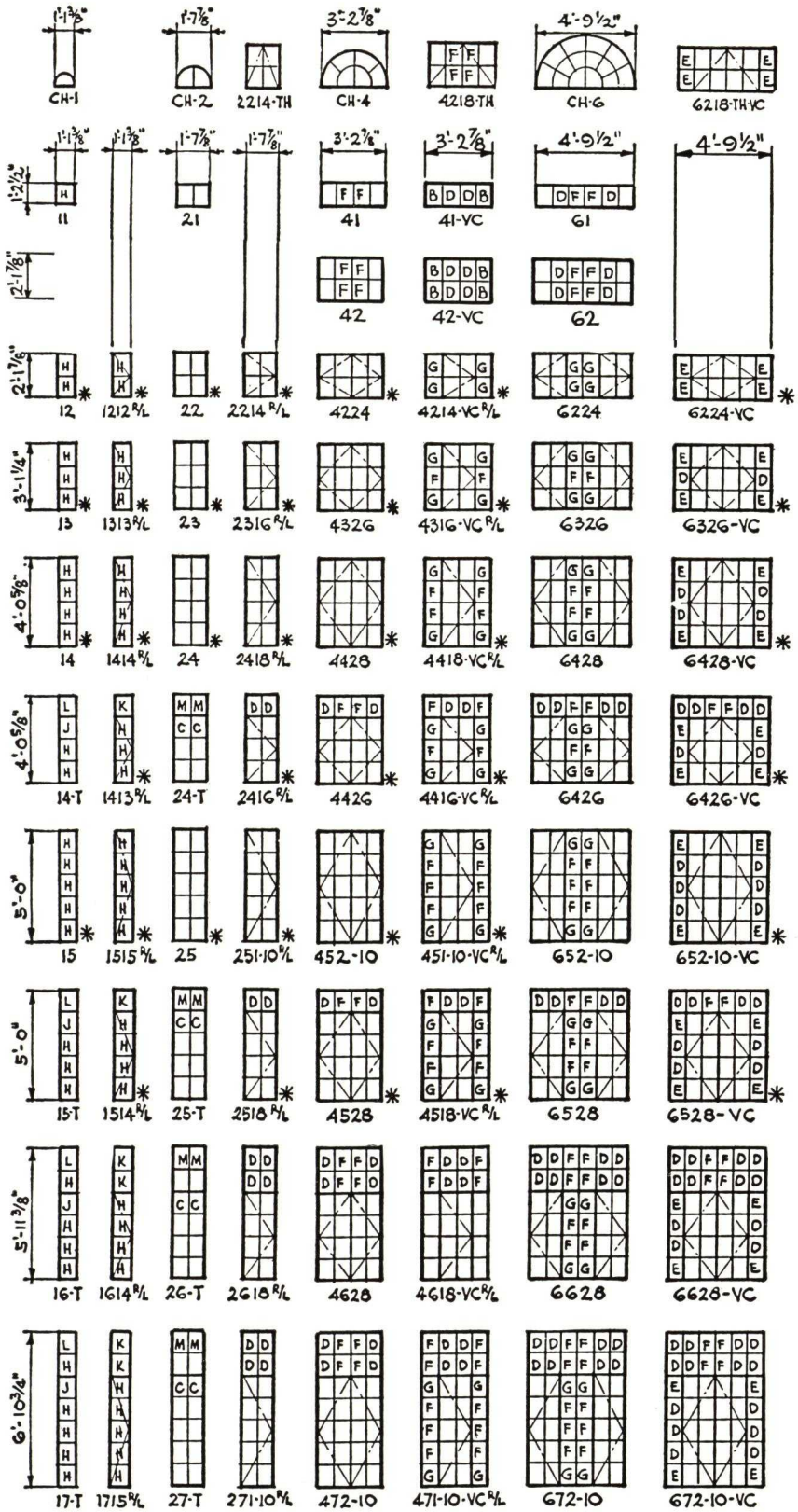
Standard side hung ventilators open out but in certain types may be designed to open in if so specified. Transom types may be top hinged open out or bottom hinged open in. Sill vents are bottom hung open in. Combinations of units may be made to fill almost any sized opening and provide almost any degree of ventilation.

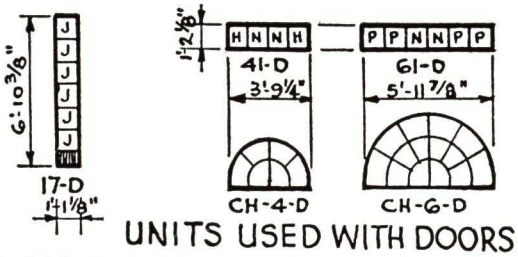
Specification, Bronze hardware is standard. For Screened Types, Handle 1023, Roto-Adjuster 356, Adjuster Handle 354. For Standard Types Handle 1119. Hardware available as special includes Handle 1222, Adjuster Handle 355, Thumb Screw Stay 1101, Transom Stays 1110 and 1108. Extra heavy Roto-Adjuster is available at extra cost where specified.

We strongly urge the use of Quick Shipment types and sizes shown on Page 11 supplied with standard hardware only. These types are available as shown or with muntins wholly or partially omitted to accommodate leaded glass or provide horizontal lights popular in Spanish and Modern architecture.

"Inside Insulating Window" Available for Screened Types if desired. See Section 16, General Specifications.

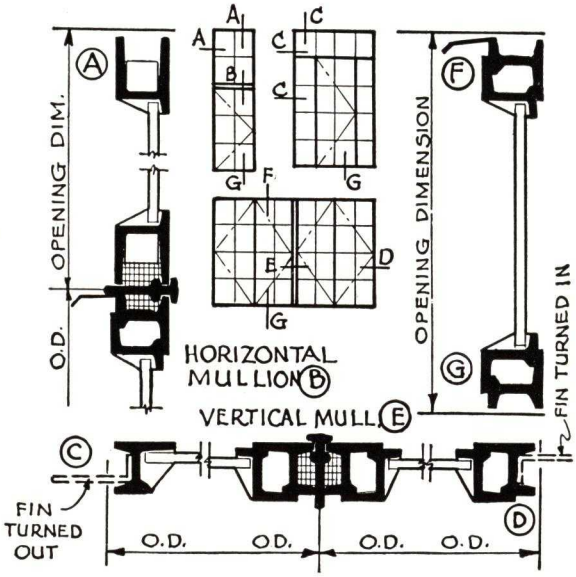
* TYPES SHOWN WITH ASTERISK ARE QUICK SHIPMENT TYPES, AND ARE FURNISHED WITH MUNTINS AS SHOWN OR WITH MUNTINS OMITTED. ANY TYPE FURNISHED WITH MUNTINS OMITTED WHEN SO SPECIFIED.





UNITS USED WITH DOORS

SIZES SHOWN ON ABOVE TYPES ONLY ARE ACTUAL WINDOW DIMENSIONS.



NOTE

EXCEPT AS NOTED ABOVE (UNITS USED WITH DOORS) ALL SIZES SHOWN ARE OPENING DIMENSIONS AND ALLOW CLEARANCE FOR INSTALLING. SEE DETAILS.

All units are outside putty glazed and have open out vents. No glazing angles and no open in vents permitted.

Hardware for Screened Types includes: Handle No. 1023-SB; Roto-Adjuster No. 356-SB; Roto-Handle No. 354-SB; Non-friction Hinges. Hardware for Non-Screen Types includes: Handle No. 1119-SB and Friction Hinges. (No stay adjusters.)

Details as shown above are standard and are the only ones that can be supplied on Quick Shipment Types.

"VC" indicates "Vent in Center"; "R/L" indicates casement may be either "Right" or "Left" Hand. Viewed from outside, a Right Hand Casement is hinged at the right, a Left Hand Casement is hinged at the left.

Drips are supplied over all ventilators at no extra charge. Fins supplied at head and jambs only, at extra cost where specified. State whether fin should turn in or out. (See details.)

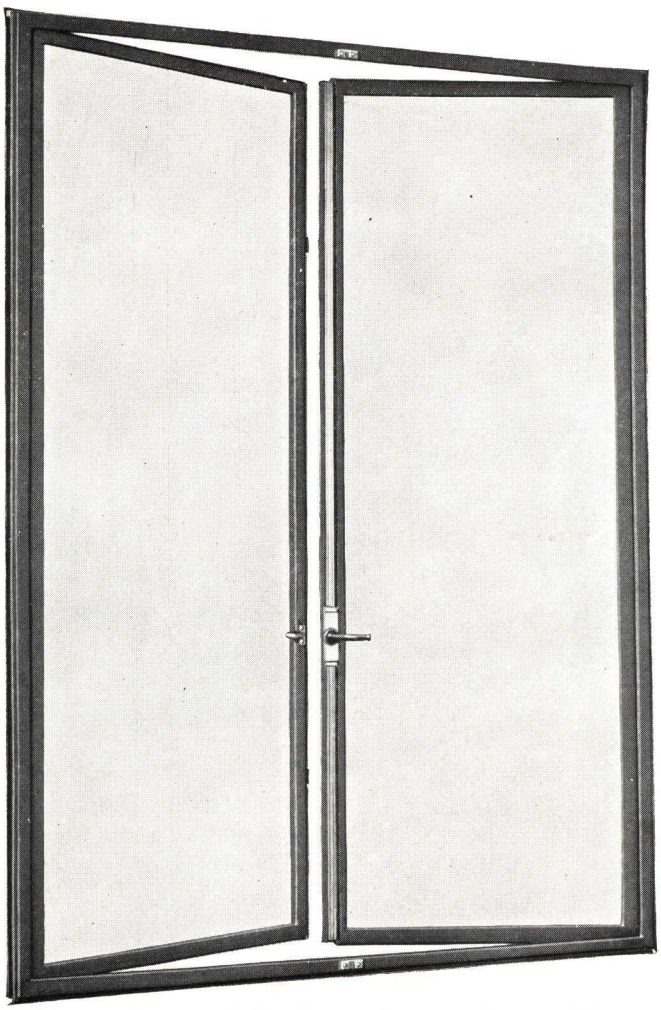
• GLASS SIZES •

A	8" × 11"	F	9⅛" × 11"	L	10" × 10⅛"
B	8¼" × 11"	G	9⅛" × 11⅞"	M	8" × 10⅛"
C	8" × 11⅞"	H	10" × 11"	N	10½" × 11"
D	8⅞" × 11"	J	10" × 11⅞"	P	11½" × 11"
E	8⅞" × 11⅞"	K	11⅝" × 11"		

NOTE: LIGHTS NOT LETTERED ARE 8" × 11" (A) EXCEPT THOSE IN CH-UNITS WHICH ARE CUT TO TEMPLATES. ~

FENESTRA CUSTOM CASEMENTS

FRAMES $1\frac{9}{16}$" DEEP



Custom Casement, Folder Type, with Bronze Cremone Bolt

(All General Specifications on Pages 1, 2 and 3 apply except Section 4.)

Fenestra Custom Casements are heavy, solid section, steel windows designed for use in monumental, public and educational buildings and in fine residences, clubs, theaters, hospitals and so on. They are especially desirable where large sized units are required as the unusual weight of the sections permits single units, 100% ventilated, up to 3′ wide by 8′ high and double ventilated, "folder type" units (without meeting rail) up to 5′ wide by 8′ high.

Frame and ventilator sections are $1\frac{9}{16}$" deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered and electrically butt welded.

(Frame sections equipped with continuous steel fins for anchorage, at extra cost where specified.)

Made in both Screened and Standard Types but Screened Types must be made with meeting rail. Folder types non-screened or equipped with sliding, rolling or hinged screens.

Side hung ventilators usually are designed to open out but may be designed to open in if so specified.

Transom types with ventilators projected, top-hinged to open out or bottom hinged to open in, are available—also bottom hinged, open-in, sill ventilators. Transoms and sill ventilators may be combined with side hung units by means of transom bars to provide windows of almost any height or width or degree of ventilation, up to 100%.

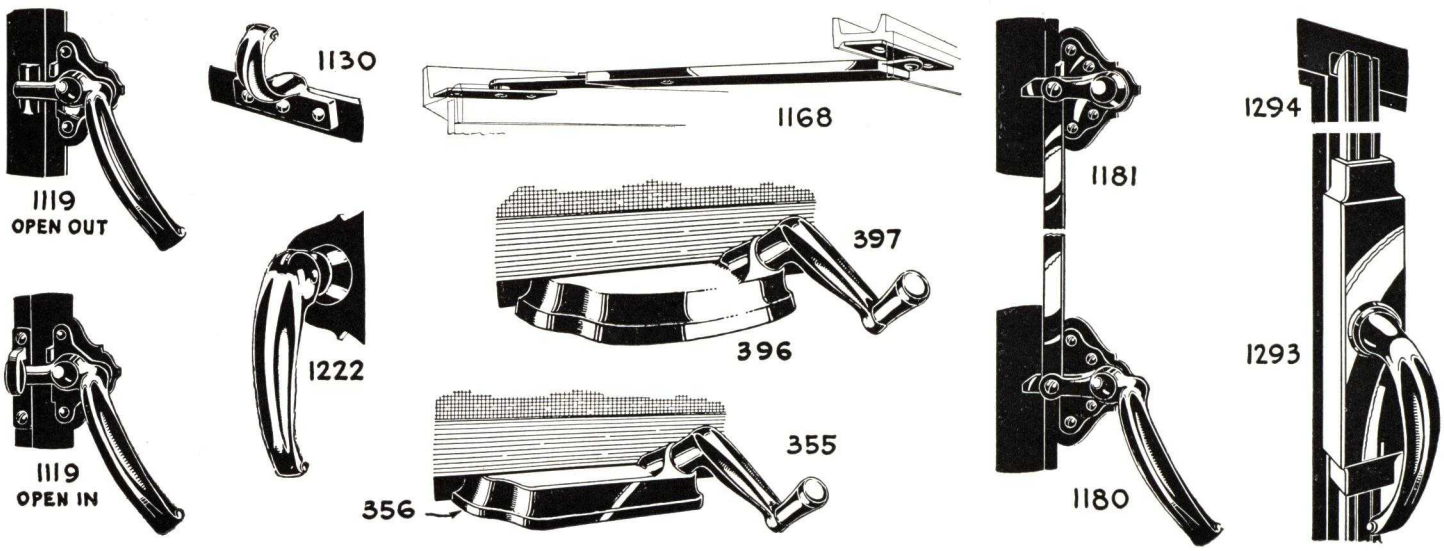
Large panes of glass, one to each leaf, usually are used with putty and spring glazing clips. Muntins can be supplied where specified.

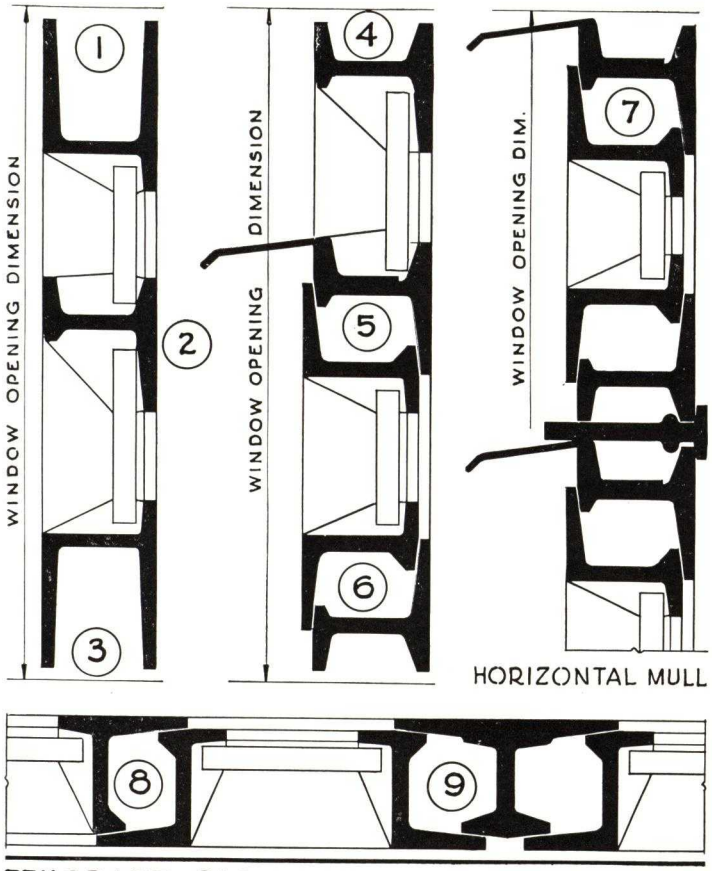
Specification bronze hardware, coinage finish, always is supplied unless otherwise specified. Screened type hardware includes: Handles 1222 or 1023, Roto-Adjuster 356 with handles 355 or 354. (Adjuster 396 and Handle 397 for swing leaves over 2′0" wide.) Single leaf Standard types have Handle 1119 with friction butts. Double leaf Standard types have Cremone Bolt 1294 with Handle 1293 and Finger Pull 1130. Transom Adjusters include: 1101, 1110, 1108.

(Extra heavy Roto-Adjuster on Screened types or concealed Friction Adjuster 1168 on Standard types can be supplied at extra cost with non-friction butts.)

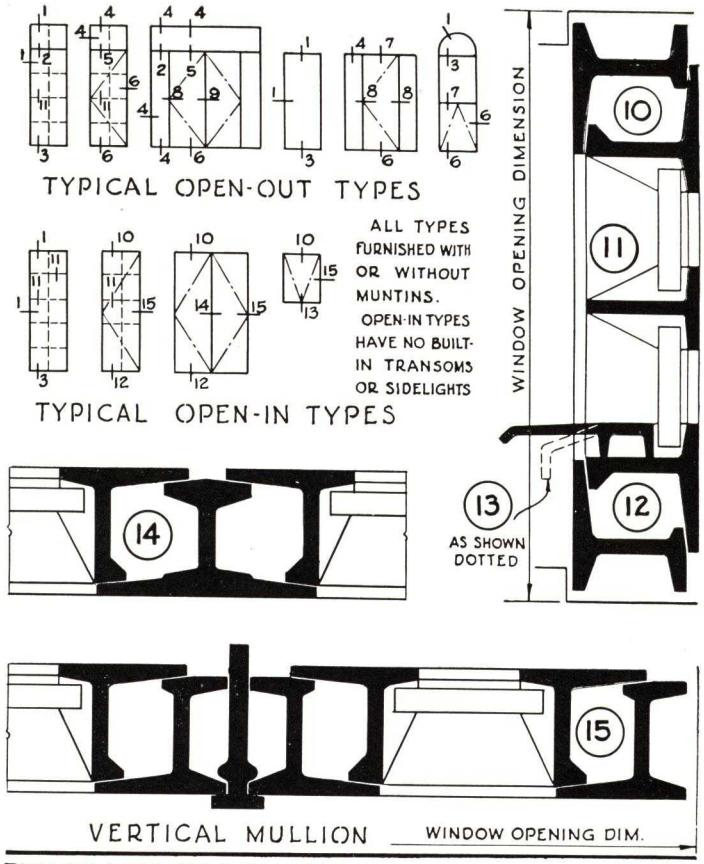
(For single ventilators over 5′ high or with vertical centers more than 6′ 3" above the floor, Double Locking Devices 1180 and 1181 are recommended.)

"Inside Insulating Window" available for Screened Types if desired. See Section 16, General Specifications.

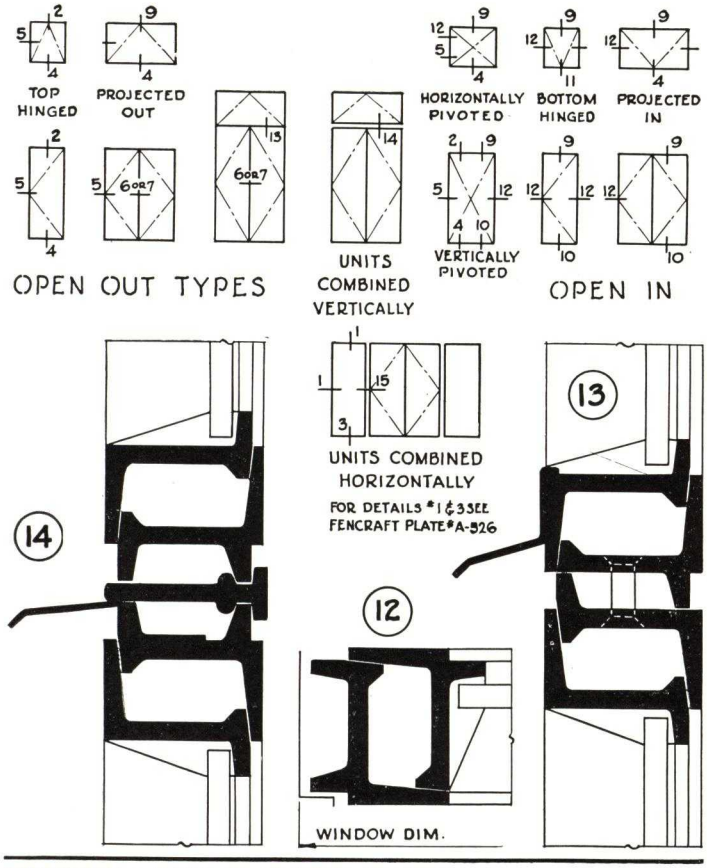




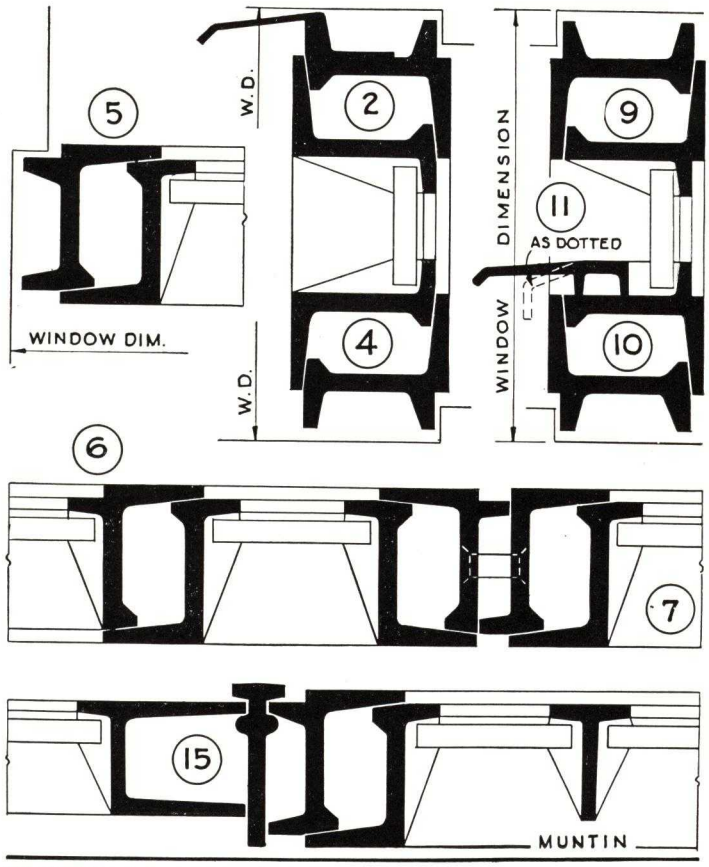
FENCRAFT CASEMENTS A-526



FENCRAFT CASEMENTS A-527

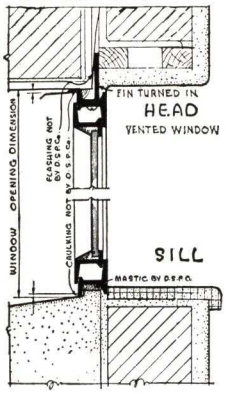


CUSTOM BUILT CASEMENTS E-102

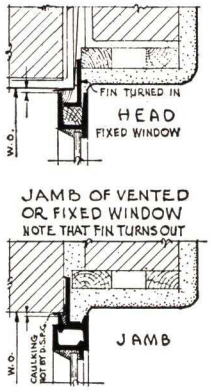


CUSTOM BUILT CASEMENTS E-101

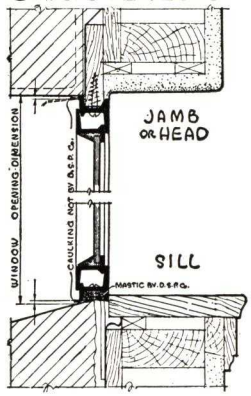
SOLID BRICK



SOLID BRICK



BRICK VENEER



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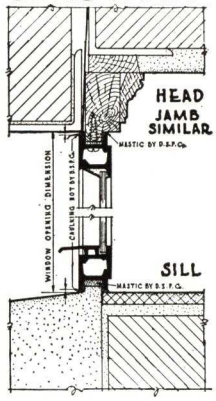
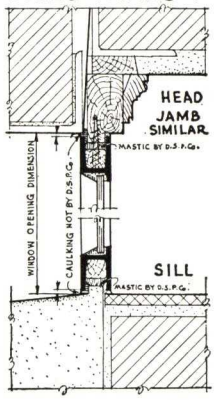
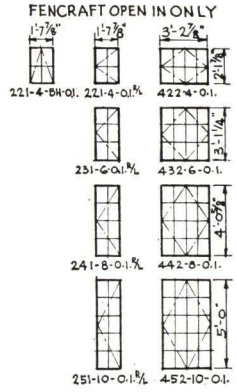


FIXED WINDOW

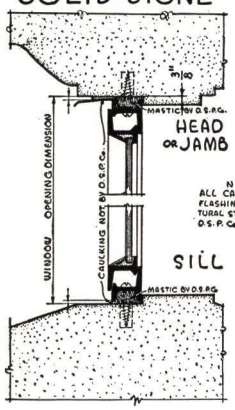


TYPES & SIZES

FENCRAFT OPEN IN ONLY



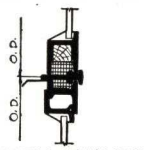
SOLID STONE



NOTE

USE OF CONTINUOUS STEEL FINS AS SHOWN ABOVE PROVIDES IMPROVED INSTALLATION. NOTE IN HEAD DETAILS, FACE BRICK NEED NOT BE CHIPPED FOR LINTEL. FINS ARE FURNISHED AT EXTRA COST IF SPECIFIED. DETAILS ON THIS SHEET APPLY TO FENCRAFT AND CUSTOM CASEMENTS.

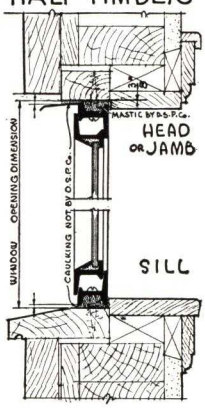
NOTE
ALL CAULKING & FLASHING AND STRUCTURAL STEEL NOT BY D.S.P.Co.



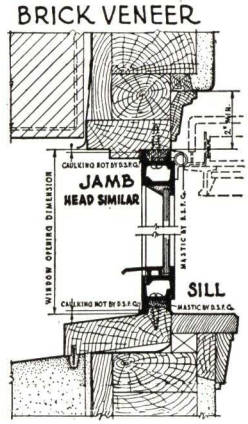
HORIZONTAL MULLION

VERTICAL MULLION

HALF TIMBER



BRICK VENEER



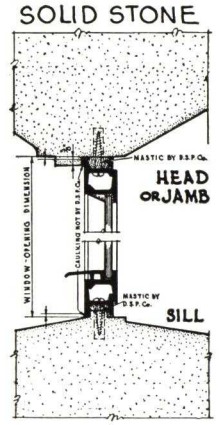
NOTES

WHEN SHADE & DRAPERY BRACKETS ARE ATTACHED TO SWING LEAF, A CLEARANCE OF 2" MINIMUM FROM SASH TO REVEAL AT JAMB IS REQUIRED FOR BRACKETS WHEN SWING LEAF IS OPEN. SEE DETAIL AT LEFT.

INSTALLATION DETAILS ON THIS PLATE ARE FOR FENCRAFT & CUSTOM CASEMENTS.

NO CAULKING, FLASHING OR STRUCTURAL STEEL FURNISHED BY D.S.P.Co.

SOLID STONE

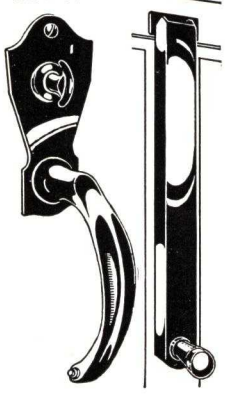


FENCRAFT & CUSTOM OPEN OUT **A-525**

FENCRAFT & CUSTOM OPEN IN **A-308**

CASEMENT DOORS

1176-A 1459



Fenestra Casement Doors and Frames are supplied in standard sizes as assembled units for use either individually or in combination with Fencraft or Fenwrought side lights and transoms.

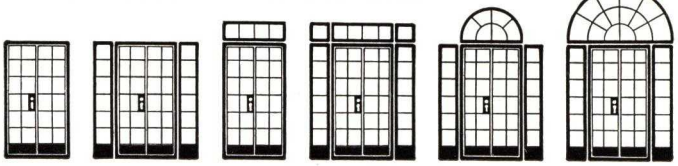
Both doors and frames are made from 1¼", cold rolled, solid steel sections with corners mitered, electrically welded and ground smooth. Lower portion of the door is a 16-gauge, double kick plate with wooden sound deadener. Upper portion is of interlocked steel sections accommodating plate glass inserted from the outside. Doors are already fitted and hung in the frames on close-in, friction butts. Extruded bronze thresholds are available at extra cost.

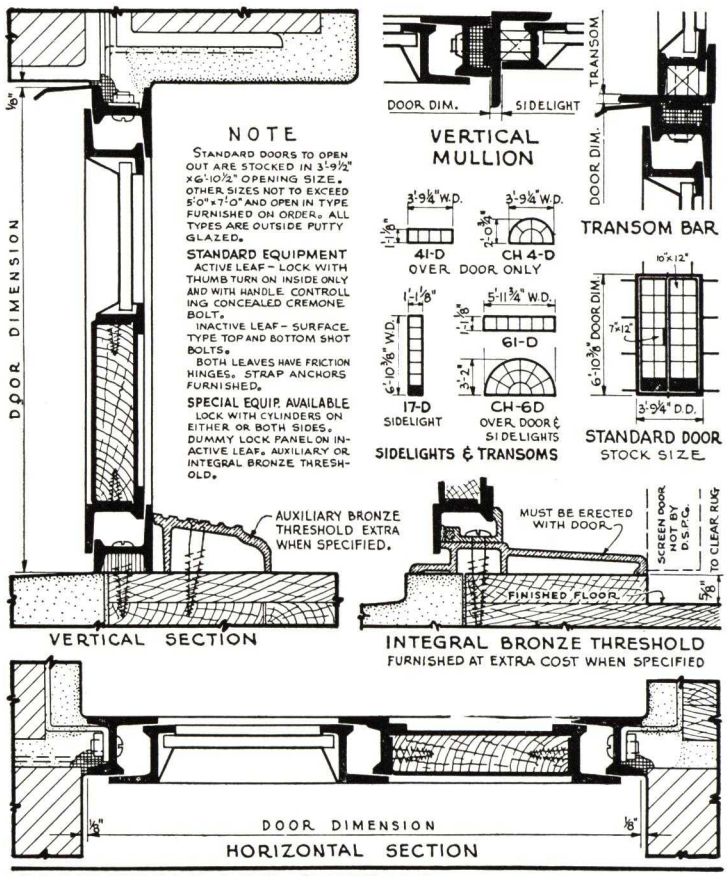
Specification bronze hardware is standard. Handles (1176-A) on both sides of the active leaf actuate a concealed, bronze, cremone bolt. A bronze thumb turn is supplied on the inside. Bronze top and bottom shot bolts (1459) are supplied on the inactive leaf.

These doors are not recommended for outside entrances or heavy traffic locations. Screen doors are not supplied.

Custom Doors of heavy $1\frac{9}{16}$" section are available where specified.

SUGGESTIONS FOR DOOR COMBINATIONS





CASEMENT DOOR DETAILS **B 304**

FENESTRA FENWROUGHT CASEMENTS

FRAMES 1 IN. DEEP

Fenestra Fenwrought Casements are the most popular of all Fenestra Casement designs for residential use. They are applicable to all types and designs of houses from the severely Colonial to the ultra Modern and to all kinds of construction including brick, brick veneer, stone, frame and stucco.

Frames are solid, rolled steel sections 1 in. deep from front to back. Corners of both frames and swing leaves are mitered and electrically butt-welded. Swing leaves meet the frame with a continuous, two-point, flat contact and are weathered by double baffles extending all around the opening.

All Fenwrought Casements have extension (cleaning) hinges so that the outside surface of all glass lights may be reached from inside the room for cleaning.

All Fenwrought Casements, made in Detroit, are "Rust Inhibited" by means of a special finish which includes alkali cleaning, Bonderizing, dip priming and oven baking. This process makes the useful life of the priming coat three to five times as long. Provision should be made for a second painting after erection and before glazing and for a finish coat about three weeks after glazing. (See Page 19).

Mastic is supplied by the window manufacturer for sealing the entire perimeter of all Fenwrought Casements.

Glazing is done from the outside after installation. We recommend ⅛ in. or $\frac{3}{16}$ in. plate glass set in bed and face putty and held by spring glazing clips which are supplied at no extra cost. Only steel window putty should be used.

(Units may be combined, one above another by means of transom bars, or side by side through the use of T mullions or 1½" pipe mullions.)

("Inside Insulating Window" available if desired.)

THREE FENWROUGHT GROUPS

To permit a wide variety in the selection of types and flexibility in design and cost, Fenwrought Casements are subdivided into three groups:

A—Screened Fenwrought Casements

B—Standard Fenwrought Casements

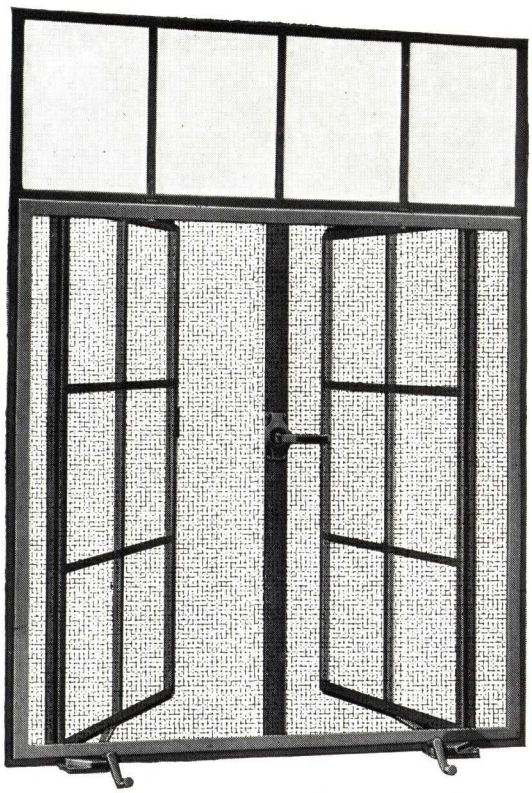
C—Economy Fenwrought Casements

All of the information given above applies equally to all three types, but in certain other features, the three types differ considerably as outlined below:

A—SCREENED FENWROUGHT CASEMENTS

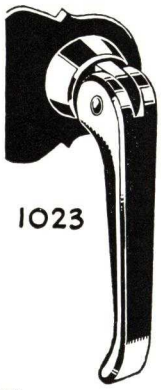
Screened Fenwrought Types are equipped for Fenestra, Inside, Flat Screens and have hardware so designed that the swing leaf may be opened, closed and locked without touching the screen.

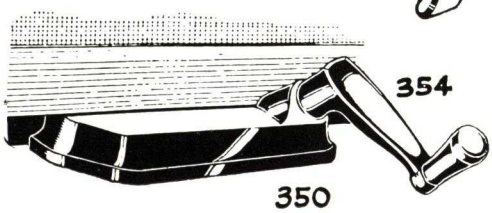
Handle brackets are of solid rolled steel or steel plate, solidly attached to the casement frame and carry the locking handles which are attached by concealed spring washers and lock nuts.

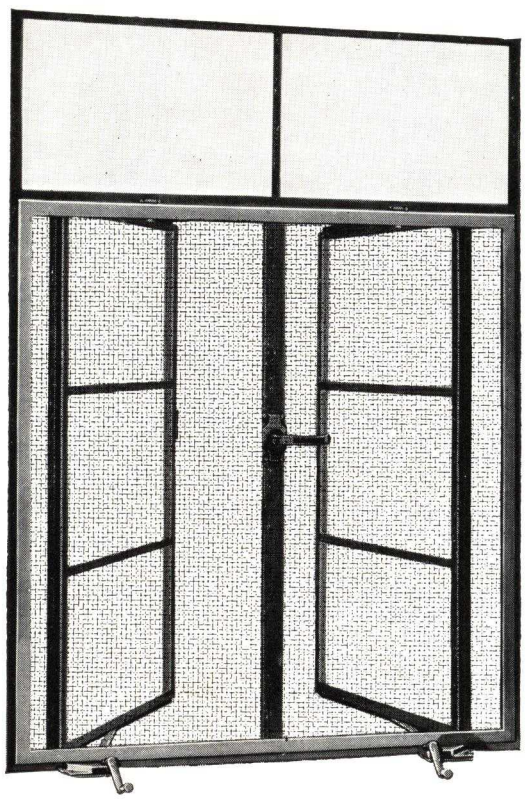


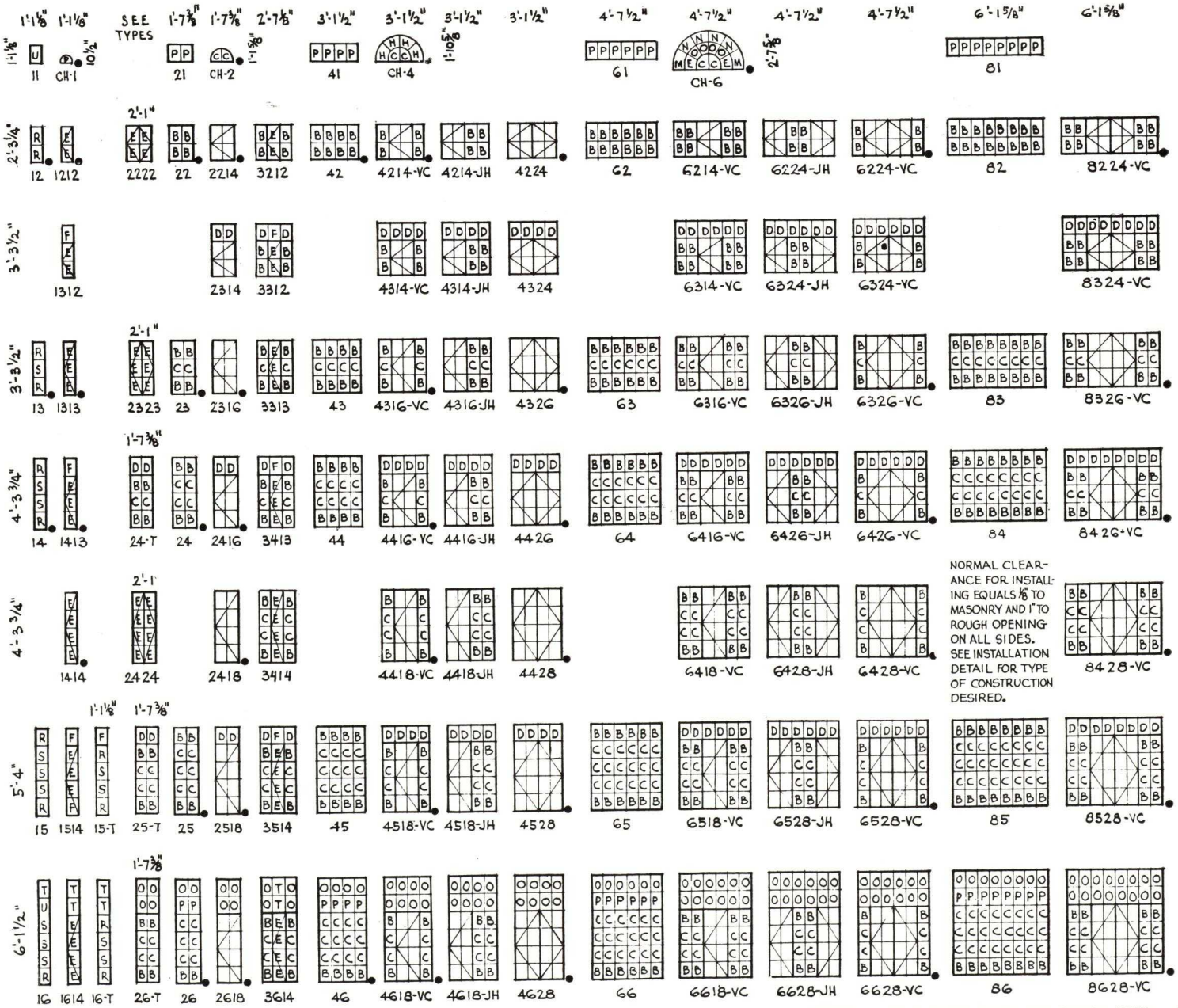
Above: Screened Type Fenwrought Casement, Type 4426. Double ventilated. Only ONE screen is needed to cover both swing leaves.

Right: Screened Type Fenwrought, Type 4426 same as at left but with vertical muntins omitted to give horizontal glass lights. ONE screen covers both swing leaves.









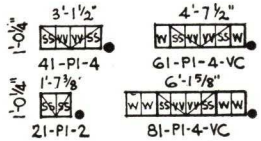
NORMAL CLEARANCE FOR INSTALLING EQUALS ⅛" TO MASONRY AND 1" TO ROUGH OPENING ON ALL SIDES. SEE INSTALLATION DETAIL FOR TYPE OF CONSTRUCTION DESIRED.

GLASS SIZES

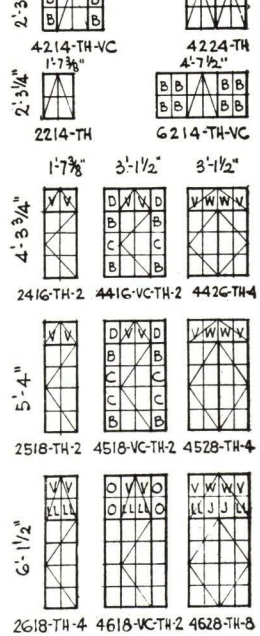
A	8" × 12"	*P	8 3/16" × 11 3/16"
B	8 3/16" × 12 5/8"	R	11 3/16" × 12 3/8"
*C	8 3/16" × 12"	S	11 3/16" × 12"
D	8 3/16" × 11 3/4"	T	11 3/16" × 10 1/2"
*E	10" × 12"	U	11 3/16" × 11 3/16"
F	11 3/16" × 11 3/4"	V	8" × 10"
H	9 5/8" × 15"	W	8 1/16" × 10"
J	8 3/16" × 9 1/8"	LL	8" × 9 1/8"
*M	11 1/4" × 16 1/2"	SS	7 7/16" × 9 1/2"
*N	11 1/4" × 13 1/4"	VV	8 1/16" × 9 1/2"
*O	8 3/16" × 10 1/2"		

LIGHTS NOT LETTERED ARE "A" SIZE.
*: CUT TO TEMPLATE WHEN USED IN SEMI-CIRCULAR UNITS.

TILTIN UNIT TYPES



TRANSOM TYPES



CASEMENTS WITH SINGLE SIDE HINGED VENTS MAY BE RIGHT OR LEFT HAND. WHEN VIEWED FROM OUTSIDE, A RIGHT HAND CASEMENT IS HINGED AT RIGHT, A LEFT HAND AT LEFT. NOMENCLATURE SHOULD INCLUDE THE SUFFIX "R" OR "L" TO INDICATE HAND. ~

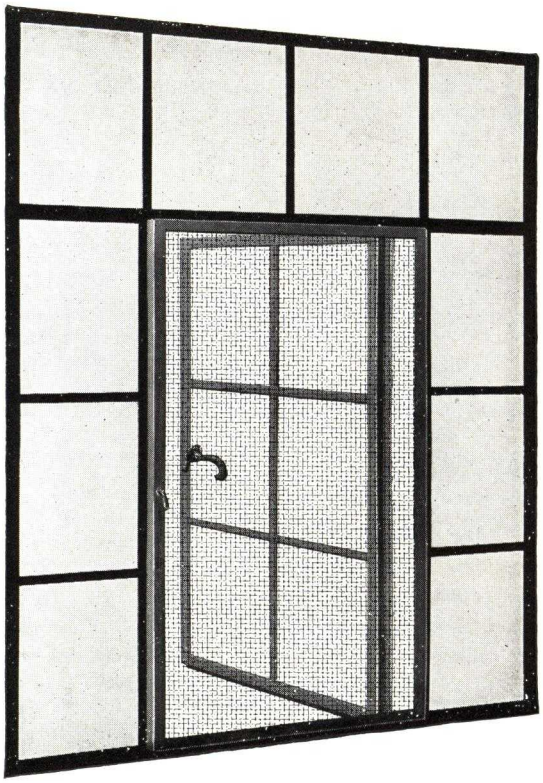
= SIDE HINGED = TOP HINGED = PROJECTED IN
● INDICATES STOCK WAREHOUSE TYPE.

TYPE SIZES GIVEN ARE ACTUAL WINDOW DIMENSIONS. ALLOW CLEARANCE FOR INSTALLATION. SEE OTHER PLATES.

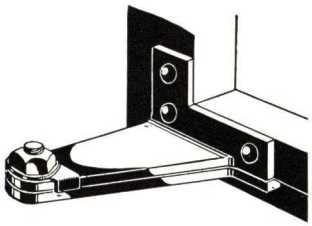
VC = VENT IN CENTER.
TH = TOP HINGED TRANSOM.
PI = PROJECTED IN (TILTIN)
J.H. = HINGED AT JAMB

SCREENED & STANDARD FENWROUGHT TYPES

A-244

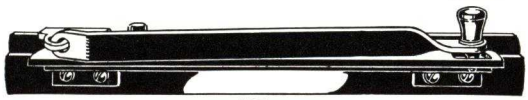


Standard Fenwrought Vent Center Type. Swing Screen

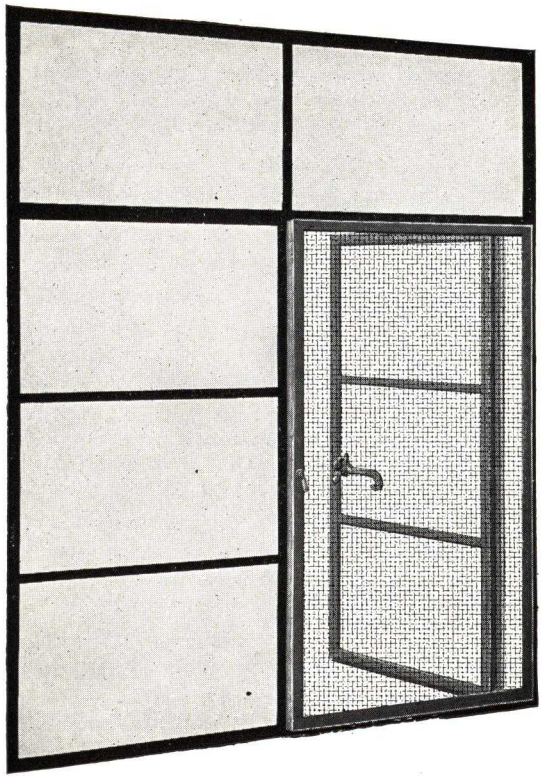


Friction Hinge

33



747



Economy Fenwrought Swing Screen

Extension (cleaning) hinges have bronze hinge pins and flanged bronze bushings.

Roto-Adjusters at the sill rest on and are firmly attached to solid rolled steel brackets solidly welded to the casement frame.

(For Roto-Adjuster assembly, see Section 6, General Fencraft Specifications. Fenwrought adjusters supplied with die-cast cases. Bronze at extra cost where specified.)

Quick shipment hardware is solid bronze or bronze finished as specified and includes: Handle 1023; Roto-Adjuster 350; Adjuster Handle 354; Transom Stay 1108; extension hinges.

Screens have frames of cold rolled, rust proofed steel, reinforced by a continuous, triangular rib. Frames painted two coats of gray enamel, the first coat baked on. Cloth is 16-mesh, bronze wire. All screens are removable and rewirable. A circular aperture in each screen permits it to fit snugly over and around the casement locking handle.

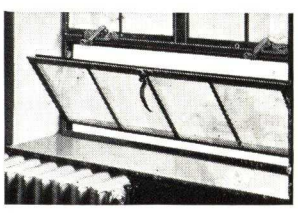
We strongly recommend the use of Quick Shipment Types shown above. These may be supplied as shown or with muntins omitted as specified.

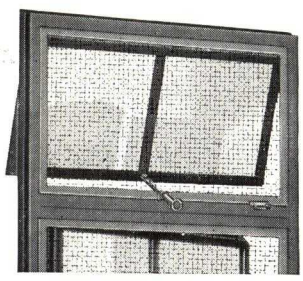
B—STANDARD FENWROUGHT CASEMENTS

Standard Fenwrought Types are equipped for Fenestra, Inside, Hinged Screens which open in when the casement is to be opened, closed or locked.

Handle brackets are of solid, rolled steel solidly welded to the swing leaves, each carrying a drawn steel stud on which the locking handle is mounted and firmly attached by a friction clevis, screw and lock washer. Cleaning hinges are friction type with oil-impregnated bronze bushing washers, bronze studs and nuts. Adjustment of the nuts

Below: Four-light-wide "Tiltin" sill ventilator. Can be screened on the outside.





Above: One-light-high Transom, screened inside, above a Screened Type Casement.

FENESTRA "TILTIN" AND TRANSOM WINDOWS

Fenestra Tiltin Windows, one light high and two, four, six and eight lights wide, opening in at the top, are supplied for attachment to the sills of Fenwrought Casements but may be used individually if desired. When open, they act as baffles, deflecting air currents upward and toward the opposite side of the room.

Designed for bedrooms where moderate night ventilation is needed. Also adaptable to libraries, play rooms, dens, sewing rooms where the "wind guard" feature prevents sudden gusts from disarranging papers, patterns, games or materials. Can be left open even in rainy weather. Screened outside where specified. When used separately, Tiltin Windows may be set high in the wall to leave room below for beds, bookcases or cupboards. Also convenient for basement "Rumpus Rooms" etc. See types and sizes under Fenwrought, Plate A-244.

One- and two-light-high, top-hung, open-out transoms may be used at the head of Screened or Standard Type Fenwrought Casements. (See types above.) Desirable for kitchens or for bedroom night ventilation. Weather-protecting even when open.

increases or decreases the friction. Top hung swing leaves have sherardized steel hinges with bronze pins.

Quick shipment hardware includes: Locking Handle 33, and Transom Stay 747, both supplied in rust-proofed iron. Solid bronze is available at extra cost if specified but requires longer delivery.

Screens have frames of cold rolled, bonderized steel tubes with corners mitered, reinforced and butt-welded, and with extending flanges to permit clearance of hardware. Frames are painted one coat of baked enamel. Cloth is 16 mesh bronze wire. All screens are removable and rewirable. Rolling screens are available at extra cost if desired.

We strongly recommend the use of Quick Shipment Types. These may be supplied as shown or with muntins omitted if specified.

C—ECONOMY FENWROUGHT CASEMENTS

Economy Fenwrought Types are exactly like Standard Fenwrought Types in material, workmanship, dimensions, construction and hardware but are supplied only in the types and sizes shown on this page. The arrangement of swing leaves and the omission of vertical muntins often results in a considerable saving.

A fixed light transom between the head of the swing leaf and the head of the window is desirable. Otherwise shades and drapery must be attached in such a way as to permit clearance for the inswinging screen.

Economy Casements may be combined with Standard and Screen Types where desired, by the use of mullions or transom bars.

FENESTRA WOOD SURROUNDS

The installation of all Fenwrought Casements is made easier by the use of Fenestra Wood Surrounds. These are especially designed of California Red Wood and are attached to the casements in a bed of mastic by copper coated screws before shipment, if so specified. The builder saves the cost of making and attaching his own surrounds and is provided with quick, economical, efficient method of installing his windows and locating his plaster grounds.

ECONOMY FENWROUGHT TYPES AND SIZES

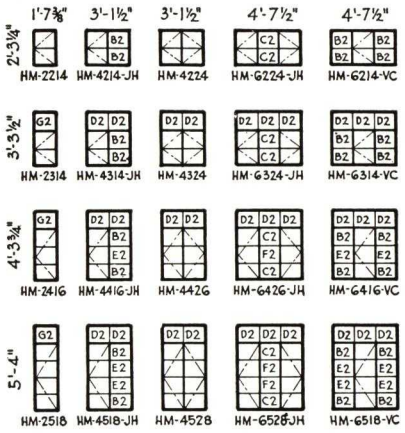


TABLE OF GLASS SIZES			
MARK	SIZE	MARK	SIZE
A2	16⅝" × 12"	E2	17⅛" × 12"
B2	17⅛" × 12⅝"	F2	17⅞" × 12"
C2	17⅞" × 12⅝"	G2	17½" × 11¾"
D2	17⅛" × 11¾"		

LIGHTS NOT LETTERED ARE "A2"

NOTE

CASEMENTS WITH SINGLE VENTS MAY BE EITHER RIGHT OR LEFT HAND, DEPENDING ON SWING OF VENT DESIRED. WHEN VIEWED FROM THE OUTSIDE, A RIGHT HAND CASEMENT HAS VENT HINGED AT RIGHT AND A LEFT HAND HAS VENT HINGED AT LEFT.

OFFSET VENTS (AS IN TYPE HM-4518-JH) MUST ALWAYS BE HINGED AT THE JAMB OF FRAME.

NOMENCLATURE SHOULD INCLUDE THE LETTERS "R" OR "L" TO INDICATE HAND AS: HM-4416-JH^{R} OR HM-6518-VC^{L}

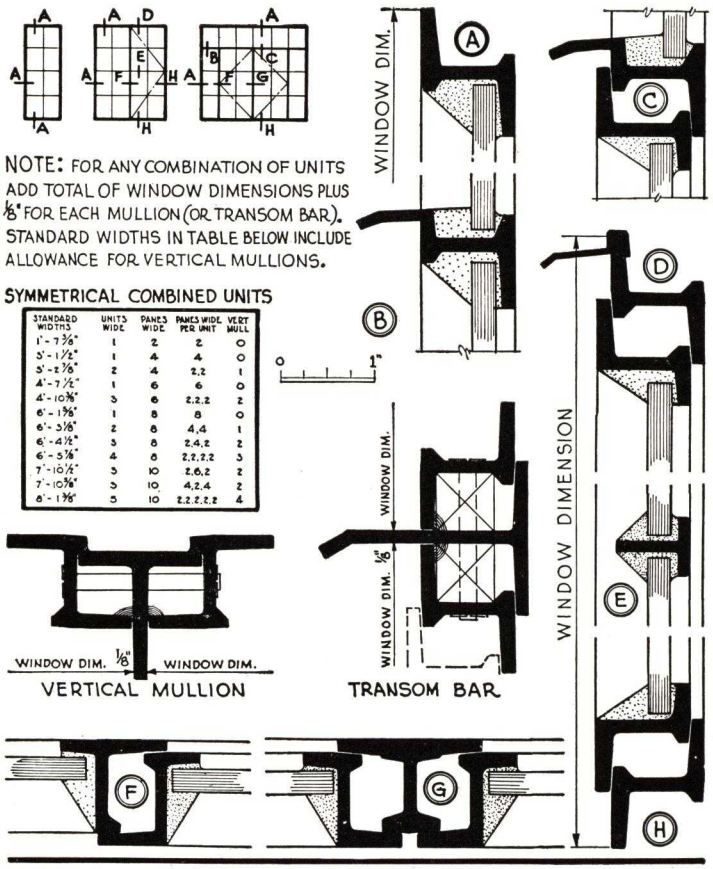
VC = VENT IN CENTER.
JH = VENT HINGED AT JAMB OF UNIT

FENESTRA STEEL LOUVRES

Designed in two types only, to fit fixed light Fenwrought Casement Types 12 and 21 with muntin omitted. Made of 16-gauge, pressed steel to be set directly into the casement frame and held by glazing clips and putty, like a pane of glass. Particularly applicable to attics, gable ends, store rooms or wherever moderate ventilation without light is desirable.

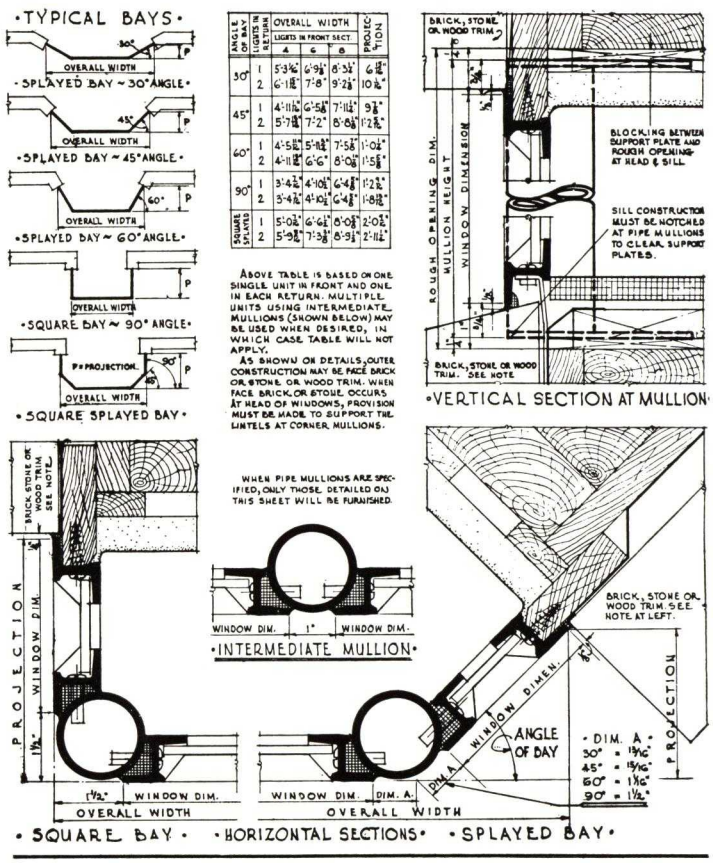
TYPES FURNISHED

LOUVERS FOR FENWROUGHT UNITS



STANDARD WIDTHS	UNITS WIDE	PANES WIDE	PANES WIDE PER UNIT	VERT MULL
1'-7⅜"	1	2	2	0
3'-1½"	1	4	4	0
3'-2⅞"	2	4	2,2	1
4'-7½"	1	6	6	0
4'-10⅝"	3	6	2,2,2	2
6'-1⅝"	1	8	8	0
6'-3⅛"	2	8	4,4	1
6'-4½"	3	8	2,4,2	2
6'-5⅞"	4	8	2,2,2,2	3
7'-10½"	3	10	2,6,2	2
7'-10⅝"	3	10	4,2,4	2
9'-1⅝"	5	10	2,2,2,2,2	4

TYPICAL SECTIONS & COMBINATIONS A-254



BAYS AND PIPE MULLION DETAILS A-239

NEW BONDERIZED, RUST-INHIBITING FINISH

All Fenwrought Casements made in Detroit are now finished by a new and improved method of cleaning, chemical resurfacing and painting designed: to inhibit rust; to protect the primer from chipping, flaking, peeling, chalking or abrasion and to give the priming coat from three to five times longer useful life.

This process, never before standardized on residence windows, is accomplished through the use of especially designed, completely mechanized equipment housed in a building erected for this particular purpose.

The new protective treatment should be tremendously valuable to builders and home owners since it includes the famous, rust-inhibiting, Bonderizing process so widely used to make possible the present finishes on automobiles and refrigerators.

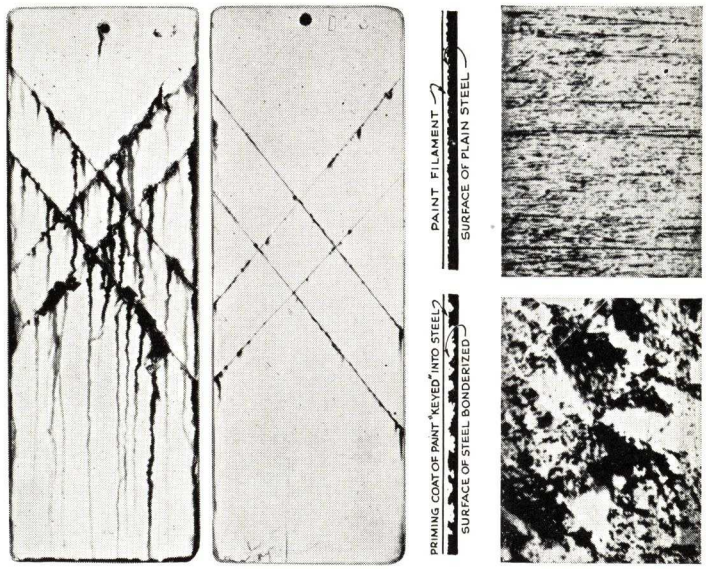
To receive this finish, Fenestra Casements pass through EIGHT stages:

1—Cleaning in hot alkali solution to remove oil and grease.
2—Rinsing in hot water to remove any alkali solution remaining.
3—Submersion in Bonderite solution.
4—Rinsing in hot water to remove Bonderite salts.
5—Rinsing in dilute chromic acid to provide an improved paint base.
6—Air drying to insure dry stock at uniform temperature before painting.
7—Special dip painting at uniform, controlled temperature.
8—Oven baking to toughen the priming coat.

In the Bonderite solution, a chemical action converts the smooth, metallic surface of the steel into a non-metallic, phosphorated, crystalline surface full of microscopic peaks and pits. Then when paint is applied (Stage 7, above), some of it flows into the small crevices and depressions between the crystals and is keyed to the metal as it dries and hardens. Hence paint adheres to Bonderized surfaces to a much greater degree than where it is applied to smooth surfaces and depends on natural attraction for adherence.

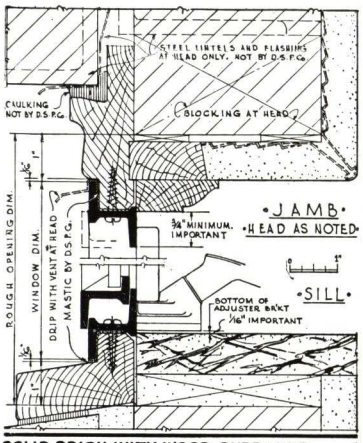
Cleaning, Bonderizing and painting operations are performed at a uniform, controlled heat so that the windows enter the paint bath at a predetermined temperature. This permits definite control of the painting operation and of the paint itself, including maintenance of temperature, viscosity and specified ingredients by frequent analysis and test.

The specification finally adopted is particularly adapted to use at the temperature required; to keying into Bonderized steel and to producing a tough, durable and velvet-smooth surface after oven baking.

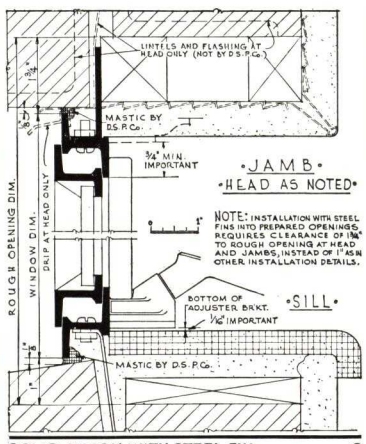


The two left hand pictures in the group above, show steel panels which were subjected to salt spray (20% solution) for over 700 hours. Panels and finishing were identical except that the panel on the left was acid cleaned while the panel on the right was Bonderized before finishing.

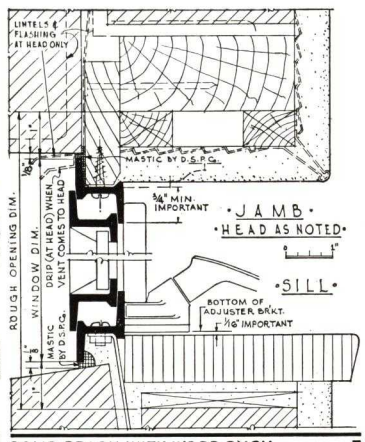
Two photomicrographs are shown (right) above. The upper shows a plain steel surface (enlarged 100 times). The lower shows a piece of Bonderized steel greatly enlarged to bring out the surface of metallic phosphates with pits and crevices in the crystalline structure.



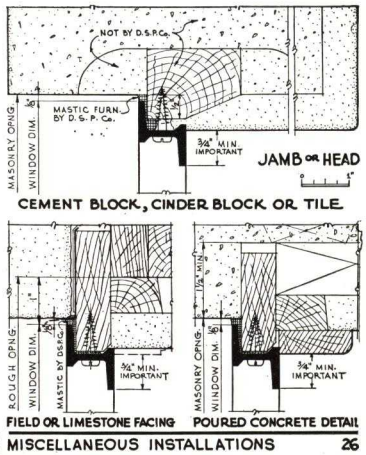
SOLID BRICK WITH WOOD SURROUND 1



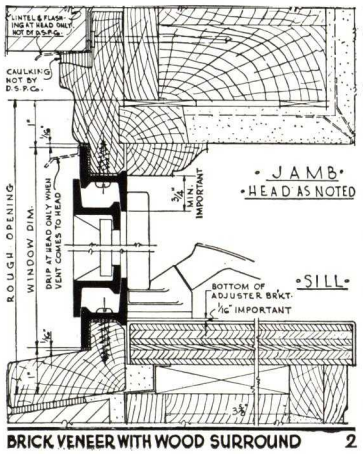
SOLID BRICK WITH STEEL FIN 6



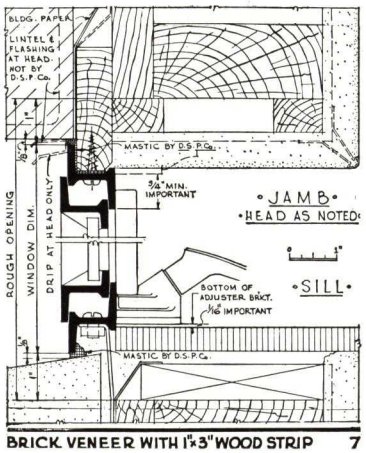
SOLID BRICK WITH WOOD BUCK. 5



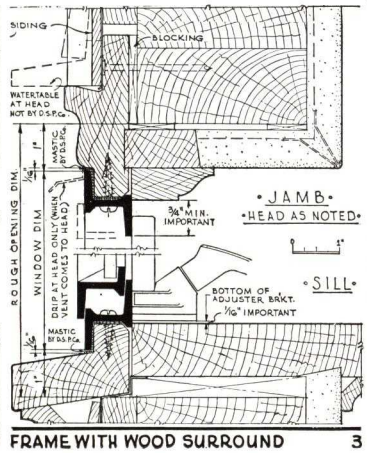
MISCELLANEOUS INSTALLATIONS 26



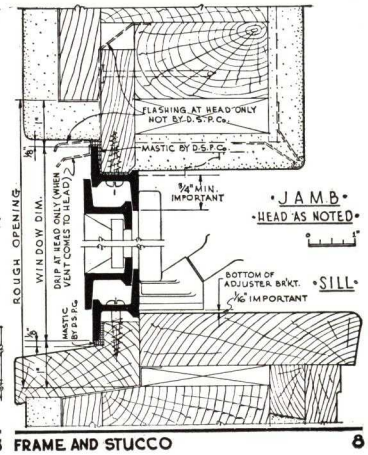
BRICK VENEER WITH WOOD SURROUND 2



BRICK VENEER WITH 1"x3" WOOD STRIP 7



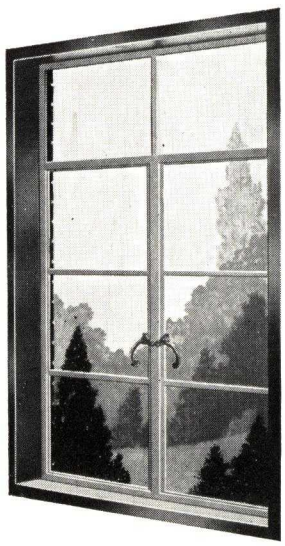
FRAME WITH WOOD SURROUND 3



FRAME AND STUCCO 8

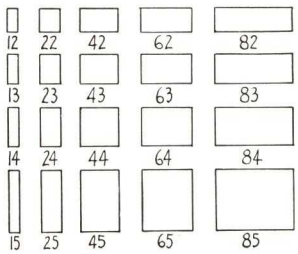
STEEL CASINGS

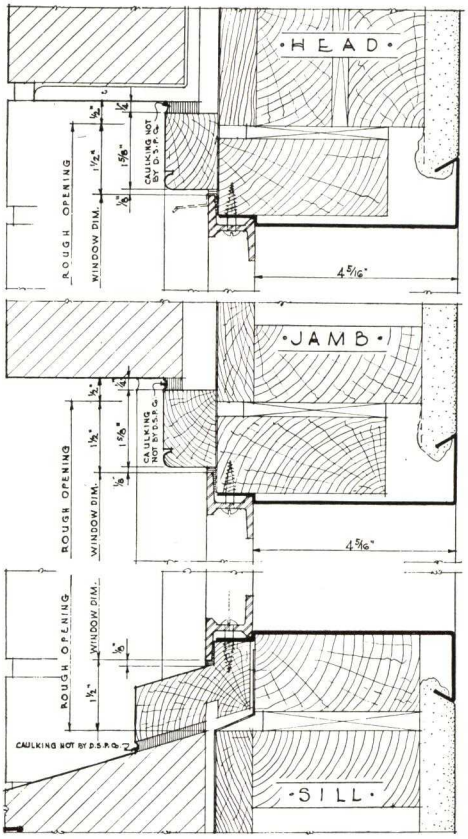
An interior steel "trim" (18 ga. head and jamb; 16 ga. sill) which takes the place of interior wood finish, plaster return, stools and aprons. Does not swell, shrink, burn, warp or discolor. Eliminates plaster troubles around windows. Simplifies and reduces cost of installation. Provides a smooth, durable, all steel interior finish that is almost indestructible.

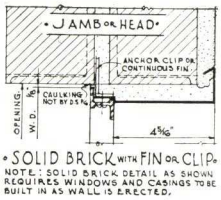


Made in stock sizes as indicated,—in ONE DEPTH ONLY—4 5/16". All members are hot rolled steel annealed smooth, with corners mitered, fitted to a hair line crack and reinforced. Inside of casing is 1½" wide and is formed into a plaster lock at its outer edge. Shipped already attached to single units of Fenwrought Casements. Cannot be supplied for two or more types combined by mullions. Painted one shop coat before shipment.

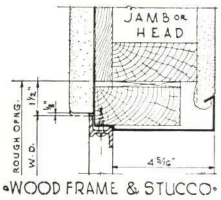
Used on numerous large housing developments, notably in over 8000 window openings in the Hillside Apartments, New York City and in 150 single houses erected by The Oakland County Housing Corporation at Green Lake, Michigan. Specified for Ten Eyck Development, Brooklyn, largest individual housing project ever undertaken in the United States.



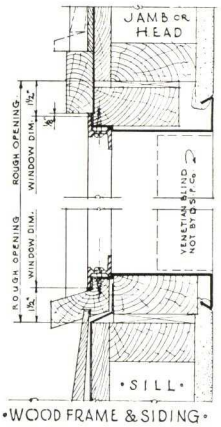




• SOLID BRICK WITH FIN OR CLIP •
NOTE: SOLID BRICK DETAIL AS SHOWN REQUIRES WINDOWS AND CASINGS TO BE BUILT IN AS WALL IS ERECTED.



•WOOD FRAME & STUCCO•

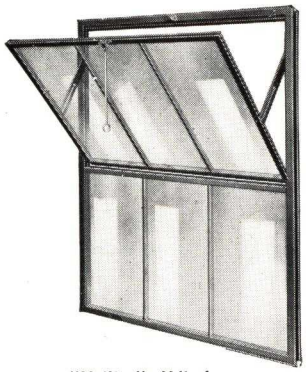


•WOOD FRAME & SIDING•

STEEL CASING DETAILS **A-114**

UTILITY WINDOWS

Made of Fenwrought Casement Sections in two types: (a) Fixed; (b) Lower Lights fixed with 1-light-high ventilator above. Ventilator tilts in at the top and is held by side arms. Spring catch at the head automatically locks the window when closed.

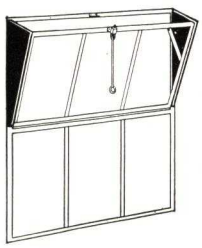


"Utility" Window

Both Fixed and Ventilated Types are made in one size only: 3' 3¾" wide by 3' 7¼" high.

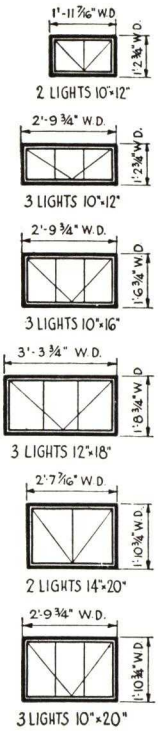
Utility Windows are especially adapted to provide light in basements where houses are set close to the grade. The lower panes are below the grade line and a grating over the areaway makes the window appear 1-light high when viewed from the outside.

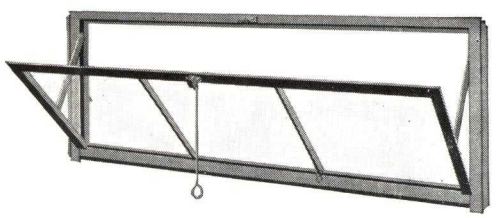
Also desirable for use in public and private garages, filling stations, stores, shops and farm buildings. The tilt-in ventilator does not interfere with the use of space directly below the window and it admits abundant ventilation without direct draft.



Triangular Draft Guards are available for Utility Windows to close the V-shaped apertures at jambs of ventilators. "Hopper Type" Units thus formed are particularly adaptable to cattle and stock barns. Draft guards are 18-gauge, pressed steel held by clips to the jamb fins (also punched for direct bolting to frames of Utility Windows already installed). The protected vent opening is 20 degrees but ventilator may be opened beyond the draft guards for cleaning.

BASEMENT WINDOWS





Built from Fenwrought Casement Sections. Both frame and ventilator are pivot-ended and welded at all four corners. Two-point flat contact weathering is maintained between sash and frame all around the opening. Weather protected even when vents are open.

Ventilators are carried on steel balance arms and open to any one of three positions. A spring latch at the head is easily operated from the basement floor by a 10" operating rod. A 14-gauge steel fin, welded outside each jamb member, imbeds in the masonry and forms a guide for the mason in laying up both the inside and the outside of the wall. (Installation details are same as for Utility Windows.)

Steel framed, bronze mesh, outside screens and outside storm sash are available where specified. Attached in a jiffy from the inside with an ordinary screw driver. Vertical mullions if desired.

Industrial Steel Windows

Fenestra

Commercial Steel Windows

Manufactured by

DETROIT STEEL PRODUCTS COMPANY
2250 East Grand Boulevard, DETROIT, MICH.
FACTORIES: DETROIT, MICH., and OAKLAND, CALIF.

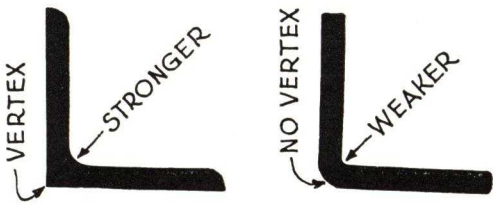
PIVOTED AND PROJECTED WINDOWS

GENERAL SPECIFICATIONS

1. SECTIONS

Sections are of American rolled, dead soft, open hearth steel, 1⅜" from front to back, with a "vertex" at each angle.

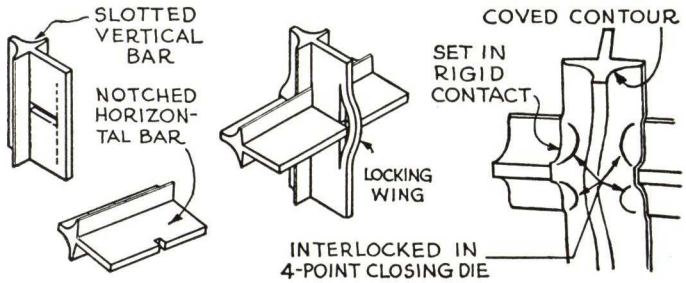
(Dead soft steel fabricates easily. Hard steel tends to fracture in fabrication.)



(A "vertex" angle is one in which the sides of the angle are rolled out full to the point of intersection. Such an angle has greater thickness than a pressed steel angle which has no vertex. Hence it has greater strength at the corner where strength is needed.)

2. THE FENESTRA JOINT

The frames and the ventilators are mortised and tenoned and air hammer riveted at all corners. Muntin bars are continuous from head to sill and from jamb to jamb, a construction made possible by the Fenestra Joint, which is the strongest known means of interlocking vertical and horizontal bars.



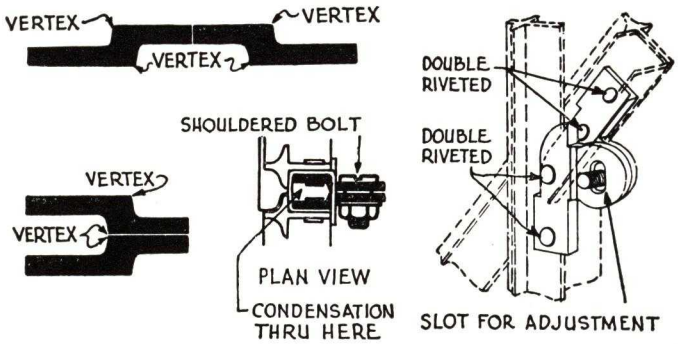
(To form the Fenestra Joint, the vertical bar is slotted and spread. Then the notched horizontal bar is threaded through the vertical. Both bars are tightly interlocked in a four-point closing die which clamps them into rigid-weather-tight contact that makes welding unnecessary.)

3. THE BUTTS

All ventilators are pivoted horizontally and supported on external, adjustable butts of solid rolled steel, double riveted through both the window bars and the weathering.

(All butts are of "vertex" section to give maximum strength in supporting the ventilator. They are located 2" above the ventilator centerline unless otherwise specified, but may be set 4" below the top of the ventilator if desired.)

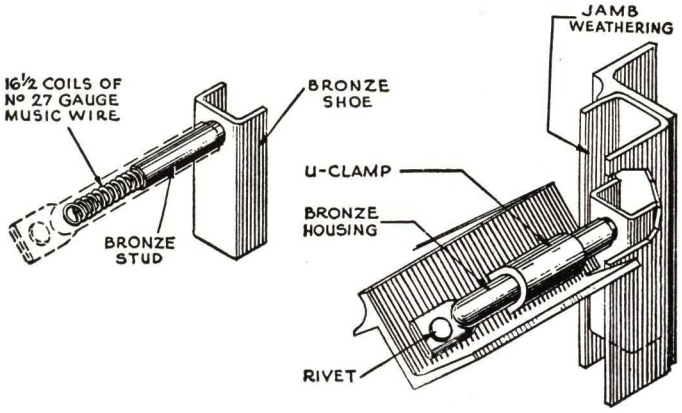
Each butt is cut and formed to permit the free passage of condensation from above the butt and guide it down to an exit at the ventilator sill.



The "ears" of each butt protrude on the inside of the window so as to be easily accessible and the sash member of the butt is slotted to permit adjustment up or down as necessary. Butt pins are ⅜" solid steel and are "shouldered" so that the ventilators, turning on these shoulders, never bind no matter how tightly the nut on the butt pin is screwed down.

4. SLIDING SHOES

Projected Ventilators are supported on heavy, bronze pivoted, spring steel side arms and are equipped with bronze sliding, friction shoes (two per



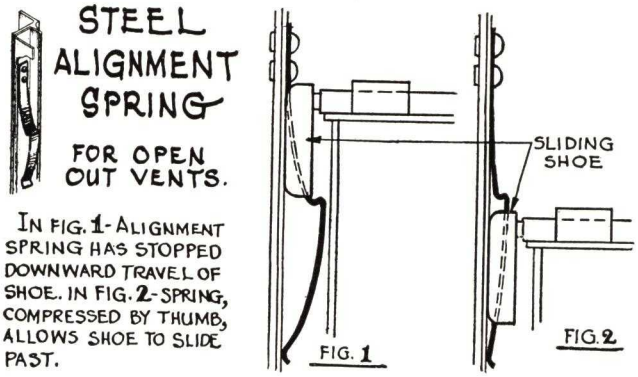
vent), the friction being maintained by compression springs of heavy, rust-proofed music wire, completely enclosed in bronze housings.

(Projected-In Ventilators used at the sills of windows tilt in at the top while sliding up from the bottom. Projected Ventilators used above the sill usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

5. ALIGNMENT STOPS

Each Projected-Out Ventilator is equipped with two alignment control bronze springs riveted in the jamb channels to limit the downward travel of the friction shoes and stop all ventilators in open alignment at about 60 degrees, but pressure on these springs permits the shoes to slide past so that the ventilators may be opened further.

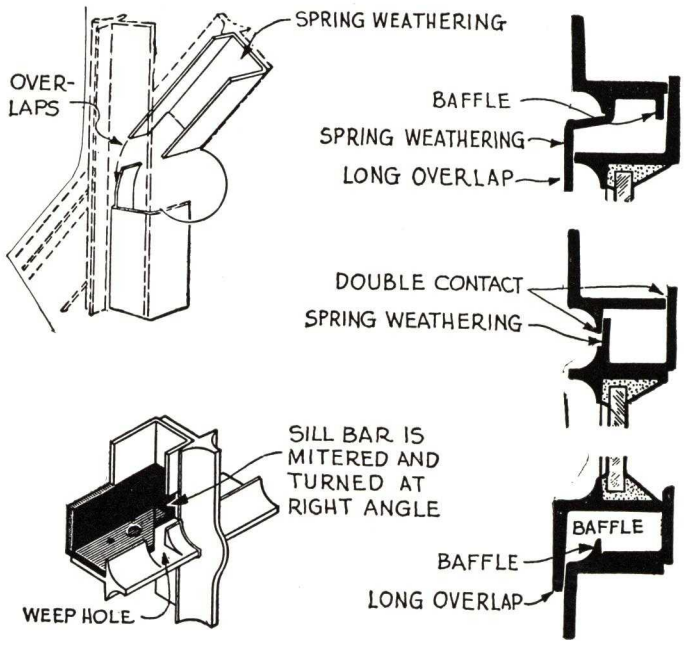
Each Projected-In Ventilator has a solid steel stop to limit its opening to about 90 degrees.



6. WEATHERING

All Pivoted and Projected Windows have continuous, two-point flat contact weathering between sash and frame all around the opening.

At the head, a long, down-standing leg on the outside and an air-deflecting baffle on the inside form an effective weather-guard. Weathering at the jambs is a U-shaped channel with no "vertex" in order to insure springiness. At the butt, the weathering is so cut that the weathering member on the ventilator overlaps the weathering on the frame as the window closes, forming complete protection. At the sill, the weathering is mitered and turned at right angles so that condensation is guided away from the inside of the window toward nearby "weep-holes" which carry it to the outside.



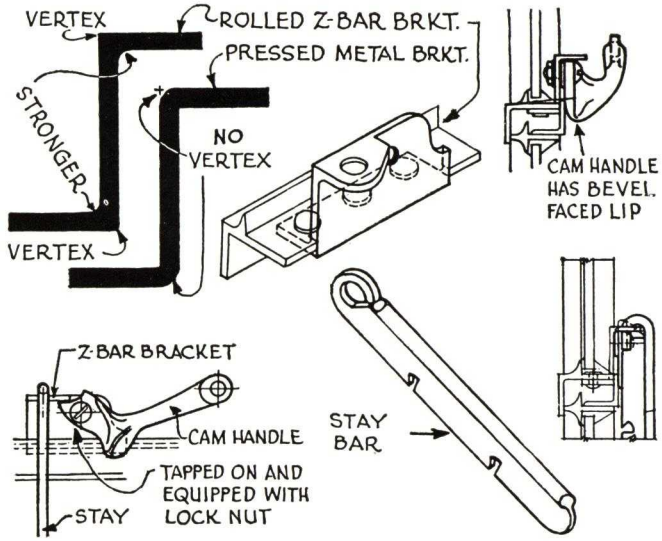
7. HARDWARE

A solid steel, Z-bar bracket, rolled of "vertex" section, is supplied—triple riveted to the sill bar of the ventilator—the strongest known means of attaching hardware.

Horizontally Pivoted Hardware

Horizontally Pivoted Ventilators may be operated in any one of five different ways.

1. Cam Handle and Stay Bar attached to the Z-bar bracket.
2. Cam Handle and Chain attached to the Z-bar bracket.
3. Spring Catch and Chain attached to the Z-bar bracket.
4. Spring Catch and Chain attached at the head.
5. Mechanical Operator.



The Cam Handle is cast with a bevel faced lip and a weighted handle. It is tapped to the Z-bar bracket and is further held by a locking nut. As the ventilator closes the handle rides up and drops over the edge of the weathering, forming an automatic latch. Light downward pressure on the handle locks the vent and pulls the springy weathering at the jambs into tight contact with the frame.

Spring catches and pulley bracket are of steel. Chain is galvanized. Sufficient chain is provided to extend downward to within easy reach from the floor. Chain cleats are supplied to hold the ventilators in an open position.

Commercial Projected Hardware

Hardware for Commercial Projected Open-Out Ventilators includes a weighted cam handle attached to the Z-bar bracket at the sill and a pole ring at the head of the ventilator. (Stay Bars are not necessary. Chain operation cannot be supplied.)

Hardware for Commercial Projected Open-In Ventilators consists of a cam handle at the head for hand operation. If the ventilator is out of reach from the floor a spring catch or handle with eye for pole operation is supplied (or a spring catch and chain for chain operation).

8. ERECTION

All windows should be erected in prepared openings, set plumb and true, properly aligned and securely anchored before glazing.

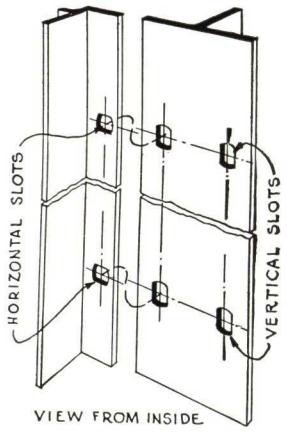
In all multiple unit openings where the vertical mullions are not anchored to the sills—and in all cases where any ventilator comes to the sill of the window—and in all cases where the window is more than 5′ 0″ wide,

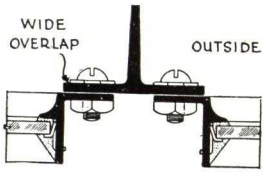
standard Fenestra sill anchors should be used, two anchors for windows up to 6′ 6″ wide and four anchors for windows wider than 6′ 6″.

(Mortar grouting, pointing, etc., should be included in the masonry specifications to be done by the mason contractor.)

The Fenestra Construction Co., a subsidiary of the DETROIT STEEL PRODUCTS CO., is prepared to erect Fenestra Windows, glaze and paint them, where desired; the work being done under a separate contract.

9. MULLIONS





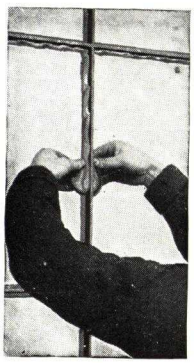
Two or more windows may be used side by side in the same opening when joined by the Fenestra Vertical Mullion. This is a "T" section. The web of the T usually is turned out and the wings of the T are lapped over and bolted to the frame members of the adjoining windows.

Vertical slots in the wings of the mullion correspond to horizontal slots in the window jamb bars and permit both vertical and horizontal adjustment to meet erection conditions as the bolts are inserted.

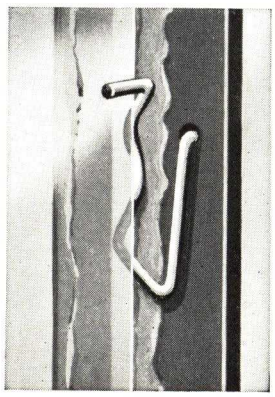
Two or more windows may be used one above another in the same opening when joined by structural horizontal mullions (transom bars), which vary in construction depending on the width of the opening. See suggestions, page Ind. 6.

10. GLAZING

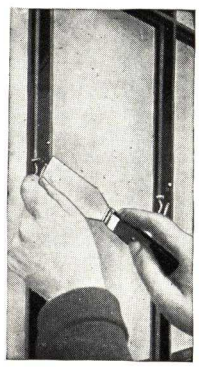
Glass for standard stypes of Horizontally Pivoted and Commercial Projected windows is cut in lights 12″ x 18″ or 14″ x 20″ but ventilator lights which abut on the top, sides or bottom of the ventilator must be trimmed 1″ along the abutting edge. One-quarter inch glass is preferable, either rough wire or factory ribbed. One-eighth inch, double strength or factory ribbed glass may be used.



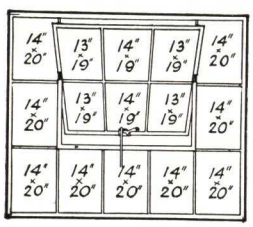
Bed Puttying



Glazing Clip in place



Inserting Glazing Clips



Ventilator lights which abut on top, sides or bottom of ventilator trim 1″ on the abutting edge

Putty must be high grade, steel window putty. Ordinary wood sash putty cannot be used.

All Pivoted and Projected Windows are glazed from the inside, glass being set in a bed of putty and secured by copper plated, spring glazing clips supplied by the window manufacturer. Four clips should be used for each fixed light and six clips for each ventilator light. After the clips are inserted, face putty should be applied.

11. PAINTING

All windows are given one dip coat of red mineral paint before shipment. Further painting should be done by the painting contractor in the field. One field coat is desirable after erection and before glazing and a finish coat should be applied about three weeks after glazing, when the putty has had time to set.

12. BONDERIZING

At slight extra cost, Pivoted and Projected Windows can be supplied with a new finish which includes Bonderizing, painting, and oven baking. This process, never before applied to steel windows on a production basis, gives the steel sections a phosphated, crystalline surface structure which is rust-resisting; guards against flaking, chalking, peeling, and abrasion and makes the priming coat last three to five times longer.

The Bonderizing process is largely responsible for the fine finishes on automobile fenders and refrigerators and when applied to steel windows, provides a tough, durable base coat that improves the appearance and lasting qualities of all finish coats which may be applied later.

13. UNDERWRITER'S LABEL

Underwriters' Labels can be supplied on both Horizontally Pivoted and Commercial Projected Windows.

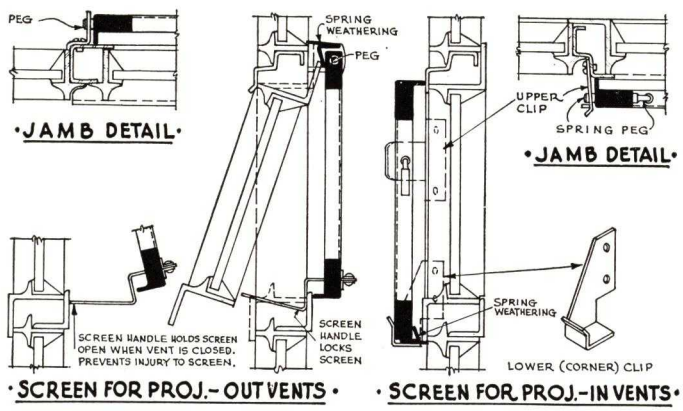
Windows must not be more than 7′ x 12′ overall. (Either dimension may be use for width or height.) The total area per ventilator must not be more than 3,000 sq. in. and ventilators must be operated individually. Glass must be ¼″ wire and single light dimensions are limited to 48″ in either width or height with an exposed area of not over 350 sq. in. Glass must be held in place by glazing angles.

14. SCREENING

Metal screens can be supplied for both Pivoted and Projected Types.

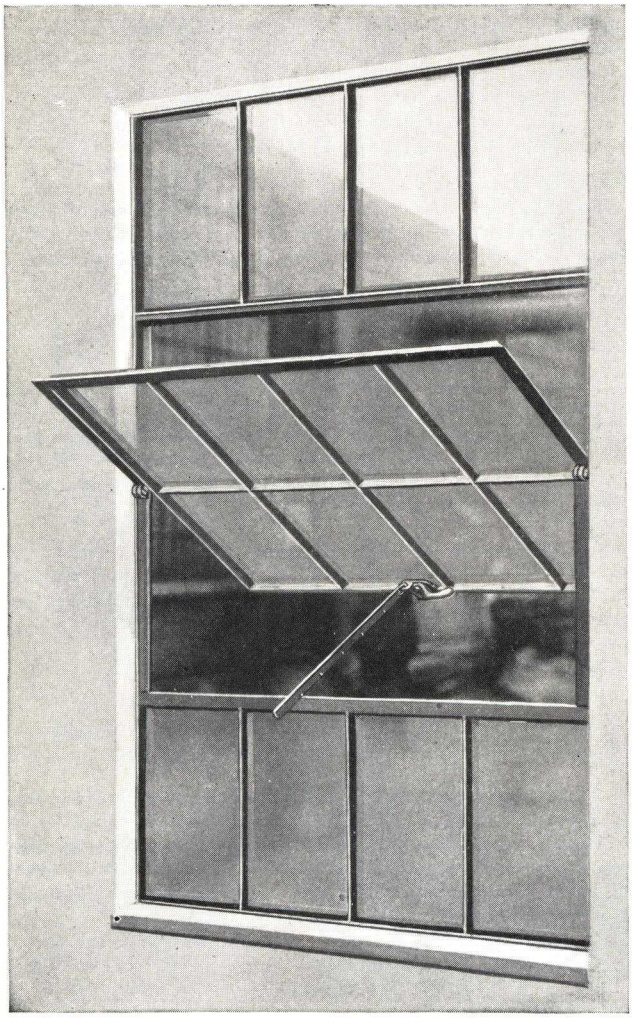
For Horizontally Pivoted Ventilators the screens are so arranged that the upper half of the screen is outside the ventilator and the lower half is inside.

Where screens are an important item, we suggest the use of Commercial Projected Windows with open-in ventilators and screens on the outside. If specified, Projected-Out Ventilators may be used with screens on the inside. (See details below.)



HORIZONTALLY PIVOTED WINDOWS

FRAMES 1⅜" DEEP



Horizontally Pivoted Window
Type 44181

(All sections of the General Specifications, Pages Ind. 1 to Ind. 3, apply except Section 4.)

Fenestra Horizontally Pivoted Windows have been standard material in all types of industrial and commercial construction for years. Their use is general all over the United States in such buildings as factories, warehouses, mills, power plants, lofts, garages, piers, round houses, hangars, and shops.

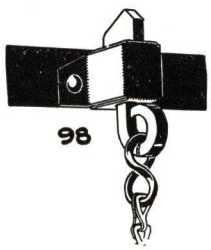
Frame members are solid rolled, vertex profile steel sections with corners mortise and tenoned and air-hammer riveted. Ventilators are symmetrically located and are pivoted horizontally. (Section 3, General Specifications.) In an open position, the upper portion of the ventilator is inside the building and the lower portion is outside.

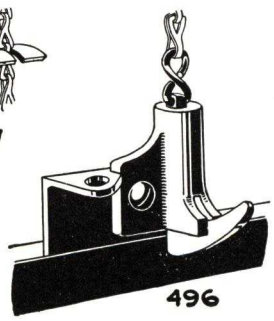
Ventilators may be operated by hand, individually, using any of the four methods shown below. No. 1 is Z-Bar Bracket 495; Cam Handle 467; Stay 860. No. 2 is Z-Bar Bracket 495; Cam Handle 467; Chain passing up over Roller Bracket 603. No. 3 is Z-Bar Bracket 495; Spring Catch 496; Chain passing up over Roller Bracket 603. No. 4 is Spring Catch 98 with Keeper 592. Chain Cleats 547 or 548 are supplied as necessary. Ventilators also may be operated in banks by mechanical operators. (See Page Ind. 12.)

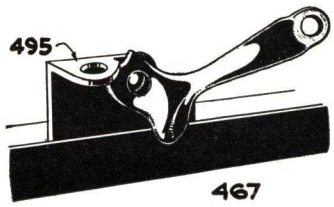
Although Horizontally Pivoted Windows may be screened, where screening is a major factor, we recommend the use of Commercial Projected Types in the same sizes. (See Page Ind. 3.)

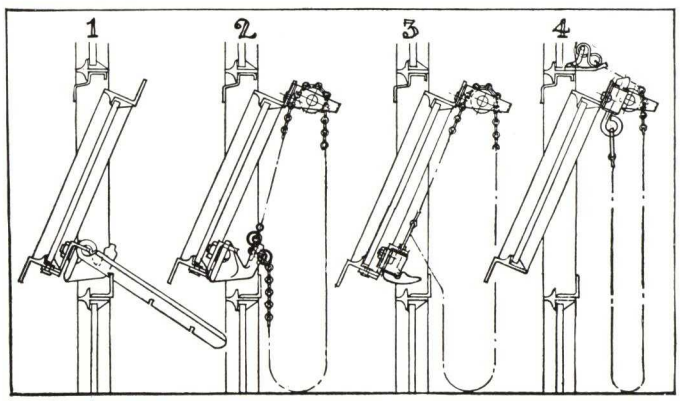
Stock, Standard and Listed Special Types of Pivoted Windows are shown on Page Ind. 5, combinations of units to fill multiple openings on Page Ind. 6 and installation details on Page Ind. 9.

Bonderized at extra cost where specified.



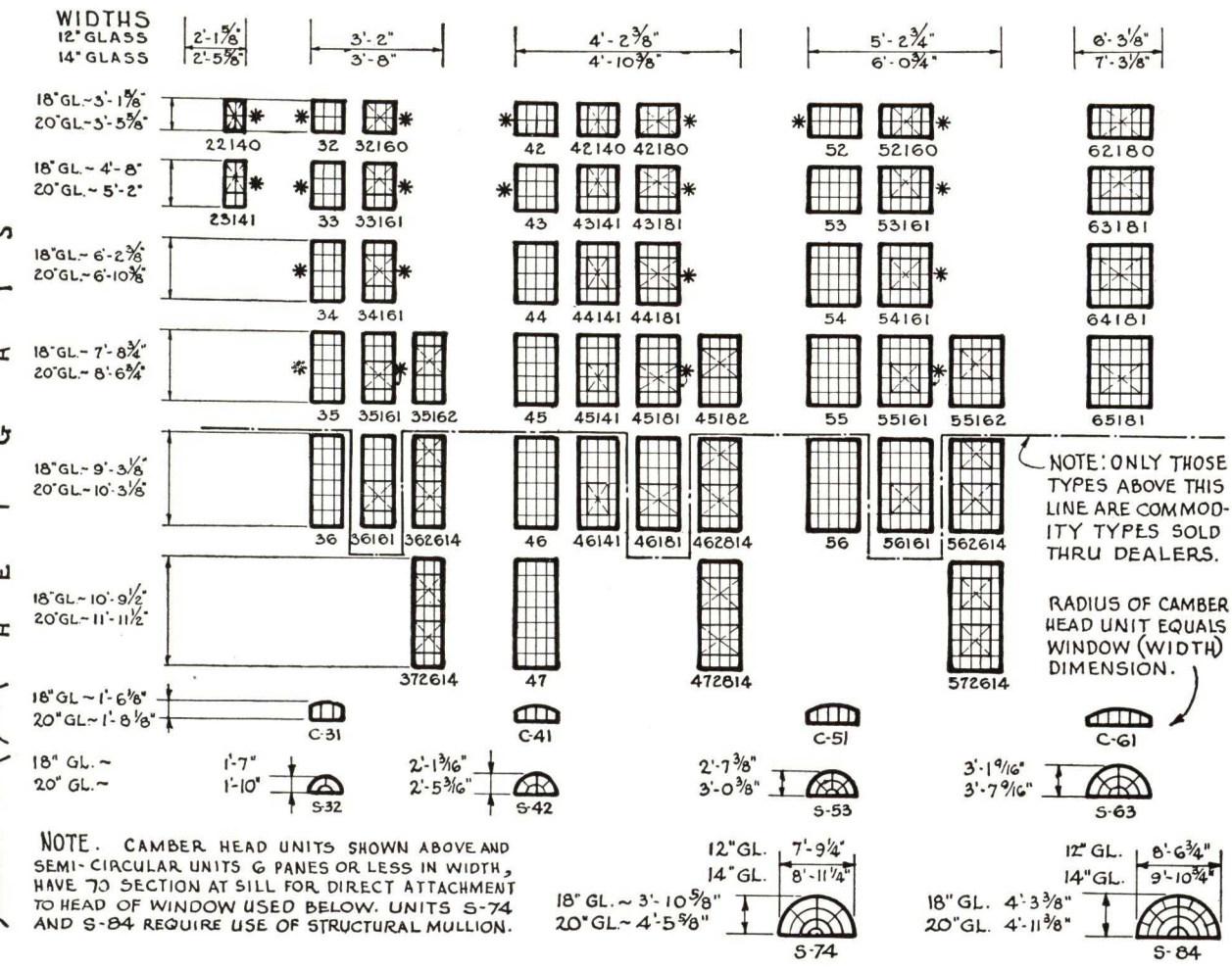






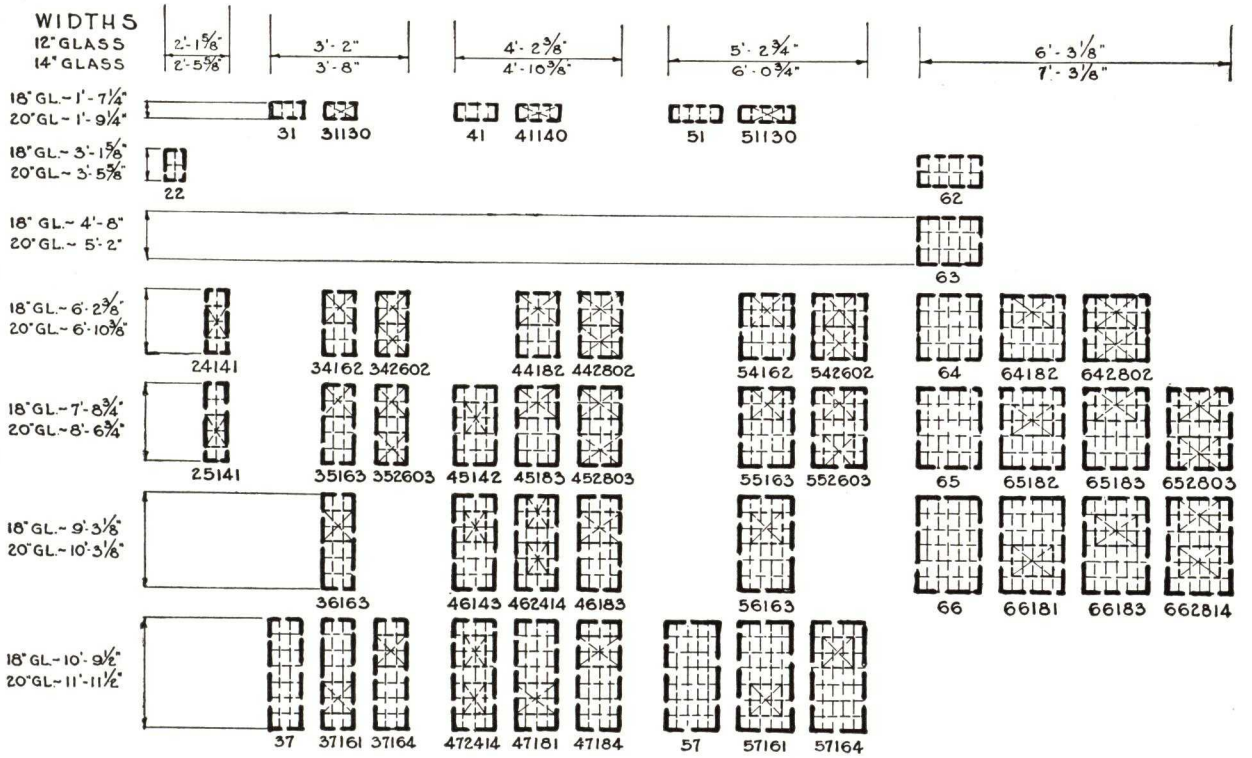
STANDARD AND STOCK TYPES

* TYPES STARRED ARE STOCKED IN ALL WAREHOUSES. FOR TYPES NOT STARRED BARS ONLY ARE STOCKED AT FACTORY FOR ASSEMBLY AS REQ'D.



LISTED SPECIAL TYPES

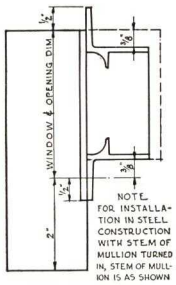
GLASS SIZE COMBINATIONS ARE 12"×18" AND 14"×20" LISTED SPECIAL UNITS ARE BUILT AT THE FACTORY AS REQ'D.



PIVOTED TYPES AND SIZES

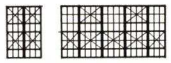
L-116

Fenestra



VERTICAL SECTION AT MULLION SHOWING CUTOFF

DETAIL SHOWN (SOLID) IS SAME FOR ALL INSTALLATIONS WITH STEM OF MULLION TURNED OUT OR IN, EXCEPT AS NOTED ABOVE.



TYPICAL COMBINATIONS

NOTE

ONLY MULLIONS OF DESIGN SHOWN ARE FURNISHED BY D.S.P. Co. FOR HORIZONTALLY PIVOTED AND COMMERCIAL PROJECTED WINDOWS.

WINDOW WIDTHS SHOWN IN THE TABLE AT RIGHT ARE OVERALL OPENING AND WINDOW DIMENSIONS AND, IN THE MULTIPLE WIDTHS, INCLUDE ALLOWANCE FOR VERTICAL MULLIONS REQUIRED.

OPENING WIDTH FOR ANY COMBINATION EQUALS TOTAL OF WINDOW (WIDTH) DIMENSIONS PLUS 2" FOR EACH VERTICAL MULLION.

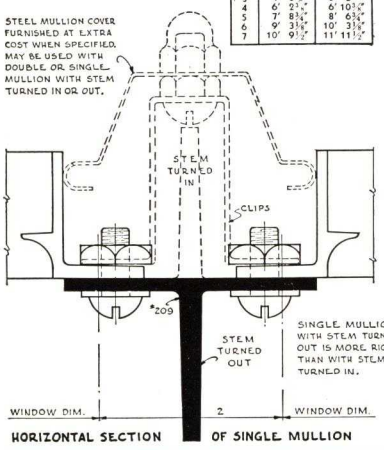
ALWAYS COMBINE UNITS OF THE SAME GLASS SIZES. ALSO ALWAYS COMBINE 12" WIDTHS WITH 18" HEIGHTS AND 14" WIDTHS WITH 20" HEIGHTS.

SINGLE WINDOW HEIGHTS

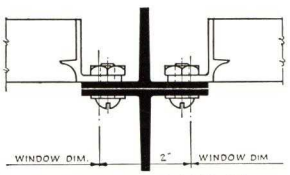
LIGHTS	12" × 18" GLASS	14" × 20" GLASS
1	1' 7½"	1' 9½"
2	3' 1⅝"	3' 5⅝"
3	4' 8"	5' 2"
4	6' 2⅜"	6' 10⅜"
5	7' 8¾"	8' 6¾"
6	9' 3⅛"	10' 3⅛"
7	10' 9½"	11' 11½"

SYMMETRICAL COMBINATIONS of UNITS

12" × 18" Glass	14" × 20" Glass	Type and Arrangement of Units	Total Lights	No. Units Wide	No. of VERT MULLS
SINGLE WINDOW WIDTHS					
1' 1¾"	1' 3½"		1	1	0
2' 1⅜"	2' 5⅜"		2	1	0
3' 0"	3' 8"		3	1	0
4' 2⅝"	4' 10⅜"		4	1	0
5' 2⅜"	6' 0¾"		5	1	0
6' 3⅛"	7' 3⅛"		6	1	0
MULTIPLE WINDOW WIDTHS					
4' 5¾"	5' 1¼"	2-2	4	2	1
6' 6"	7' 6"	3-3	6	2	1
8' 6¾"	9' 10¾"	4-4	8	2	1
9' 10"	11' 4"	3-3-3	9	3	2
10' 7⅛"	12' 3⅛"	5-5	10	2	1
10' 10¾"	12' 6¾"	3-4-3	10	3	2
11' 10¾"	13' 8¾"	3-5-3	11	3	2
12' 8⅛"	14' 8⅛"	6-6	12	2	1
12' 11¾"	14' 11¾"	4-4-4	12	3	2
13' 9"	15' 9"	3-3-3-3	12	4	3
13' 11½"	16' 1½"	4-5-4	13	3	2
14' 11⅞"	17' 3⅞"	5-4-5	14	3	2
15' 2¾"	17' 6¾"	3-4-4-3	14	4	3
16' 0¼"	18' 6¼"	5-5-5	15	3	2
16' 6"	19' 0"	3-3-3-3-3	15	5	4
17' 0⅝"	19' 8⅝"	5-6-5	16	3	2
17' 3½"	19' 11½"	4-4-4-4	16	4	3
17' 6¾"	20' 2¾"	3-3-4-3-3	16	5	4
18' 1"	20' 11"	6-5-6	17	3	2
18' 6¾"	21' 4¾"	3-4-3-4-3	17	5	4
19' 1⅜"	22' 1⅜"	6-6-6	18	3	2
19' 4½"	22' 4½"	4-5-5-4	18	4	3
19' 7⅛"	22' 7⅛"	3-4-4-4-3	18	5	4
20' 1½"	23' 1½"	4-4-3-4-4	19	5	4
21' 5"	24' 9"	5-5-5-5	20	4	3
21' 7⅞"	24' 11⅞"	4-4-4-4-4	20	5	4
21' 10¾"	25' 2¾"	3-3-4-4-3-3	20	6	5
22' 8½"	26' 2½"	5-5-5-5	21	5	4
23' 2"	26' 8"	3-3-3-3-3-3-3	21	7	6
23' 8⅝"	27' 4⅝"	5-4-4-4-5	22	5	4
23' 11½"	27' 7½"	3-4-4-4-4-3	22	6	5
24' 2¾"	27' 10¾"	3-3-3-4-3-3-3	22	7	6
24' 9"	28' 7"	4-5-5-5-4	23	5	4
25' 2⅜"	29' 0⅜"	4-3-3-3-3-3-4	23	7	6
25' 9⅜"	29' 9⅜"	5-5-4-5-5	24	5	4
26' 0⅛"	30' 0⅛"	4-4-4-4-4-4	24	6	5
26' 9¾"	30' 11¾"	5-5-5-5-5	25	5	4
27' 3½"	31' 5½"	4-4-3-3-3-4-4	25	7	6
27' 10⅛"	32' 2⅛"	5-5-6-5-5	26	5	4
28' 1"	32' 5"	5-4-4-4-4-5	26	6	5
28' 10½"	33' 4½"	6-5-5-5-6	27	5	4
29' 10⅞"	34' 6⅞"	5-6-6-6-5	28	5	4
30' 1¾"	34' 9¾"	4-5-5-5-5-4	28	6	5
30' 6½"	35' 2½"	6-6-5-5-6	29	5	4
31' 11⅝"	36' 11⅝"	6-6-6-6-6	30	5	4
32' 2¾"	37' 2¾"	5-5-5-5-5-5	30	6	5
33' 5⅞"	38' 7⅞"	4-4-5-5-5-4-4	31	7	6
34' 3½"	39' 7½"	4-6-6-6-6-4	32	6	5
35' 6⅛"	41' 0⅛"	4-5-5-5-5-5-4	33	7	6

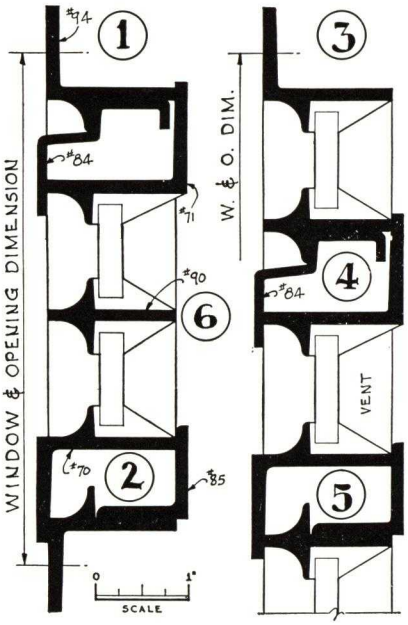


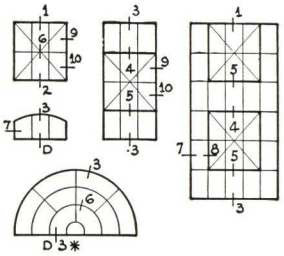
HORIZONTAL SECTION OF SINGLE MULLION



DOUBLE VERTICAL MULLION

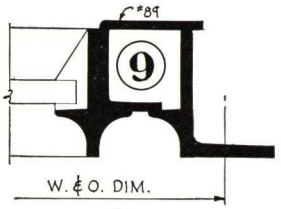
VERTICAL MULLIONS (HORIZONTALLY PIVOTED COMMERCIAL PROJECTED) L-122

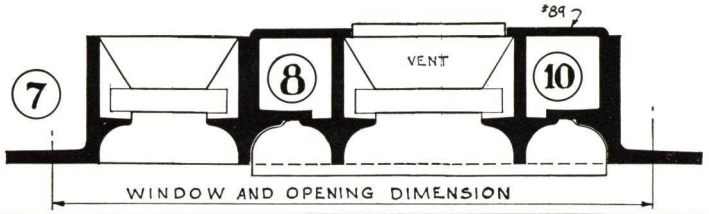




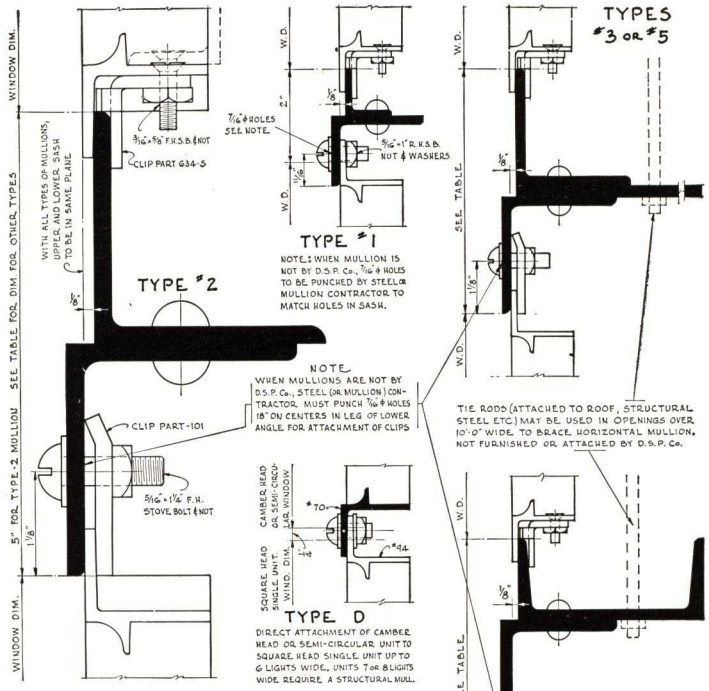
TYPICAL ELEVATIONS

* SEMI-CIRCULAR UNITS MORE THAN 6 PANES WIDE HAVE DETAIL 3 (#94 SECTION) AT SILL. ALL STANDARD CAMBER HEADS AND ALL SEMI-CIRCULAR UNITS 6 PANES OR LESS WIDE HAVE #70 SECTION AT SILL. SEE DETAIL "D" ON HORIZONTAL MULLION PLATE.





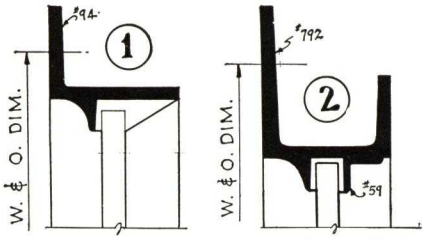
HORIZONTALLY PIVOTED SECTIONS L-125



LIGHTS WIDE		MULL	STEEL ANGLES		PLATE OR CHANNEL	WEIGHT PER FOOT	BETWEEN WIND DIMS
12" × 18" GLASS	14" × 20" GLASS	TYPE	REQD	SIZE			
SINGLE UNITS UP TO 6 INCLUDING 6 LIGHTS WIDE		1	1	1" × 1" × 1/8"	NONE	3.0#	2"
3 TO 9	3 TO 8	2	2	2"×2"×1/4"	NONE	6.5#	5"
10 TO 13	9 TO 11	3	2	2½"×2½"×5/16"	6"×1/4" PLATE	11.5#	5⅛"
10 TO 13	9 TO 11	4	1	3½"×2½"×1/4"	4" CHANNEL	10.5#	5⅛"
14 TO 18	12 TO 16	5	2	3"×3"×5/16"	6"×1/4" PLATE	17.5#	6⅛"
14 TO 18	12 TO 16	6	1	4"×3"×5/16"	6" CHANNEL	15.5#	6⅛"

NOTE: ONLY MULLIONS OF SIZE AND DESIGN SHOWN WILL BE FURNISHED BY D.S.P.Co. WHEN SPECIFIED. MULLIONS TO EXTEND 4" INTO MASONRY AT JAMBS FOR ANCHORAGE.

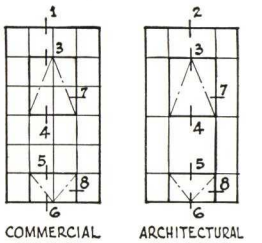
HORIZONTAL MULLIONS (HORIZONTALLY PIVOTED COMMERCIAL PROJECTED) L-123



COMMERCIAL PROJECTED FRAME SECTION

ARCHITECTURAL PROJECTED FRAME SECTION

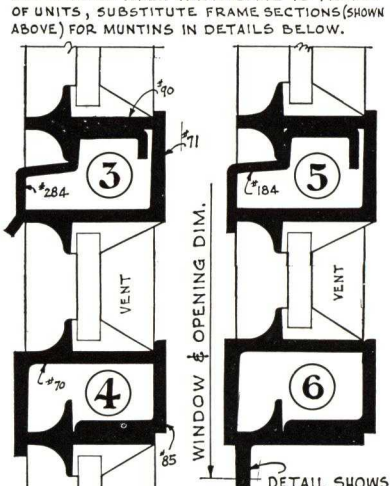
FOR DETAILS WHEN VENTS COME TO FRAME OF UNITS, SUBSTITUTE FRAME SECTIONS (SHOWN ABOVE) FOR MUNTINS IN DETAILS BELOW.



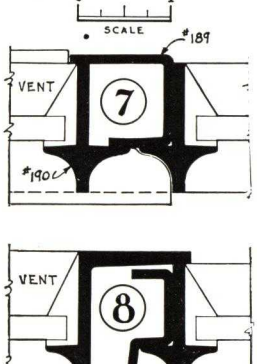
COMMERCIAL PROJECTED

ARCHITECTURAL PROJECTED

TYPICAL TYPES



NOTE: STANDARD GLAZING FOR COMMERCIAL PROJECTED UNITS IS WITH PUTTY AS SHOWN ON DETAILS. GLAZING ANGLES PER DETAIL 2 ARE STANDARD FOR ARCHITECTURAL PROJECTED UNITS.



STANDARD SECTIONS COMMERCIAL PROJECTED ARCHITECTURAL PROJECTED G-309

COMMERCIAL PROJECTED WINDOWS

FRAMES 1⅜" DEEP

(All sections of the General Specifications, Pages Ind. 1 to Ind. 3, apply except Section 3.)

Commercial Projected Windows are designed for all types of industrial and commercial buildings, factory offices, and particularly for window openings where screening and shading are important factors.

Each ventilator opens entirely inside or entirely outside the plane of the window permitting easy attachment of screens, roller shades, wire guards, blinds, etc. Ventilators are supported on bronze pivoted, spring steel side arms and open in or out as specified.

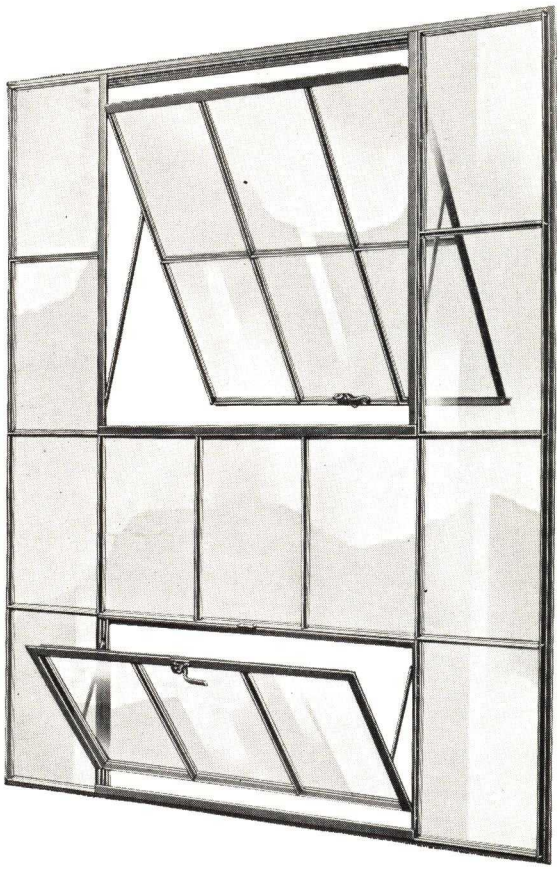
Projected-In Types, with fixed screens attached on the outside, as shown in the lower right hand corner, usually answer all screening requirements.

Standard types and sizes are shown on Page Ind. 9. For method of vent hanging, see Sections 4 and 5, General Specifications. Materials, construction and installation details are exactly the same as for Horizontally Pivoted Windows.

Hardware, as shown on Page Ind. 8, is standardized in iron (bronze at extra cost). Hardware for Open-Out Ventilators includes: Handle 150, Pole Ring 151. Hardware for Open-In Ventilators includes: Handles 1171 or 1220; Spring Catch 39 or 739.

Windows are glazed from inside, glass being bed puttied, held by spring glazing clips and face puttied.

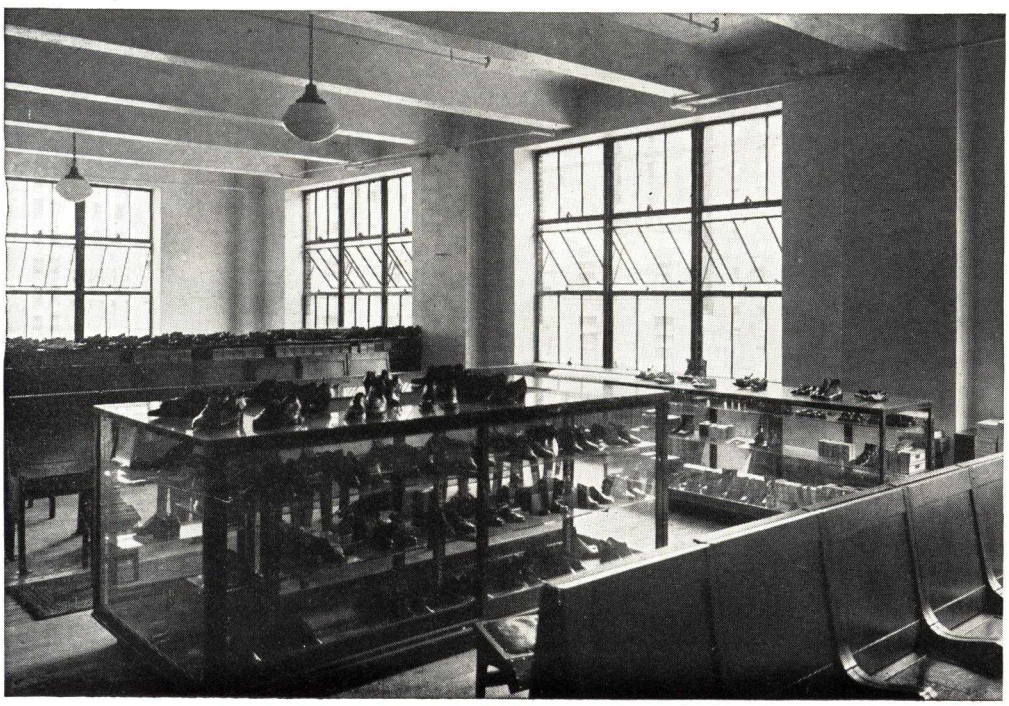
Projected-Out Vents form a protecting canopy above the window opening. May be opened in rainy weather. Also insure unobstructed aisle or storage space under the window. Projected-In Vents act as wind guards at the sill; deflect air currents upward and toward the opposite wall.



Above: Type 5423602, with upper vent projected-out and lower vent projected-in.

Below: Type 34161, with projected-in vent to facilitate screening on the outside.

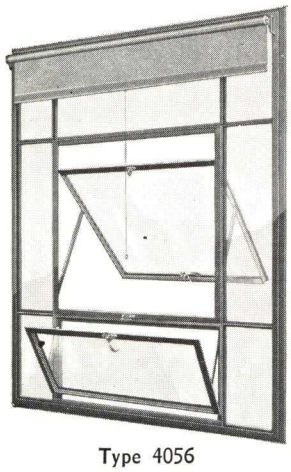
Below: Retail sales department of the Hens Kelly Shoe Co., Buffalo, N. Y. Fenestra Commercial Projected Windows.



ARCHITECTURAL PROJECTED WINDOWS

FRAME 1⅜" DEEP

Architectural Projected Windows are designed for use in office type buildings, schools and commercial structures of all types where the architectural effect desired is somewhat more elaborate than that supplied by either Horizontally Pivoted or Commercial Projected Windows.



Type 4056

Standard Types are shown on Page Ind. 9 and include the use of comparatively large glass lights in the ventilators with narrow side lights and fixed transoms.

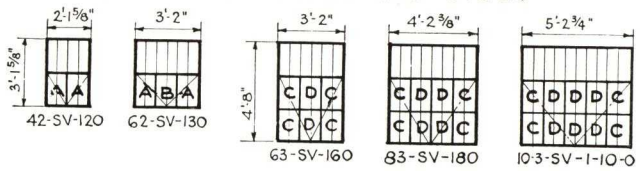
Architectural Projected Windows have frames of cold rolled, vertex profile steel channel section as indicated on Page Ind. 9. In other respects, General Specifications on Pages Ind. 1 to Ind. 3 apply except Sections 3 and 10. Architectural Types and Sizes are shown on Page Ind. 9.

Hardware as shown below, is standardized in bronze. Iron hardware is available where specified. Hardware for Open-Out Ventilators includes: Handles 733 or 914, Pole Ring 151. Hardware for Open-In Ventilators includes: Handles 1071, 1171 or 1220; Spring Catch 39 or 739.

Windows are glazed from the inside. Glass is bed puttied and held by steel glazing angles mitered at the corners.

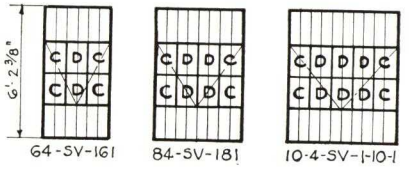
SECURITY WINDOWS

STANDARD TYPES AND SIZES



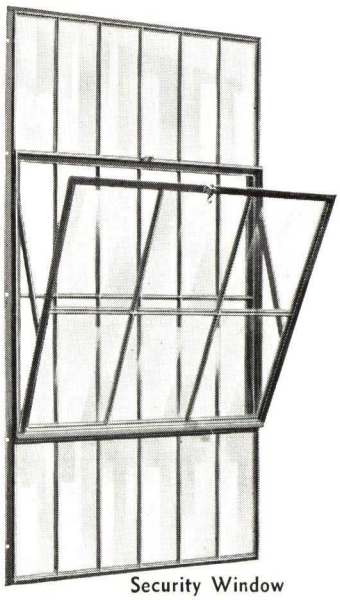
GLASS SIZES	
SYMBOL	SIZE
A	9¾" × 13½"
B	12 " × 13½"
C	9¾" × 15¾"
D	12 " × 15¾"

ALL GLASS IN FIXED LIGHTS = 5⅞" × 18"



The Fenestra Security Window provides a modern steel window and protective steel grille in one unit, replacing the old-fashioned and costly wood windows with separate iron grilles, for use in the rear and side elevations of store and commercial buildings generally.

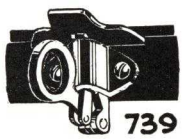
The Security Window, made in eight sizes, consists of a main frame 1⅜" deep from front to back with muntin bars spaced to provide 6" x 18" openings. On the inside of the main frame is superimposed a projected-in ventilator with bars spaced to provide 12" x 17" openings. Ventilators are supported by steel side arms.



Security Window

Openings in the ventilator and in the main frame above and below the ventilator are to be glazed but those immediately in front of the ventilator are left unglazed to act as a grille.

1220

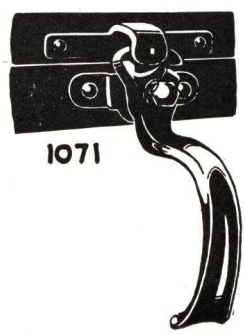


739

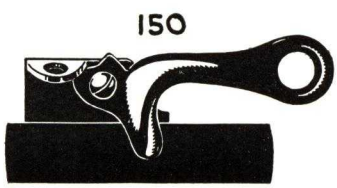
39

151

1171



1071



150

STOCK AND STANDARD TYPES

HEIGHTS

18"GL.- 3'-1⅝" / 20"GL.- 3'-5⅝" — 22140 — 32160 — 42140 — 52160

18"GL.- 4'-8" / 20"GL.- 5'-2" — 23141 — 33161 — 43141 — 53161

18"GL.- 6'-2⅜" / 20"GL. 6'-10⅜" — 34161 — 3423602 — 44141 — 4422402 — 54161 — 5423602

18"GL.- 7'-8¾" / 20"GL.- 8'-6¾" — 35161 — 35162 — 3523602 — 45141 — 4522402 — 55161 — 55162 — 5523602

18"GL.- 9'-3⅛" / 20"GL. 10'-3⅛" — 36161 — 362614 — 3623603 — 46141 — 4622403 — 56161 — 562614 — 5623603

18"GL.- 10'-9½" / 20"GL.- 11'-11½" — 372614

NOTE: ONLY THOSE TYPES ABOVE THIS LINE ARE COMMODITY TYPES SOLD THRU DEALERS.

✣TYPES MARKED THUS ARE STOCKED IN DETROIT WAREHOUSE ONLY. SWING OF VENT CAN BE REVERSED AT NO EXTRA CHARGE, WHEN SPECIFIED, BUT SHIPMENT FROM FACTORY WILL BE REQUIRED.

WIDTHS				
12" GLASS	2'-1⅝"	3'-2"	4'-2⅜"	5'-2¾"
14" GLASS	2'-5⅝"	3'-8"	4'-10⅜"	6'-0¾"

LISTED SPECIAL TYPES

HEIGHTS

18"GL.- 6'-2⅜" / 20"GL.- 6'-10⅜" — 24141 — 34162 — 54162

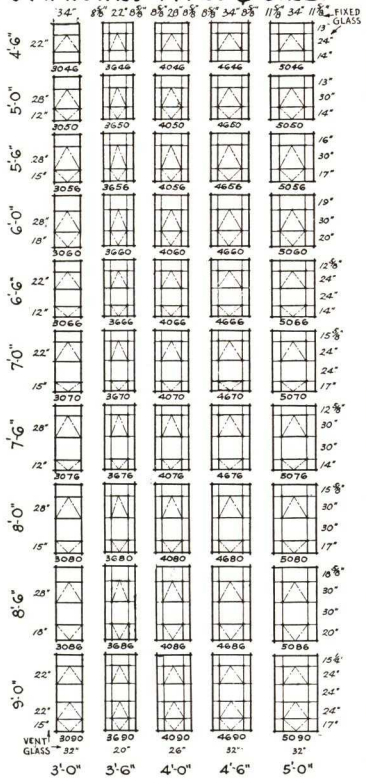
18"GL.- 7'-8¾" / 20"GL.- 8'-6¾" — 25141 — 35163 — 352603 — 3523603 — 45142 — 55163 — 552603 — 5523603

18"GL.- 9'-3⅛" / 20"GL.- 10'-3⅛" — 36163 — 46143 — 462414 — 56163

18"GL.- 10'-9½" / 20"GL.- 11'-11½" — 37161 — 37164 — 3723604 — 472414 — 57161 — 57164 — 5723604

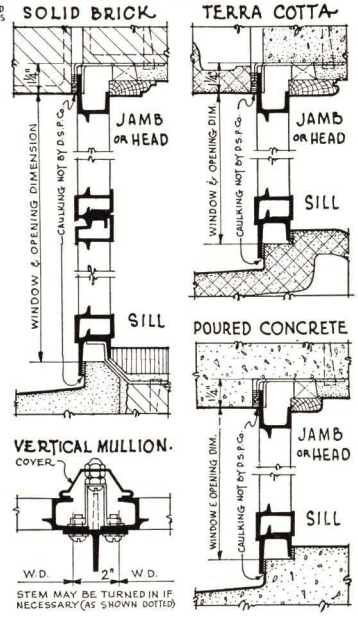
WIDTHS				
12" GLASS	2'-1⅝"	3'-2"	4'-2⅜"	5'-2¾"
14" GLASS	2'-5⅝"	3'-8"	4'-10⅜"	6'-0¾"

STANDARD TYPES & SIZES



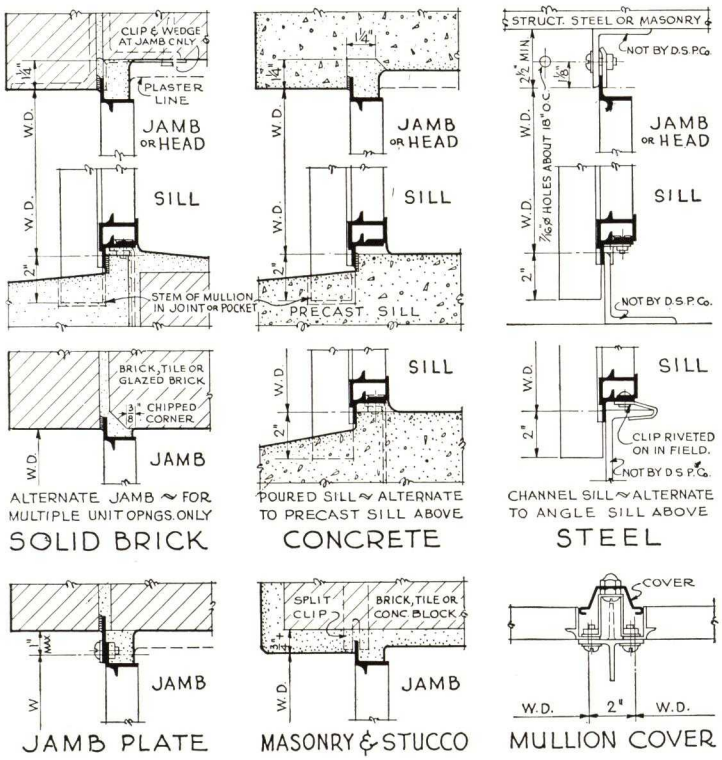
SIZES SHOWN ARE WINDOW & OPENING DIMENSIONS FOR SINGLE UNITS.

INSTALLATION DETAILS



TO FIGURE OPENING WIDTHS OF COMBINED UNITS, ADD 2" FOR EACH VERTICAL MULLION. STONE VENEER DETAIL IS SIMILAR TO SOLID BRICK. ORNAMENTAL METAL DETAIL IS SIMILAR TO TERRA-COTTA. INSTALLATION INTO PREPARED OPENINGS AS SHOWN IS RECOMMENDED. GLAZING ANGLES (FURN. BY D.S.P.Co.) ARE STANDARD. PUTTY GLAZED IF DESIRED. GLASS, PUTTY & GLAZING NOT BY D.S.P.Co.

COMMERCIAL PROJECTED G-308



ALTERNATE JAMB ~ FOR MULTIPLE UNIT OPNGS. ONLY

SOLID BRICK

POURED SILL ~ ALTERNATE TO PRECAST SILL ABOVE

CONCRETE

CHANNEL SILL ~ ALTERNATE TO ANGLE SILL ABOVE

STEEL

JAMB PLATE

MASONRY & STUCCO

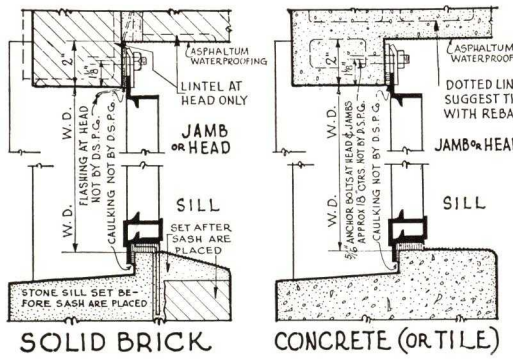
MULLION COVER

SILL DETAILS SHOWN FOR CONCRETE CAN BE USED AS ALTERNATES TO DETAIL SHOWN FOR SOLID BRICK (OR OTHER MASONRY). STEM OF VERTICAL MULLION MAY BE TURNED OUT OR IN. WHEN STEM IS TURNED OUT, GREATER STIFFNESS IS SECURED. NOTE IN SILL DETAILS THAT STEM OF MULLION ANCHORS INTO SILL, EITHER AT A JOINT OR INTO A POCKET PREPARED FOR IT.

STRUCT. STEEL, CAULKING OR GROUT NOT BY D.S.P.Co.

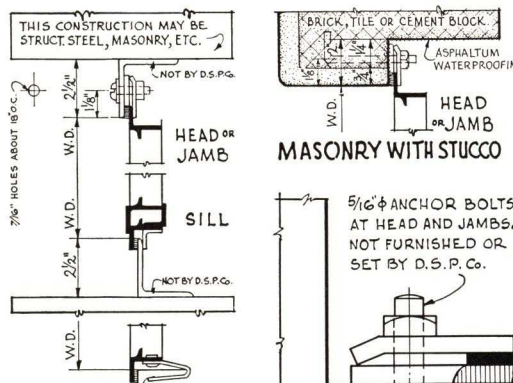
PIVOTED & COMMERCIAL PROJECTED L-120

ARCHITECTURAL PROJECTED G-209



SOLID BRICK

CONCRETE (OR TILE)



STEEL ANGLE OR CHANNEL

MASONRY WITH STUCCO

NOTE

THESE DETAILS FOR INSTALLATION OF STEEL WINDOWS INTO PREPARED OPENINGS ARE RECOMMENDED FOR PREVENTION OF CORROSION. THEY SHOW WATERPROOFING AND CAULKING AROUND THE ENTIRE OPENING, FLASHING AT HEAD OF MASONRY DETAIL AND ACCESSIBILITY OF HEAD AND JAMBS FOR PAINTING ETC.

FLASHING AT HEAD, ANCHOR BOLTS ON 18" CENTERS AT HEAD AND JAMBS OF MASONRY OPENINGS, NOT FURNISHED OR SET BY D.S.P.Co.

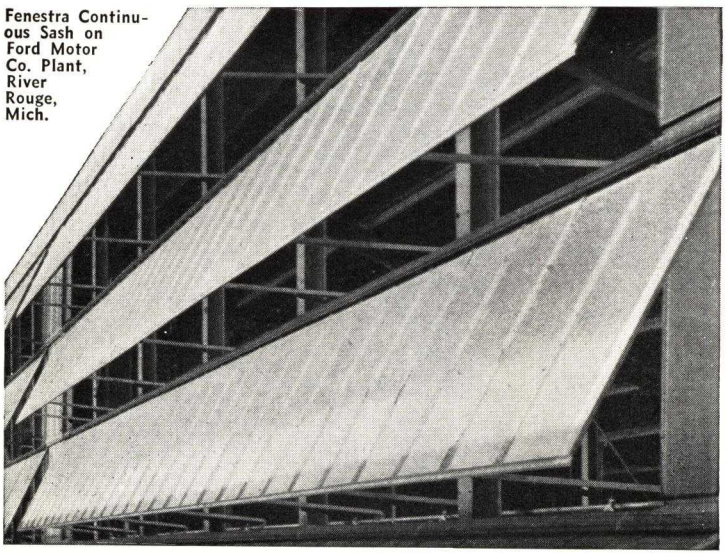
THE APPLICATION OF ASPHALTUM WATERPROOFING AROUND MASONRY OPENINGS IS RECOMMENDED, NOT FURNISHED OR APPLIED BY D.S.P.Co. CAULKING NOT BY D.S.P.Co. EXCEPT UNDER SEPARATE CONTRACT.

PIVOTED AND COMMERCIAL PROJECTED L-124

FENESTRA CONTINUOUS WINDOWS

Fenestra Continuous Windows are steel panel frames usually about 3′ high and 20′ long, designed to be connected end to end, hinged to the building construction and mechanically operated as single units perhaps 100′ or more in length.

These windows are intended primarily for use in monitor and saw-tooth-roof construction where the plane of the window is on a slope. However, they may be used, where necessary, when the windows are in a vertical plane.



Fenestra Continuous Sash on Ford Motor Co. Plant, River Rouge, Mich.

Standard units are made in any height (not exceeding 6′ 0″) and 20′ 0″ long (window dimensions equal to clear opening).

Units less than 20′ long should be designed to some multiple of 4′ 0″ in length (that is 4′, 8′, 12′ or 16′). Where this is impossible, they should be designed to some multiple of 2′ 0″ in length (8′, 10′, 12′, 14′, etc.).

All members of Fenestra Continuous Windows are especially designed, hot rolled, solid steel, vertex sections. Head and jamb sections are special angles. Muntins are "T" Sections 1⅜″ deep. Sills are especially designed with long, down-standing legs bent at the end to make close contact with the building construction.

All members are accurately fitted and rigidly riveted at joints to form standard panel units which are joined end to end (at time of erection) by splice plates bolted to head and sill members midway between muntins.

A stationary panel 2′ 0″ wide is supplied as a finishing panel between any swinging section and the adjacent building construction and a stationary panel 4′ 0″ wide is supplied between any two adjacent swinging sections.

Joints between any swinging sections and stationary panels are covered and protected by an especially formed, 14-gauge, steel channel with legs turned in. One leg of this channel is bolted to the end angle of the swing section and the other leg protrudes so as to overlap the end angle of the stationary panel as the window closes.

Where required, storm panels 2′ 0″ wide are supplied (at extra cost). These storm panels are attached to the end and intermediate stationary panels and underlap the swing section. All storm panels are provided with a formed, continuous drip board set over the sill flashing.

Fenestra Continuous Top Hung Windows are equipped with heavy, hot dipped, galvanized steel butts with $\frac{5}{16}$″ brass pins. These butts are spaced 4′ 0″ on centers and are rigidly riveted to the head angle of the windows. Bolts are supplied for attachment to the building girts.

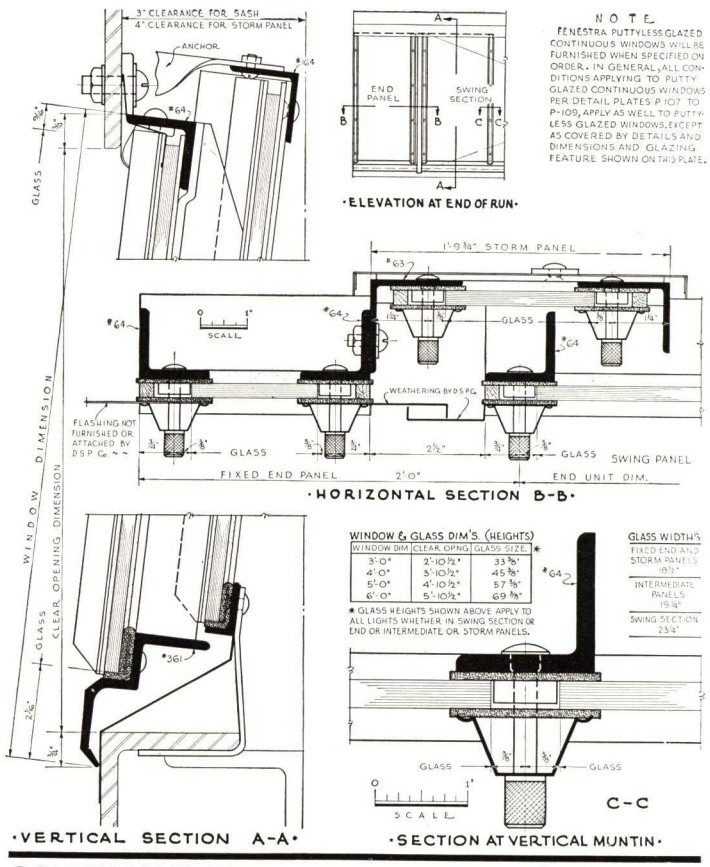
Where the Continuous Windows are to remain fixed in the opening (no provision for operation) the butts at the head are eliminated and heavy steel angle clips are provided for bolting to the window head and to the building girts. Flat steel clips are furnished for bolting to the sill of the window, the clips being bent around the steel sill girts to hold the window rigidly in place at the bottom.

All Fenestra Continuous Windows should be erected by the Fenestra Construction Co. (a subsidiary of DETROIT STEEL PRODUCTS CO.) under a separate contract.

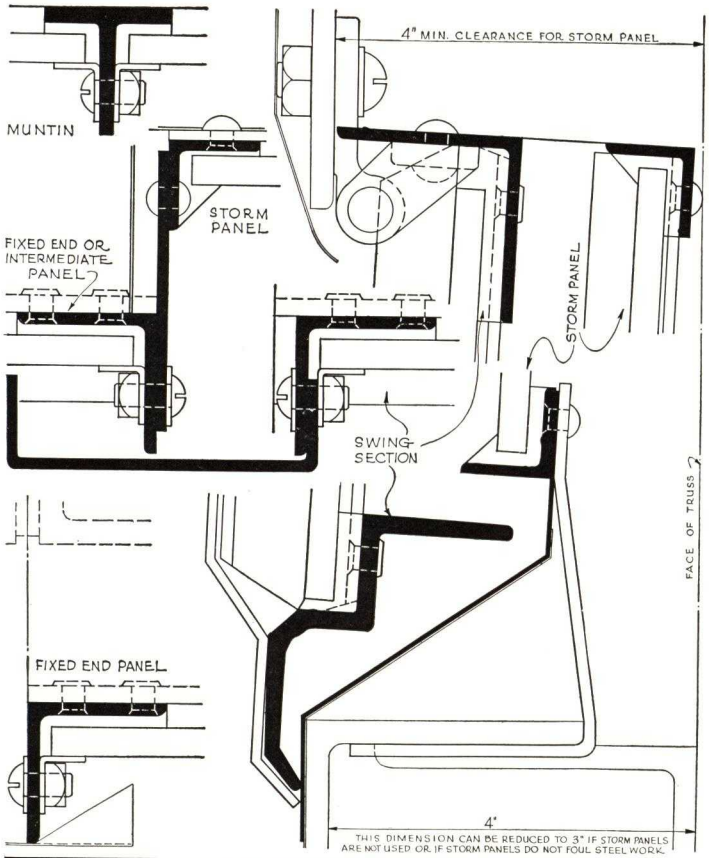
All Continuous Windows are given one dip coat of red mineral paint by the manufacturer before shipment. The painting contractor, as part of his contract, should apply an additional coat of paint after erection but before the windows are glazed. Further painting should then be deferred until at least three weeks after glazing to permit the putty to set. One or more additional coats may then be applied as desired.

Fenestra Continuous Windows should be glazed with ¼″ rough wire glass. Putty must be a high grade of steel window putty. Ordinary wood window putty cannot be used. The windows are glazed from the outside, the glass being set in a heavy bed of putty and secured at the muntins and end angles by angle clips and bolts.

Where specified, Continuous Windows arranged for puttyless glazing are supplied at extra cost. In this type, muntins are angles instead of T bars and glass is resiliently mounted on asphalt coated felt strips at jambs and sill. An additional felt strip is laid over the glass at the jambs and muntins and the glazing is completed by use of formed, galvanized steel caps held by bolts with knurled nuts. Spring bronze weathering is supplied at the head. This arrangement saves times and labor in glazing and glass breakage due to expansion variation is greatly reduced.

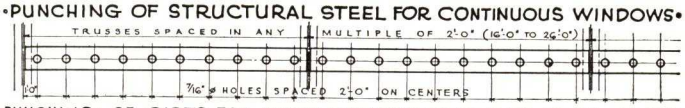


CONTINUOUS WINDOWS ~ PUTTYLESS TYPE P-112

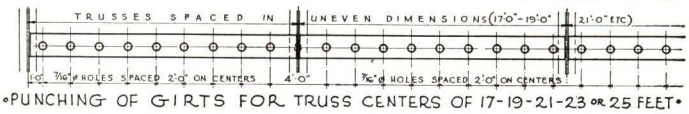


CONTINUOUS WINDOW SECTIONS P-106

•PUNCHING OF STRUCTURAL STEEL FOR CONTINUOUS WINDOWS•



•PUNCHING OF GIRTS FOR TRUSS CENTERS OF 16-18-20-22-24 OR 26 FEET•



•PUNCHING OF GIRTS FOR TRUSS CENTERS OF 17-19-21-23 OR 25 FEET•

N O T E S

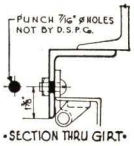
THESE DETAILS SHOW STRUCTURAL SHOP PUNCHING OF GIRTS AT HEAD OF CONTINUOUS WINDOWS FOR BUTTS OF SWING SASH OR FOR CLIPS OF FIXED SASH, FIXED END PANELS AND FIXED INTERMEDIATE PANELS ~

IN TRUSS SPACINGS NOT MULTIPLES OF 2'-0", HOLES OCCURING AT JOINTS OF GIRTS (AT EVERY SECOND TRUSS) MUST BE OMITTED. IF A BUTT OR CLIP IS REQUIRED AT THIS POINT, THE BOLT FOR ATTACHING THE BUTT OR CLIP MAY BE INSERTED THRU THE JOINT (IF POSSIBLE) OR A HOLE LOCATED AND PUNCHED BY WINDOW ERECTORS.

GIRTS FOR TRUSS CENTERS NOT MULTIPLES OF 1'-0" MUST BE PUNCHED IN THE FIELD.

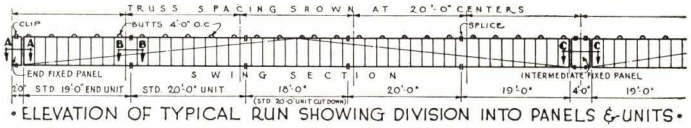
INTERMEDIATE VERTICAL SUPPORTS NOT MORE THAN 10'-0" ON CENTERS ARE RECOMMENDED.

HORIZONTAL GIRTS, VERTICAL SUPPORTS AND PUNCHING AS ABOVE, TO BE PROVIDED BY STRUCTURAL CONTRACTOR.

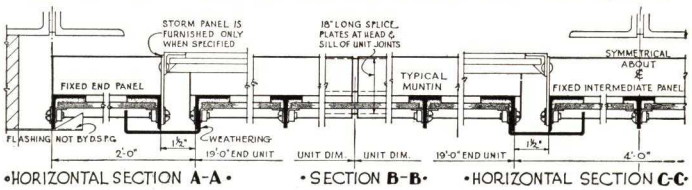


•SECTION THRU GIRT•

•DETAILS OF TYPICAL RUN OF CONTINUOUS WINDOWS•



•ELEVATION OF TYPICAL RUN SHOWING DIVISION INTO PANELS & UNITS•



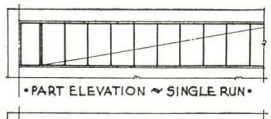
•HORIZONTAL SECTION A-A• •SECTION B-B• •HORIZONTAL SECTION C-C•

N O T E S

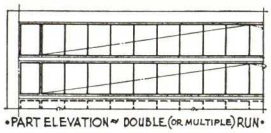
RUNS OF TOP HUNG CONTINUOUS WINDOWS CONSIST OF FIXED END PANELS AND A SWING SECTION OR A SERIES OF SWING SECTIONS SEPARATED BY FIXED INTERMEDIATE PANELS. LENGTHS OF SWING SECTIONS ARE NORMALLY DETERMINED BY THE VENTILATION REQUIREMENTS TO BE HANDLED FROM ONE CONTROL STATION ~ FOR RECOMMENDED LIMITS FOR LENGTHS OF RUNS SEE CONTINUOUS OPERATOR CATALOG.

FIXED SASH ARE SIMILAR TO TOP HUNG EXCEPT THAT CLIPS AT HEAD AND SILL REPLACE BUTTS AND FIX SASH IN PLACE. A FIXED INTERMEDIATE PANEL IS REQUIRED EVERY 200 FEET TO PROVIDE EXPANSION. IF SPECIFIED, A SWING SECTION MAY BE FIXED AT SILL BUT HUNG WITH BUTTS AT HEAD FOR FUTURE OPERATION.

CONTINUOUS ~~ GIRT PUNCHING & DETAILS P-107



•PART ELEVATION ~ SINGLE RUN•



•PART ELEVATION ~ DOUBLE (OR MULTIPLE) RUN•

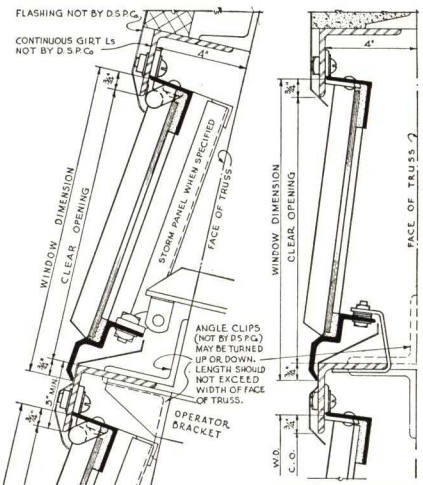
WINDOW HEIGHTS & GLASS SIZE DATA			
WINDOW DIM.	CLEAR OP'NG	GLASS SIZES	
HEIGHT	HEIGHT	WIDTH	HEIGHT
3'-0"	2'-10⅞"	23½"	2'-9¼"
4'-0"	3'-10⅞"	23½"	3'-9¼"
5'-0"	4'-10⅞"	23½"	4'-9¼"
6'-0"	5'-10⅞"	23½"	5'-9¼"

GLASS IN FIXED END AND INTERMEDIATE PANELS IS 22" IN WIDTH. HEIGHTS AS IN TABLE ABOVE ~~ FOR SIZE OF GLASS IN STORM PANELS SEE DETAIL PLATE ON STORM PANELS.

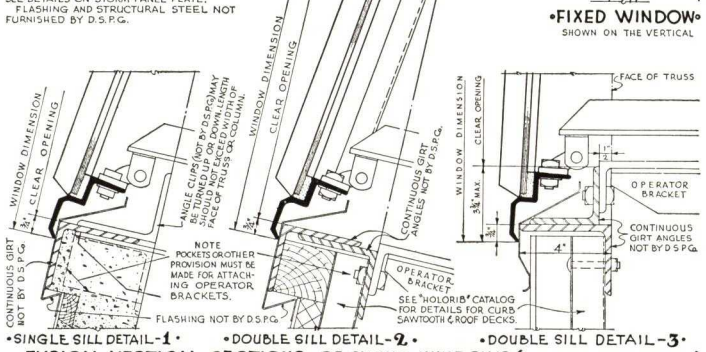
•NOTES•

CONTINUOUS WINDOWS MAY BE ON THE VERTICAL OR ON A SLOPE NOT TO EXCEED 30° FROM VERTICAL. STORM PANELS, AT ENDS OF SWING SECTIONS, WILL BE FURNISHED AT EXTRA COST WHEN SPECIFIED. SEE DETAILS ON STORM PANEL PLATE.

FLASHING AND STRUCTURAL STEEL NOT FURNISHED BY D.S.P.G.



•FIXED WINDOW• SHOWN ON THE VERTICAL

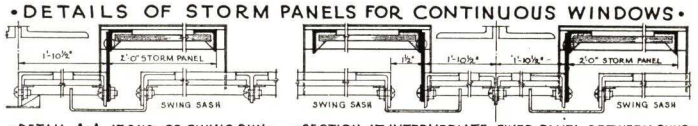


•SINGLE SILL DETAIL-1• •DOUBLE SILL DETAIL-2• •DOUBLE SILL DETAIL-3•

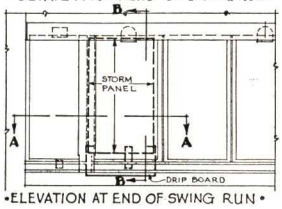
•TYPICAL VERTICAL SECTIONS OF SWING WINDOWS (ON SLOPE OR ON VERTICAL)

CONTINUOUS ~~ SINGLE & DOUBLE RUNS P-108

•DETAILS OF STORM PANELS FOR CONTINUOUS WINDOWS•



•DETAIL A-A AT END OF SWING RUN• •SECTION AT INTERMEDIATE FIXED PANEL BETWEEN RUNS•



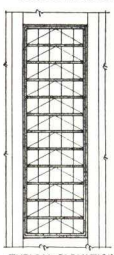
•ELEVATION AT END OF SWING RUN•

N O T E S

STORM PANELS AT ENDS OF SWING SECTIONS OF TOP HUNG WINDOWS PROVIDE PROTECTION FROM WEATHER WHEN SWING SECTIONS ARE OPENED. STORM PANELS ARE FURNISHED AT EXTRA COST ONLY WHEN SPECIFIED. THEY ARE NOT USED WITH CONTINUOUS WINDOWS IN SIDE WALL CONSTRUCTION OR IN TALL VERTICAL BAYS AS IN DETAILS SHOWN BELOW

GLASS SIZES	
GLASS WIDTH-23½"	
WINDOW HEIGHT	GLASS HEIGHT
3'-0"	= 2'-8"
4'-0"	= 3'-8"
5'-0"	= 4'-8"
6'-0"	= 5'-8"

•CONTINUOUS WINDOWS IN TALL VERTICAL BAYS•



•TYPICAL ELEVATION•

N O T E S

CONTINUOUS WINDOWS MAY BE USED IN SHORT RUNS AS SIDE WALL WINDOWS OR GROUPED IN TALL NARROW BAYS SUCH AS FOR POWER HOUSES OR IN SIMILAR BUILDINGS. IN SUCH CONSTRUCTION, END AND STORM PANELS ARE NOT USED AND THE SWING SASH WEATHER DIRECTLY ON BAFFLE MEMBERS ATTACHED TO THE BUILDING CONSTRUCTION.

FOR OPERATION OF WINDOWS IN TALL VERTICAL BAYS SEE CONTINUOUS OPERATOR CATALOG.

IN SKETCHES BELOW, THE SASH ARE REMOVED TO SHOW BAFFLE MEMBERS AT JAMBS.

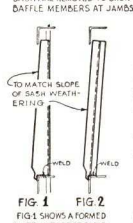
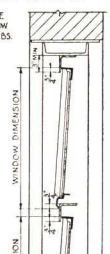
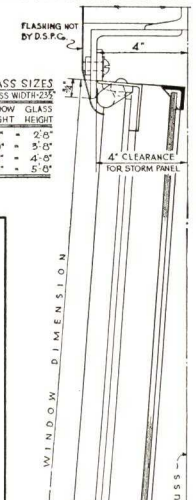


FIG. 1 FIG. 2

FIG. 1 SHOWS A FORMED PLATE WITH EDGE SHEARED TO MATCH SLOPE OF SASH WEATHERING IN FIG. 2. Z-BAR IS TILTED TO CONTACT WEATHERING, SEE DETAILS BELOW





FORMED PLATE BAFFLE NOT FURNISHED OR SET BY D.S.P.G. ~ SET IN PLACE WHEN WALL IS ERECTED

CHANNEL FRAME & Z-BAR BAFFLE NOT FURNISHED OR INSTALLED BY D.S.P.G.

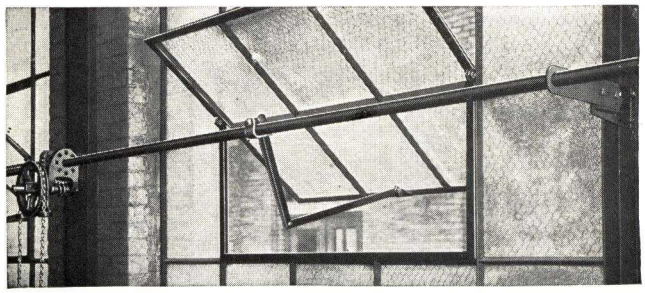
•JAMB WITH FORMED PLATE• •JAMB WITH 'Z' & CHANNEL FRAME•

VERT. SECTION WITH CHANNEL FRAME

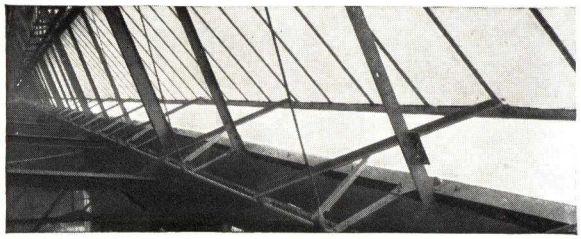
•TYPICAL VERTICAL SECTION ~ B-B•

CONTINUOUS ~~ VERT. BAYS ~ STORM PANELS P-109

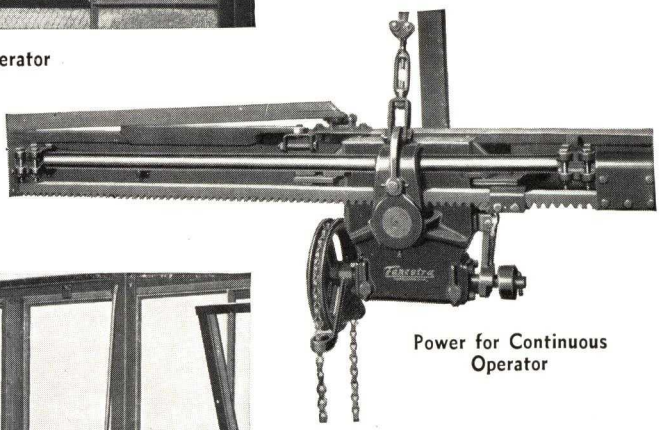
FENESTRA OPERATING DEVICES



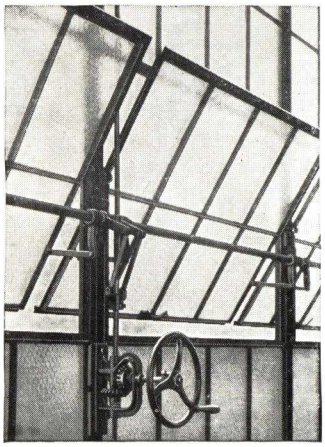
Worm and Gear Operator



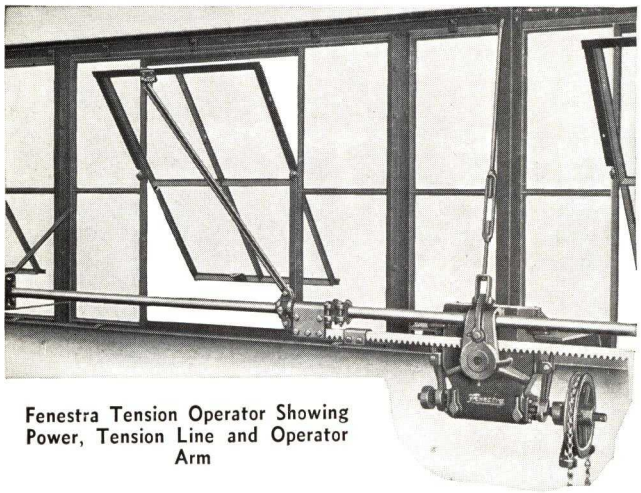
Continuous Operator—Right



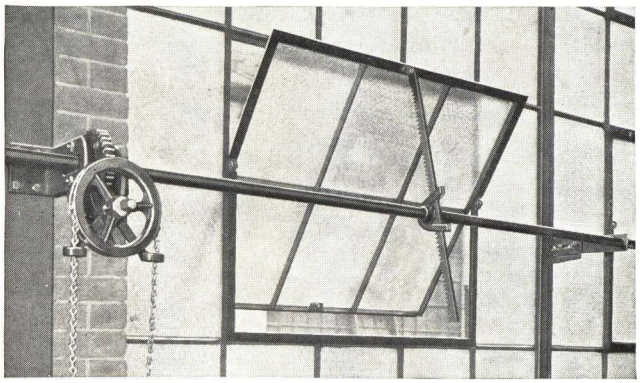
Power for Continuous Operator



Screw Type Operator



Fenestra Tension Operator Showing Power, Tension Line and Operator Arm



Rack and Pinion Operator

Fenestra Operating Devices are not sold as separate products, but only as methods of mechanically opening and closing Fenestra Windows. Erection should always be handled by the Fenestra Construction Company or an authorized Fenestra agent.

Due to the variety of conditions encountered, it is advisable that a Fenestra Engineer be consulted to insure a practical and economical layout. The types shown are standardized designs which are adequate to meet most conditions.

Fenestra Worm and Gear Operator is designed for manual operation, controlling horizontally pivoted or projected ventilators in single or multiple tiers. The power consists of a machine-cut, cast-iron worm, equipped with ball thrust bearings, operating a cast-iron segmental worm gear assembled in a steel housing. The power, for chain or mitre gear and pipe control, is located preferably in the center of the run, but may be located at the end.

Fenestra Continuous Operator is designed to operate continuous windows, either manually or electrically in single or multiple banks. Heavy construction and extreme care in assembly give this operator unusual strength and reliability. The power may be located at either end of the run, not closer than 20′ to the end. Operator arms are spaced about 10′ on centers.

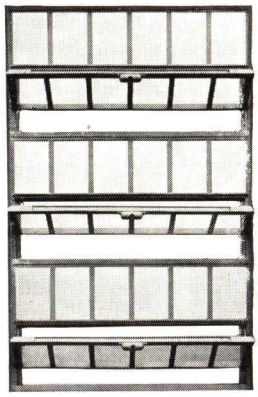
Tension Operator is designed to operate long runs of horizontally pivoted ventilators. In general construction and design Tension operator is similar to Continuous operator. Power and transmission lines are the same, except that each power is equipped with a double stop so that all movement is stopped and power cut off both when the vents are closed and when they are fully open. Power may be attached at either end of the run not closer to the end than 20′. Operator limited (single power) to 300′.

Fenestra Screw Type Operator is designed for neat, inconspicuous appearance. The vertical pipe, horizontal transmission line and ventilator arms lie snugly against the inside face of window. The power may be manually or electrically controlled. This device is particularly suitable for high openings containing vertical tiers of ventilators.

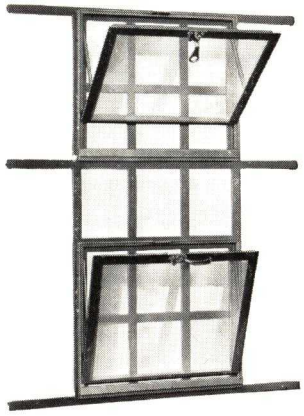
Fenestra Rack and Pinion Operator is similar to worm and gear, except that the operator arms are straight racks engaging pinions on the transmission line. Considerably longer runs may be controlled from one power. Operation may be by chain or mitre gear and vertical pipe, or an electrical hook-up may be used. Rack and pinion operator will handle short runs of Fenestra Continuous Windows.

FENESTRA DETENTION WINDOWS

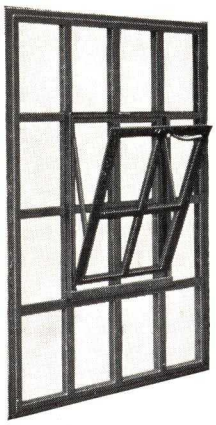
Side Projected Window



Psychiatric Window



Super-resistant Window



Superbar Window

Intermediate Guard Window

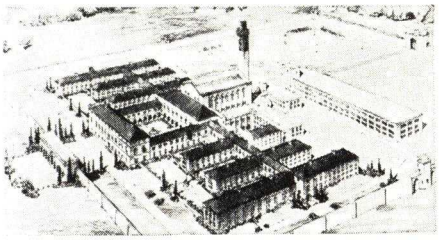
Detention institutions may be divided into two classes: (a) those caring for psychopathic and mentally diseased patients, such as hospitals, "homes," asylums, etc. and (b) corrective institutions including penitentiaries, prisons, jails and detention schools. Both types of institution may need "light" detention (moderate restriction) in certain rooms or certain buildings and "heavy" detention (absolute confinement) in others.

The design of Fenestra Detention Windows is determined largely by the degree of restriction needed and by the architectural effect desired. Types of detention windows shown here are only a few of the many which are available. Fenestra engineers will be glad to assist in choosing or designing windows to best meet individual conditions.

SIDE PROJECTED WINDOWS

Side Projected Windows are built from heavy casement sections, detention being secured by limiting all movable portions to a maximum opening of 5″. Two side-projected leaves (a single leaf cannot be used) are opened at the same time by a screw-type device concealed under the steel stool and are locked individually by cams concealed in the vertical meeting rail. Unit widths are limited to 3′ 0″ minimum and 4′ 6″ maximum. Side-projected leaves are limited to 5′ 0″ maximum height. A single removable handle is used for operating. These windows are particularly clean cut in appearance, have no projecting hardware and are easily screened or shaded on the inside.

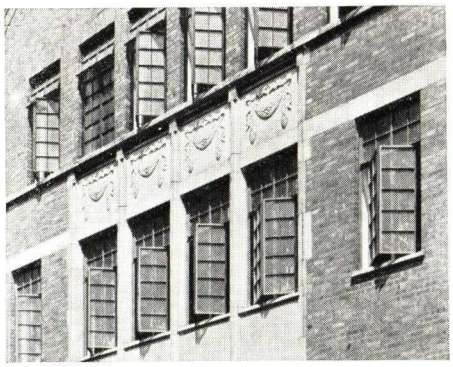
Side Projected Windows have been or are being used in the State Hospital, Athens, Ohio; Psychiatric Clinic, Fulton, Mo.; Cuyahoga County Detention Home, Cleveland, Ohio; Jackson County Parental School, Kansas City, Mo.; State Hospital, Columbus, Ohio; Industrial Home for Girls, Chillicothe, Mo. and in many other institutions.



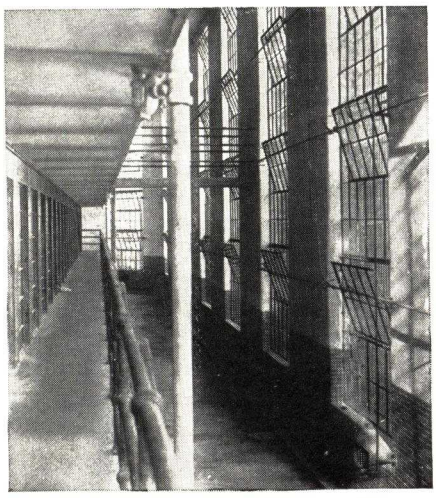
Federal Penitentiary, Lewisburg, Pa.

Pilgrim State Hospital, Brentwood, N. Y.

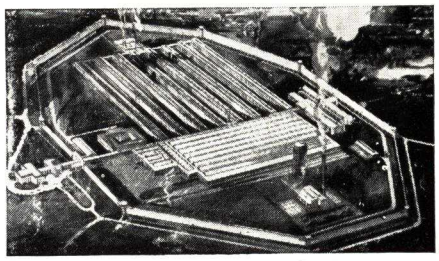
State Vocational School, Coxsackie, N. Y.



Cuyahoga Detention Home and Juvenile Court, Cleveland, Ohio



Wisconsin State Prison, Waupun, Wis.



New Eastern Penitentiary, Graterford, Pa.

PSYCHIATRIC WINDOWS

Psychiatric Windows are made of Projected Fenmark, heavy casement sections with open-in ventilators accommodating 6″ x 9″ glass. Ventilators limited to a maximum opening of 5″. Ventilators are one-light-high and may provide 100% ventilation or may be alternated with fixed sections if desired. A special two-light-high vent for convenience in washing is available and may be unlocked and opened farther than 5″.

These windows have been adopted as standard by the New York State Department of Public Works. Used in Pilgrim Hospital, Brentwood, N. Y.; Rockland State Hospital, Rockland, N. Y. Similar windows have been used in State Hospital, Fairfield, Conn.; State Hospital, Ypsilanti, Mich.; State Hospitals at Utica and Rochester, N. Y.; State Hospital, Howard, R. I. and numerous others.

SUPER-RESISTANT WINDOWS

Super-resistant Windows have the appearance of heavily built industrial windows but provide maximum detention without the use of separate bar guards. They are designed with fixed light grilles, frames and muntins being tool-resisting steel. Sections are 1¾″, hot rolled, with matrix of soft, low-carbon steel. In this matrix are imbedded steel inserts which are non-annealable and resistant both to hack-saw and breast-drill. Muntins in the grille extend 9″ into the masonry if so specified. Intersections are interlocked and welded in such a manner that they cannot be sawed. Open-in ventilators are superimposed inside the fixed grille. Ventilators and grille above and below the ventilators are glazed but grille immediately in front of the ventilators is left open.

Installed in the State Vocational School, Coxsackie, N. Y.; Tatnall Prison, Reidsville, Ga.; Anamosa State Hospital, Anamosa, Ia. and numerous other institutions.

SUPERBAR WINDOWS

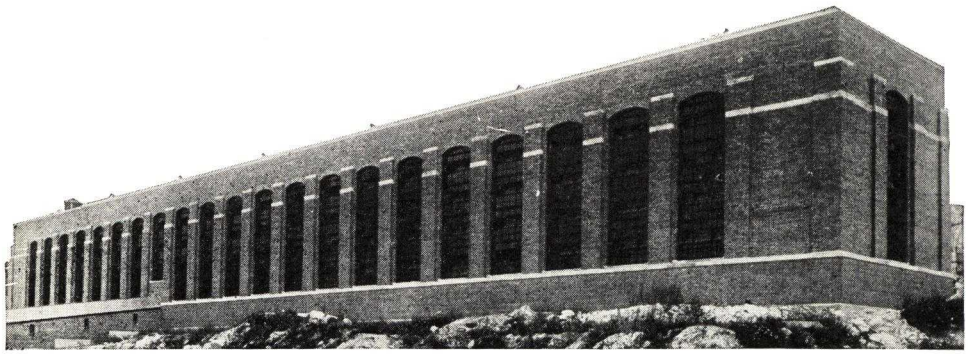
Superbar Windows have fixed grilles of 1¾″ section weighing slightly more than 2# per lineal foot. Glass lights 6″ x 9″. Frame corners and muntin intersections are welded inside and out, muntin joints being so formed that their construction is not revealed. Open-in ventilator is solidly welded to inside the grille. Operated by hand or pole individually, or in groups, mechanically. Applicable to exterior walls of cell blocks without the use of separate bar guards. Windows of similar design may be had with sections 1½″ and 1¼″ deep.

These windows have been installed on Alcatraz Island, Calif.; Tatnall Prison, Reidsville, Ga.; State Penitentiary, Jefferson City, Mo.; Federal Penitentiary, Atlanta, Ga.; Erie County Penitentiary, Wende, N. Y.; Clinton Prison, Dannemora, N. Y. and hosts of others.

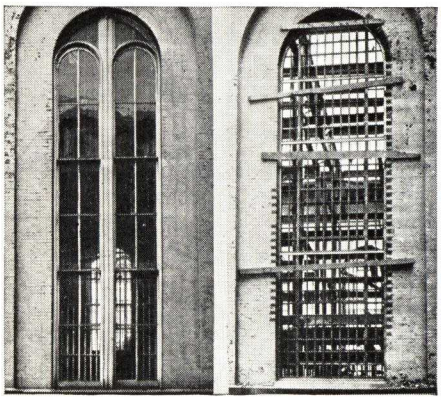
INTERMEDIATE GUARD WINDOWS

Intermediate Guard Windows have a fixed grille of standard 1½″ section with an open-in ventilator superimposed on the inside. Glass lights 6″ x 9″. Ventilators may be designed to provide as much ventilation as desired and are usually mechanically operated in banks. Adapted to court openings in corridors, dormitories, recreation buildings, etc.

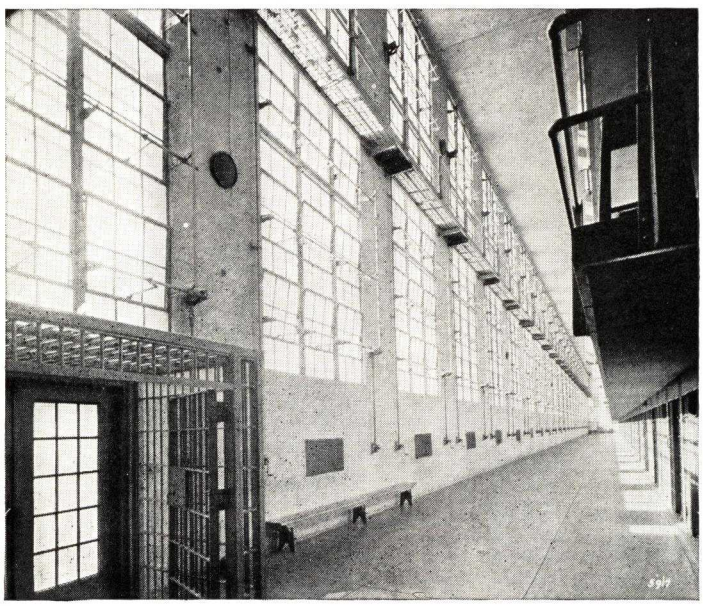
Used in the Federal Penitentiary, Milan, Mich.; Intermediate Reformatory, Algoa, Mo.; New Eastern Penitentiary, Graterford, Pa.; Sing Sing Prison, Ossining, N. Y.; State Reformatory, Mansfield, Ohio; New State Penitentiary, Statesville, Ill. and many other locations.



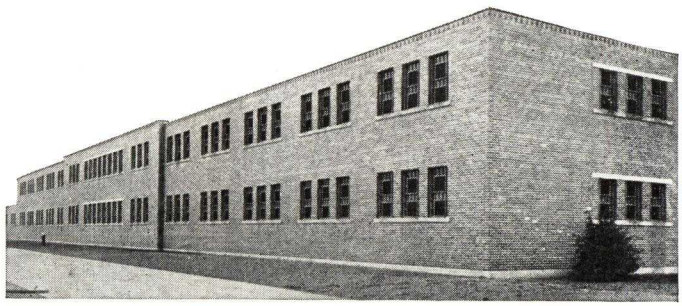
Shop Building at Sing Sing Prison, Ossining, N. Y.



Note the extra light afforded by the Fenestra detention windows (right) being installed in the Erie County Penitentiary at Wende, N. Y. to replace the old wood windows equipped with separate bar guards on the inside (left).



Cell Block Corridor at Illinois State Penitentiary, Pontiac, Ill.



Federal Prison, Milan, Mich. This dormitory and cell block, equipped with Fenestra Superbar Windows, faces the street with no surrounding wall.

INDUSTRIAL *Fenestra* DOORS

Manufactured by

DETROIT STEEL PRODUCTS COMPANY

General Offices: 2250 East Grand Boulevard, Detroit, Michigan

Factories: DETROIT, MICHIGAN and OAKLAND, CALIFORNIA

Fenestra Industrial Doors may be divided roughly, into three general divisions, as follows:

1—Swinging and Sliding Doors
These include "Fireshield Doors" (swing only); Industrial Doors (light and heavy) and "Accordion Doors" (light and heavy).

2—Counterweighted Doors
These include "Double Vertical Lift Doors" (light and heavy); "Pier Doors" (light and heavy); "Canopy Doors" and "Bifold Doors."

3—Airplane Hangar Doors
These include heavy rolling doors (straight slide and "round-the-corner).

Each of these types is designed to meet certain definite door opening conditions and has its own advantages, restrictions and possibilities of variation—all of which are too numerous to detail in limited space.

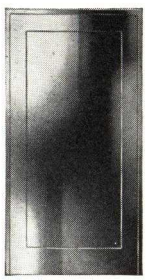
Fenestra Engineers will gladly assist with details and recommendations for filling any door opening. The proper choice often depends so largely on the type of service required and the character and construction of the building that we strongly recommend you consult a Fenestra Engineer before making your selection.

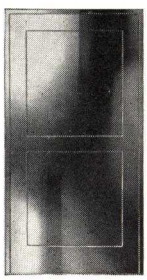
The information on the following pages is designed merely to cover some of the major characteristics of each type of door and the important features of its installation.

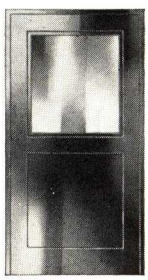
All doors have lower portion covered with steel kick plate and upper portion arranged to accommodate ¼" glass set in bed putty and held by steel glazing clips (or by glazing angles). See individual specifications. Glass is not supplied. (Doors of "Light" construction have muntins in upper portion membered directly into the stiles and rails and welded. Doors of "Heavy" construction have fixed light sash, 1⅜" deep set into stiles and rails. Steel plate may be used in upper portion of doors instead of glass panels if so specified.)

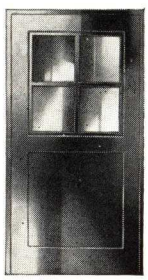
SWINGING AND SLIDING DOORS

FENESTRA FIRESHIELD DOORS


Type 1


Type 2


Type 3


Type 4

Single and double swing, tubular steel doors, shipped complete with hardware and door-frames (but not glazed). Four door designs; ten door sizes. Choice of five locks, three hinge designs, eight hardware finishes.

Designed for exterior and interior use in stairway entrances, service halls, class rooms, store rooms, industrial offices, dressing rooms, and the service departments of hotels, apartments and public buildings generally.

Stiles and rails are 16-gauge, formed and welded steel tubes (head, jamb and intermediate members, 4½" wide; sill stile, 6¼" wide) with corners mitered, welded and ground smooth. Panel in Type 1 is 16-gauge, patent leveled steel; all other panels are 18-gauge. All panels are spot welded to stiles and rails. All doors have beveled edge on lock stile and are mortised to receive hinges and locks.

Ornamental, rolled steel, cove moulding on the inside of lower panel supplied at extra cost where specified.

Glass is not furnished. Quarter inch plate or factory ribbed glass is recommended set in steel window putty and held by steel glazing angles which are already fitted and attached.

Door Frames are 16-gauge steel formed into channels with integral rebates and stops. Frames are designed in three standard depths, 5½", 7½" and 10". Sill anchors, masonry anchors and spreader bars are included. Frames are shipped either knocked down or assembled as specified.

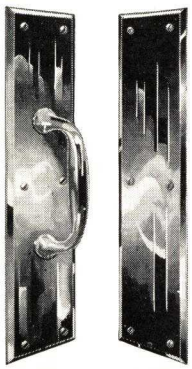
Door Widths		Door
Single Doors	Double Doors	Heights
2'6"	5'0"	6'6"
2'9"	5'6"	6'9"
3'0"	6'0"	7'0"

Any width may be combined with any height shown. Special doors, 3'9" x7'0" and 7'6" x 7'0" also are available.

WAREHOUSE STOCK TYPE

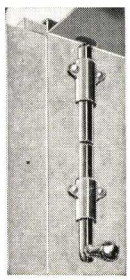
Single Door, Type 4, with frame (size 3'0" x 7'0") is stocked in Detroit and Chicago Warehouses for immediate shipment including a choice of Locks 1485 or 1487 in U. S. No. 9 polished bronze finish and three hinges (1482) per leaf. Frame is 5½" deep from front to back and is shipped assembled with door attached and mortised for lock which accompanies it.

Six clips for masonry anchorage are included. Swing of door may be in or out and right or left handed as specified. Any variation from the above requires factory shipment.


1490

1491

1492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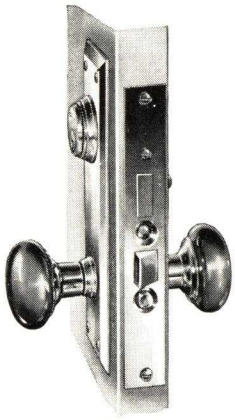
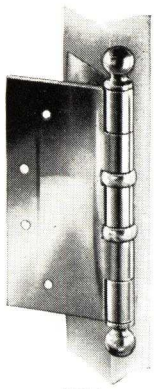

1437

1494

1493


1484

FIRESHIELD DOOR HARDWARE

Lock 1485,—Three tumbler, bit key lock, bronze latch bolt, dead bolt, front and strike. Latch bolt operated from either side by knobs. Dead bolt operated from either side by key.

Lock 1486,—Simple latch lock. Bronze latch bolt operated from either side by knobs. No key.

Lock 1487,—Cylinder lock. Bronze latch bolt, dead bolt, front and strike. Cylinder outside; thumb turn inside. Outside knob may be set by stops in face of lock.

Lock 1488,—Cylinder lock. Bronze latch bolt, front and strike. Outside knob may be set by stops in face of lock. No dead bolt.

Lock 1489,—Cylinder lock. Bronze latch bolt, guard bolt, front and strike. Guard bolt automatically locks latch bolt and the stops in the lock face. Prevents picking. No dead bolt.

All butts are 4½″ x 4½″, full mortise, template. Butt 1482 is plain steel, plated. Butt 1483 is ball-bearing, steel, plated. Butt 1484 is ball-bearing, solid wrought bronze.

Other hardware, available where specified, includes: Pull Handle and Plate, 1490; Push Plate, 1491; Flush Bolt, 1492; Surface Shot Bolt, 1499; Floor Srop with Hook, 1493; Floor Stop without Hook, 1494; Door Closer, 1462; Door Closer Bracket, 1466.

HARDWARE FINISHES

U. S. Government standard finishes available include:

U. S. 9, Polished Bronze, Stock Standard..... Immediate shipment.

U. S. 4, Dull Brass .....
U. S. 6, Sanded Brass .....
U. S. 18, Bower Barff* .....
U. S. 19, Imitation B. Barff.....
U. S. Spcl., Dull Bronze, Oil Rubbed..... } 10 to 14 days' shipment. No extra charge.

U. S. 14, Nickel Plated .....
U. S. 26, Chromium Plated ..... } 2 to 3 weeks' shipment. Extra cost.

* Where U. S. 18 finish is specified this is supplied on all items except butts which will have U. S. 19 finish.

FIRESHIELD DOOR TRANSOMS

Transom frames equipped with either fixed lights or ventilators, are available to fit any standard Fireshield Door width. Two heights of frames are stocked, as shown, the sills being designed to mesh with the head members of standard door frames. Transoms are merely set in place, in mastic, and held by the masonry jambs.

Where fixed transoms are used, glass is set directly into the transom frame in a bed of putty and held by glazing angles which are supplied at no extra charge. Where ventilated transoms are desired, a complete, rolled steel unit consisting of frame and bottom hinged, open-in vent supported by side arms, is set into the transom frame in a bed of mastic and held by steel clips. Ventilators are glazed with putty and glazing clips. All vents are equipped with spring catches (739) at the head for pole operation. Chain or rod operators are not supplied.

UNDERWRITERS' LABEL DOORS

Fireshield Doors (swing type) with insulated panels and with stiles and rails insulated or non-insulated as required, can be supplied to meet all Underwriters' requirements for labeled doors in Classes B, C, D and E.

Doors must have both upper and lower panels of steel or have glass area in panels within Underwriters' limits (see below). Doors must not be over 4′ x 8′ (single) or 8′ x 8′ (double) where cylinder locks are used. Where triple locking device is used doors may be 4′ x 10′ (single) and 8′ x 10′ (double).

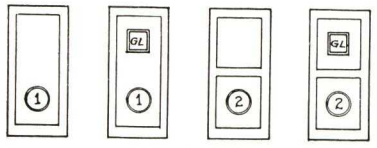
Underwriters' Class B Doors: For vertical shafts.
Total glass limited to 100 sq. in. exposed area.
Width or height limited to 12″ exposed dimension.
When two leaves are used in one opening, 100 sq. in. of glass may be placed in one leaf or 50 sq. in. in each leaf.
Stiles, rails and panels must be insulated.

Underwriters' Class C Doors: For corridors and partitions.
Total glass unlimited. Individual lights limited thus:
When used with Muntin 508, 155 sq. in. exposed area.
When used with Muntin 262, 505 sq. ft. exposed area.
When used without muntins, 1296 sq. in. exposed area with exposed width not over 48 in. and exposed height not over 54 in.
Panels, only, must be insulated.

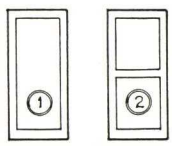
Underwriters' Class D Doors: For exterior walls and exterior fire-escapes with severe exposure.
No glass is permitted.
Panels, stiles and rails must be insulated.

Underwriters' Class E Doors: For exterior walls or exterior fire-escapes with moderate exposure.
Total glass unlimited. Individual lights limited thus:
When used with Muntin 508, 155 sq. in. exposed area.
When used with Muntin 262, 505 sq. in. exposed area.
When used without muntins, 720 sq. in. exposed area with exposed width not over 48 in. and exposed height not over 54 in.
Panels, only, must be insulated.

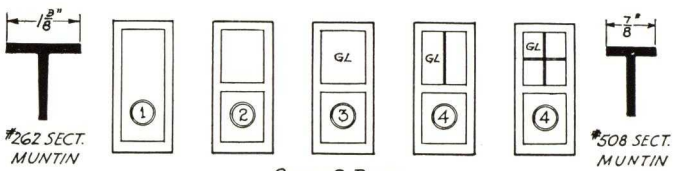
Transoms may be used on all doors, provided the door frame jamb section extends through the head of the transom and provided no glass is used in transoms for Class B or D openings.



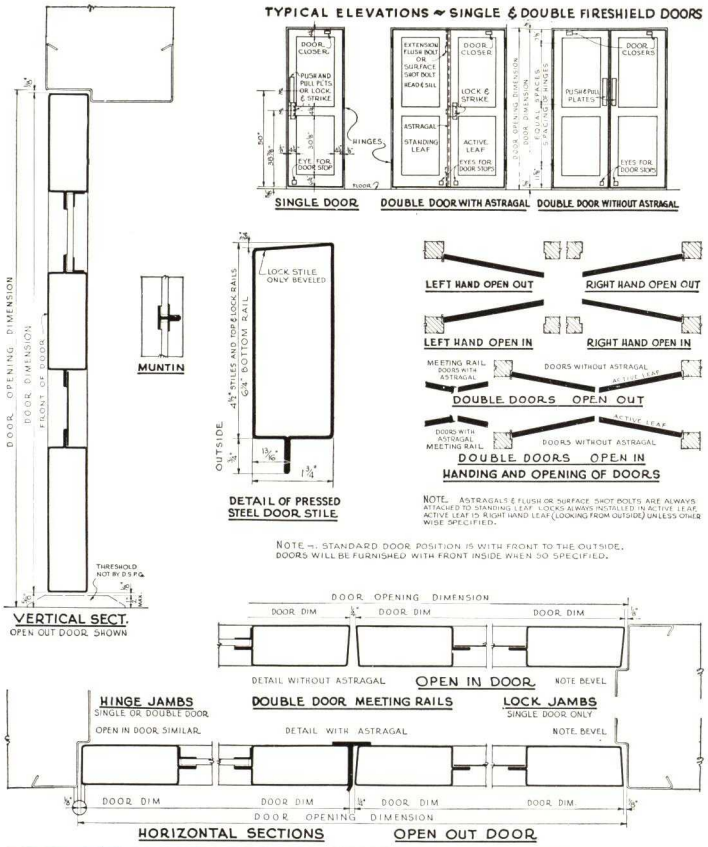
CLASS B DOORS



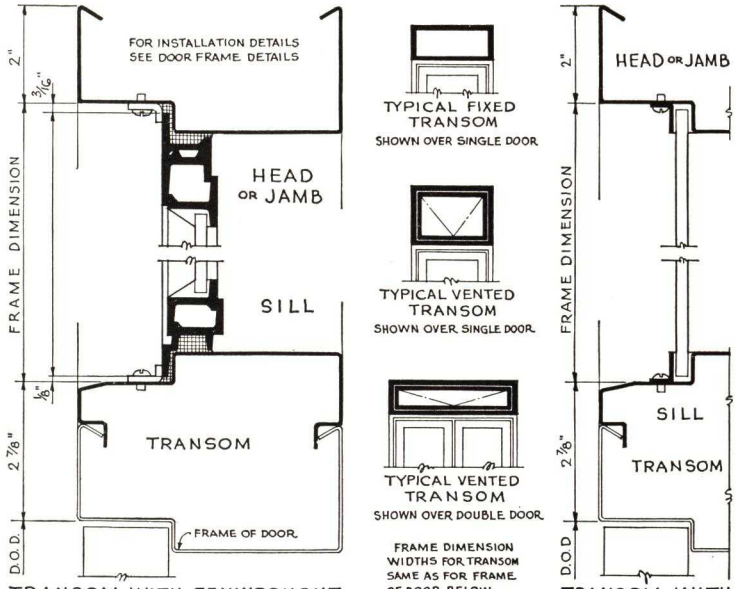
CLASS D DOORS



#262 SECT. MUNTIN
#508 SECT. MUNTIN
CLASS C DOORS
CLASS E DOORS



FIRESHIELD DOORS ~ GENERAL DETAILS Y-801

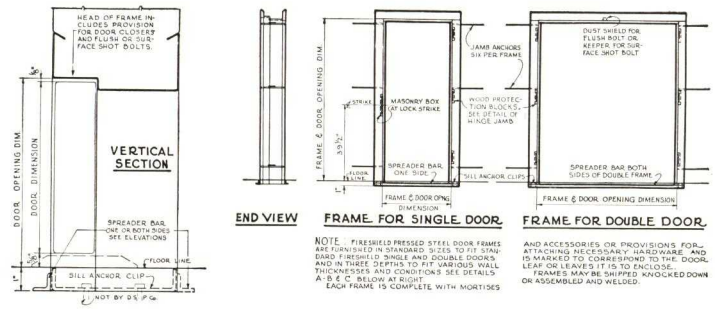


TRANSOM WITH FENWROUGHT UNIT WITH OPEN IN VENTILATOR
VENTILATORS HAVE SPRING CATCH AT HEAD ~~

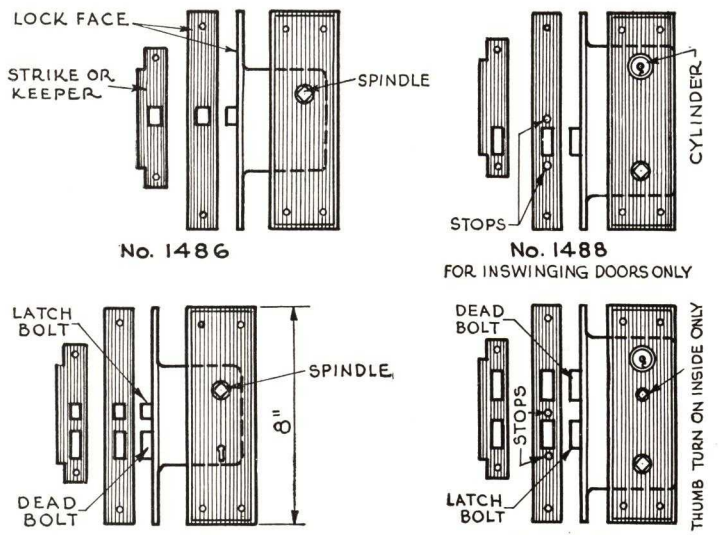
TRANSOM WITH FIXED PANE
GLASS SET INTO FRAME

FRAME HEIGHT	F.W. UNIT HEIGHT		OVER SINGLE DOOR				OVER DOUBLE DOOR			
		FRAME WIDTH	2'-6"	2'-9"	3'-0"	3'-9"	5'-0"	5'-6"	6'-0"	7'-6"
		F.W. UNIT WIDTH	2'-5 5/8"	2'-8 5/8"	2'-11 5/8"	3'-8 5/8"	4'-11 5/8"	5'-5 5/8"	5'-11 5/8"	7'-5 5/8"
1'-1 5/8"	1'-1 5/16"	FIXED GLASS	29 3/4" × 13 3/8"	32 3/4" × 13 3/8"	35 3/4" × 13 3/8"	44 3/4" × 13 3/8"	59 3/4" × 13 3/8"	65 3/4" × 13 3/8"	71 3/4" × 13 3/8"	89 3/4" × 13 3/8"
		VENT GLASS	25 1/2" × 9 1/2"	28 1/2" × 9 1/2"	31 1/2" × 9 1/2"	40 1/2" × 9 1/2"	55 1/2" × 9 1/2"	61 1/2" × 9 1/2"	67 1/2" × 9 1/2"	85 1/2" × 9 1/2"
2'-1 5/8"	2'-1 5/16"	FIXED GLASS	29 3/4" × 25 3/8"	32 3/4" × 25 3/8"	35 3/4" × 25 3/8"	44 3/4" × 25 3/8"	59 3/4" × 25 3/8"	65 3/4" × 25 3/8"	71 3/4" × 25 3/8"	89 3/4" × 25 3/8"
		VENT GLASS	25 1/2" × 21 1/2"	28 1/2" × 21 1/2"	31 1/2" × 21 1/2"	40 1/2" × 21 1/2"	55 1/2" × 21 1/2"	61 1/2" × 21 1/2"	67 1/2" × 21 1/2"	85 1/2" × 21 1/2"

TRANSOMS FOR FIRESHIELD DOORS Y-803



FIRESHIELD DOORS ~ FRAME DETAILS Y-802



N O T E

EXCEPT AS NOTED, LOCKS ARE FOR USE ON INSWINGING OR OUTSWINGING DOORS.

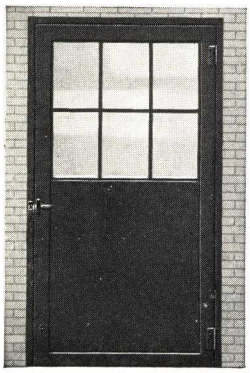
LOCKS ARE NOT REVERSIBLE BUT ARE HANDED TO FIT DOOR. THE HAND AND SWING (IN OR OUT) OF DOOR MUST BE SPECIFIED.

WHEN DOORS ARE USED IN STRUCTURAL FRAMES, STRIKES CAN NOT BE ATTACHED UNLESS FRAMES ARE MORTICED TO RECEIVE THEM.

STANDARD FINISH IS U.S.#9. CONSULT D.S.P. CO. REPRESENTATIVE FOR SPECIAL FINISHES AND MASTERKEY INFORMATION.

FIRESHIELD DOOR LOCKS Y-805

INDUSTRIAL DOORS



Fenestra Swing Door

Fenestra Double Sliding Doors

("Light" types have 14-ga., 5" x 1¾" stiles and rails. Maximum openings: Swing, 10' x 15'; Slide, 16' x 15'. "Heavy" types normally have 3" x 2½" rectangular tubing. Maximum opening, 12' x 15'. Occasionally 1½" x 2½" tube for smaller sizes.)

Doors may be single or double, swing or slide. Designed for service entrances, stairway openings, fire exits, furnace and boiler rooms in all types of commercial and industrial buildings, apartments, schools and public buildings. Stock types shown on Plates Y-502 and Y-503.

Stiles and rails are mitered at corners, welded and ground smooth. Lower panels are of sheet steel, spot welded, 18-gauge in doors up to 4'-0" wide, 14-gauge in wider doors. Light doors have muntins membered into stiles and rails and welded. Heavy doors have fixed sash units set in to form upper panels. Both Light and Heavy Doors accommodate ¼" glass to be bed puttied and held by steel glazing angles mitered at the corners and already fitted and attached.

Standard Swing Door Hardware includes: Loose pin steel butts, 2, 3 or 4 per leaf depending on size of leaf and Japanned Iron Handle (bronze extra). Chain and foot bolts also supplied on double swing doors. Door checks, Japanned T Latch and Keeper and cylinder locks are available at extra cost where specified.

Standard hardware for Sliding Doors, includes: four-wheel, roller-bearing trolleys, hangers and clevises (two per leaf); Japanned steel safety hasp and staple, Japanned steel flush, hand pulls (each side of each leaf), track, track brackets, door guide and binder end stops. Center stop supplied for double doors. Cylinder lock available at extra cost for doors 10' high or less.

(Swing doors can be equipped with Antipanic Hardware where required. Master-keyed locks are supplied in Fenestra Master-Keyed system at no extra charge. Extra cost to match other systems. Where desired, purchaser can replace the regular cylinder to match any system.)

STOCK SIZES, LIGHT INDUSTRIAL DOORS

SINGLE DOORS				DOUBLE DOORS			
Swing Opening		Slide Opening		Swing Opening		Slide Opening	
Width	Height	Width	Height	Width	Height	Width	Height
2' 6"	7' 0"	2' 3"	6' 10½"	5' 0"	7' 0"	4' 9"	6' 10½"
3' 0"	7' 0"	2' 9"	6' 10½"	6' 0"	7' 0"	5' 9"	6' 10½"
3' 6"	7' 0"	3' 3"	7' 4½"	7' 0"	7' 6"	6' 9"	7' 4½"
4' 0"	8' 0"	3' 9"	7' 10½"	8' 0"	8' 0"	7' 9"	7' 10½"
5' 0"	10' 0"	4' 9"	9' 10½"	10' 0"	10' 0"	9' 9"	9' 10½"

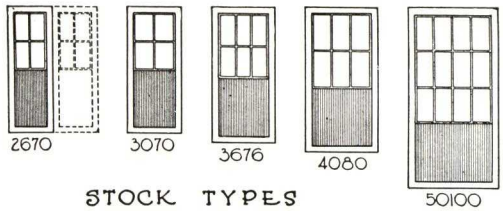
Frames for sliding doors are not supplied.

Frames for Swing Doors are 14-gauge steel formed into channels 4¼"x1½" with integral rebates and stops. Jambs extend 1" below finished floor line leaving ⅝" clearance between door and floor for threshold. This clearance reduced if frames are set more than 1" below floor. Frames shipped knocked down with masonry anchors on about 24" centers for each jamb. Spreader bar also supplied.

Frames and doors are given one brush coat of protective paint before shipment.

(We strongly recommend the use of Fenestra Standard Frames with all swing doors, doors to be hung at the time frames are erected to insure proper installation and accurate clearances.)

VERTICAL SECT.



STOCK TYPES

NOTES

ALL TYPES SHOWN ARE FURNISHED EITHER SINGLE SWING OR DOUBLE SWING AS INDICATED BY THE DOTTED LINES AT TYPE 2670.

FOR FRAME DETAILS FOR SWING DOORS SEE PLATE Y-504. JAMBS OF FRAMES ARE MADE TO ANCHOR 1" INTO FLOOR. SEE SILL DETAIL AT LEFT.

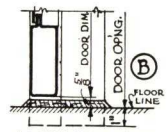
TO ALLOW FOR SETTING THRESHOLD A CLEARANCE OF ⅝" HAS BEEN PROVIDED BETWEEN BOTTOM OF DOOR AND FLOOR LINE. WHEN THRESHOLD IS NOT DESIRED, THIS CLEARANCE MAY BE REDUCED BY CUTTING OFF ENDS OF FRAME OR BY SETTING THEM DEEPER THAN 1" BELOW THE FLOOR LINE.

THRESHOLD MAY BE FORMED IN THE FLOOR FINISH AS AT (A) OR AN AUXILIARY THRESHOLD OF WOOD OR METAL MAY BE USED AS AT (B).

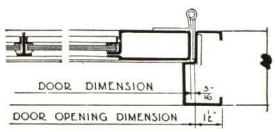
THRESHOLDS ARE NOT FURNISHED BY D. S. P. Co.

FOR DETAILS OF DOORS WITH ALL KICK PLATE PANELS SEE PLT. Y-503

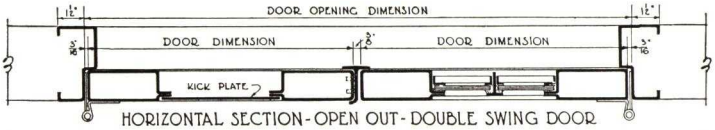
STOCK SIZES					
DOOR	SIZE OF DOOR		SIZE OF OPENING		GLASS SIZES
	WIDTH	HEIGHT	WIDTH	HEIGHT	
SINGLE SWING					
2670	2'-5⅝"	6'-11¼"	2'-6"	7'-0"	9½"x15½"
3070	2'-11⅝"	6'-11¼"	3'-0"	7'-0"	12½"x15½"
3676	3'-5⅝"	7'-5¼"	3'-6"	7'-6"	10"x18½"
4080	3'-11⅝"	7'-11¼"	4'-0"	8'-0"	12"x21½"
50100	4'-11⅝"	9'-11¼"	5'-0"	10'-0"	12"x22"
DOUBLE SWING					
5070	2'-5⅝"	6'-11¼"	5'-0"	7'-0"	9½"x15½"
6070	2'-11⅝"	6'-11¼"	6'-0"	7'-0"	12½"x15½"
7076	3'-5⅝"	7'-5¼"	7'-0"	7'-6"	10"x18½"
8080	3'-11⅝"	7'-11¼"	8'-0"	8'-0"	12"x21½"
100100	4'-11⅝"	9'-11¼"	10'-0"	10'-0"	12"x22"



ALTERNATE SILL

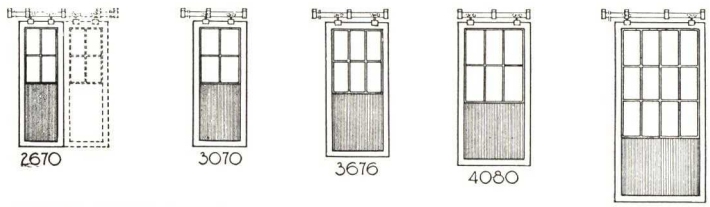


JAMB SECTION
OPEN IN SWING DOOR

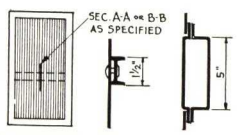


HORIZONTAL SECTION - OPEN OUT - DOUBLE SWING DOOR

LIGHT INDUSTRIAL DOORS ~ SWINGING TYPE Y-502

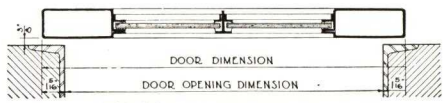


STOCK SIZES					
DOOR	SIZE OF DOOR		SIZE OF OPENING		GLASS SIZES
	WIDTH	HEIGHT	WIDTH	HEIGHT	
SINGLE SLIDE					
2670	2'-5⅝"	6'-11¼"	2'-5"	6'-10½"	9½"x15½"
3070	2'-11⅝"	6'-11¼"	2'-9"	6'-10½"	12½"x15½"
3676	3'-5⅝"	7'-5¼"	3'-3"	7'-4½"	10"x18½"
4080	3'-11⅝"	7'-11¼"	3'-9"	7'-10½"	12"x21½"
50100	4'-11⅝"	9'-11¼"	4'-9"	9'-10½"	12"x22"
DOUBLE SLIDE					
5070	2'-5⅝"	6'-11¼"	4'-9"	6'-10½"	9½"x15½"
6070	2'-11⅝"	6'-11¼"	5'-9"	6'-10½"	12½"x15½"
7076	3'-5⅝"	7'-5¼"	6'-9"	7'-4½"	10"x18½"
8080	3'-11⅝"	7'-11¼"	7'-9"	7'-10½"	12"x21½"
100100	4'-11⅝"	9'-11¼"	9'-9"	9'-10½"	12"x22"

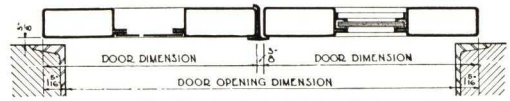


ELEVATION SEC. A-A SEC. B-B
DETAILS OF ALL KICK-PLATE DOOR
ANY TYPE SWING OR SLIDE DOOR MAY HAVE ALL KICK PLATE PANEL WHEN SO SPECIFIED.

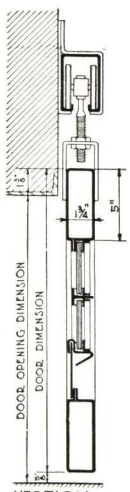
NOTE: ALL TYPES SHOWN ARE FURNISHED EITHER SINGLE OR DOUBLE SLIDE AS INDICATED BY DOTTED LINES AT TYPE 2670 SLIDING DOORS ARE SHIPPED WITH CLEVISES, HASPS, DOOR PULLS, TRACK BRACKETS, TROLLEYS, GUIDES, BINDERS & STOPS SHIPPED SEPARATELY.
HARDWARE SHOWN ON PLATE Y-506



HORIZONTAL SECTION THRU
SINGLE SLIDING DOOR

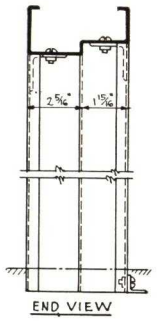


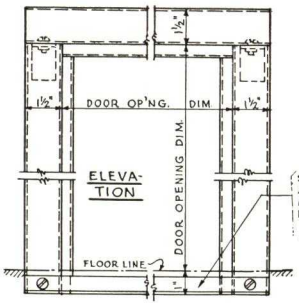
HORIZONTAL SECTION THRU
DOUBLE SLIDING DOOR



VERTICAL SECTION

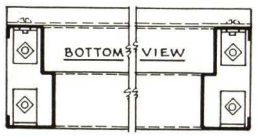
LIGHT INDUSTRIAL DOORS ~ SLIDING TYPE Y-503

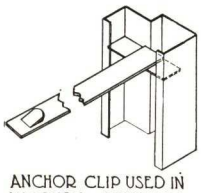




STOCK FRAME SIZES			
DOOR OPENING DIMENSION			
SINGLE		DOUBLE	
WIDTH	HEIGHT	WIDTH	HEIGHT
2'-6"	7'-0"	5'-0"	7'-0"
3'-0"	7'-0"	6'-0"	7'-0"
3'-6"	7'-6"	7'-0"	7'-6"
4'-0"	8'-0"	8'-0"	8'-0"
5'-0"	10'-0"	10'-0"	10'-0"

SPREADER ANGLE TO FACILITATE ACCURATE SETTING OF FRAME. MAY BE LEFT IN PLACE OR REMOVED BEFORE FLOOR IS LAID. FOR ERECTION OF FRAME SEE NOTES ON PLATE Y-502.



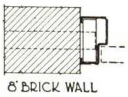


ANCHOR CLIP USED IN MASONRY OPENINGS

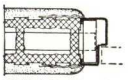
NOTE
FRAMES ARE FURNISHED FOR SWING DOORS ONLY ~

4" PARTITION

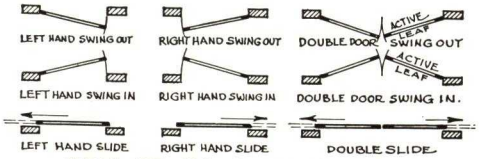
5" GYPSUM-PLASTERED



6" BRICK WALL



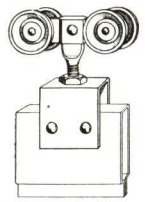
4" TILE-PLASTERED
INSTALLATION DETAILS



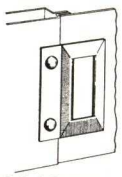
KEY TO HANDING OF DOORS
OUTSIDE OF DOORS IS TOWARD BOTTOM OF PAGE.

DOOR FRAMES ARE CONSTRUCTED OF #14 GAUGE SHEET STEEL.
FRAMES SHALL BE ANCHORED TO STRUCTURAL STEEL OR SHALL BE EQUIPPED WITH MASONRY ANCHOR CLIPS SHOWN ABOVE, SPACED APPROXIMATELY 24" APART AT JAMBS ONLY.
FRAMES FOR SLIDING DOORS NOT FURNISHED BY D.S.P.Co.

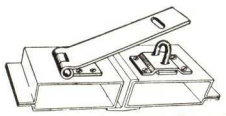
LIGHT INDUSTRIAL DOORS ~ FRAMES Y-504



TROLLEY - NO. 795
STANDARD

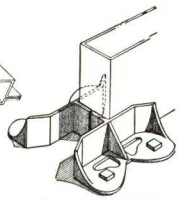


DOOR PULL
NO. 1265
STANDARD



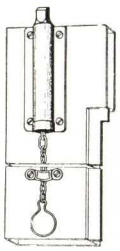
HASP & STAPLE
NO. 1268
STANDARD

SEE PLATE Y-503 FOR TYPES AND SECTIONS OF SLIDING DOORS.



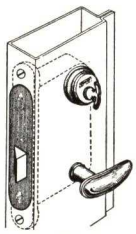
CENTER GUIDE
NO. 1269
STANDARD

HARDWARE FOR SLIDING DOORS.



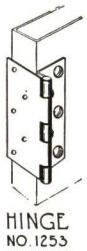
CHAIN BOLT
NO. 1438
STANDARD

TEE LATCH
NO. 1251
EXTRA



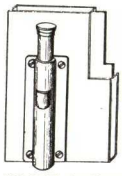
LOCK EXTRA

NO. 1248 FOR SWING IN
NO. 1248-G FOR SWING OUT
NO. 1258-D OPTIONAL (CYLINDERS BOTH SIDES)
SEE HARDWARE DESCRIPTION



HINGE
NO. 1253
STANDARD

CABIN HOOK
NO. 1257
EXTRA

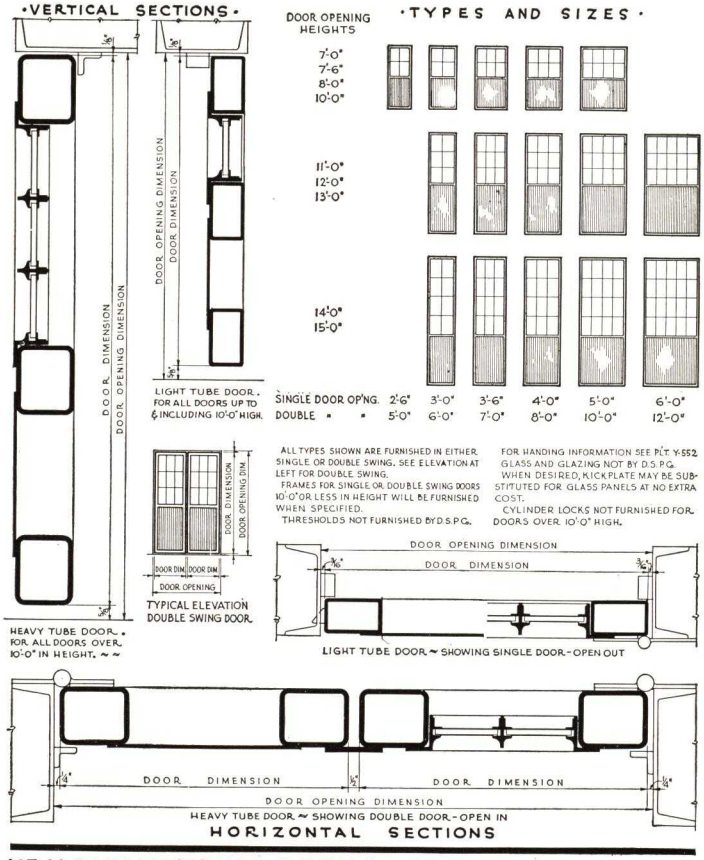


FOOT BOLT
NO. 1439
STANDARD

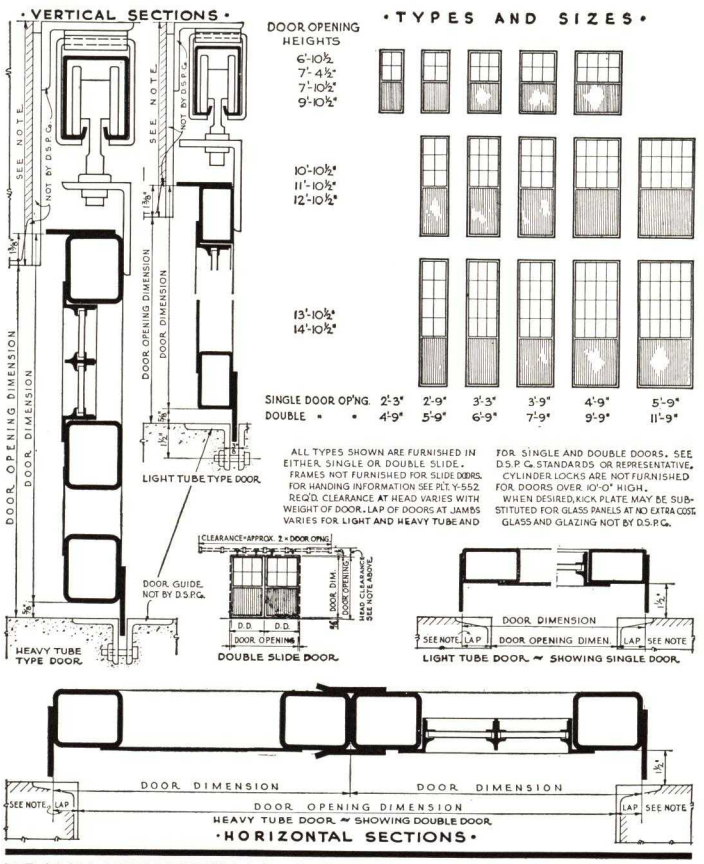
FOR DETAILS OF SWING DOORS AND FRAMES SEE PLATES Y-502 & Y-504.

HARDWARE FOR SWINGING DOORS

LIGHT INDUSTRIAL DOORS ~ HARDWARE Y-506

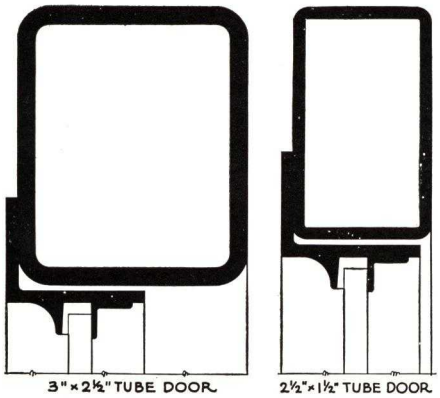


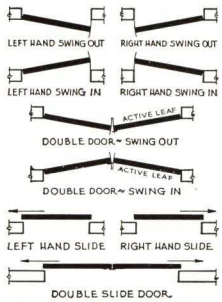
HEAVY INDUSTRIAL DOORS ~ SWING TYPE Y-550



HEAVY INDUSTRIAL DOORS ~ SLIDE TYPE Y-551

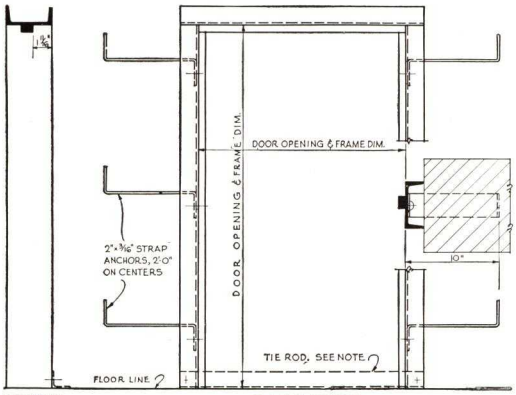
Fenestra





IN DIAGRAMS ABOVE, OUTSIDE OF DOORS IS TOWARD BOTTOM OF PAGE. LOCK OR HASP IS ALWAYS ATTACHED TO RIGHT HAND (ACTIVE) LEAF; SHOT BOLTS ALWAYS TO LEFT HAND (STANDING) LEAF.

DESIGNATION OF DOORS



SECTION ELEVATION

DETAILS OF FENESTRA CHANNEL FRAMES FOR SWING DOORS

NOTES

FENESTRA CHANNEL DOOR FRAMES, FOR SWING DOORS ONLY, ARE FURNISHED FOR ANY SINGLE OR DOUBLE SWING DOOR UP TO AND INCLUDING 10'-0" IN HEIGHT. TIE FRAME DIMENSIONS EQUAL DOOR OPENING DIMENSIONS.

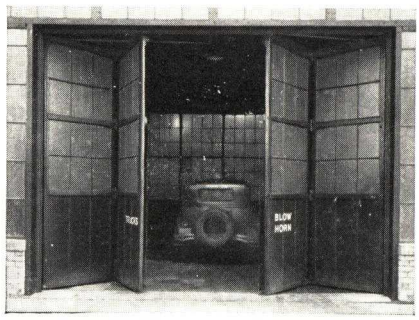
FRAMES ARE CONSTRUCTED OF 4" STRUCTURAL CHANNEL. ANY OTHER CONSTRUCTION OR SIZES OTHER THAN SHOWN ON PLATE Y-550 MAKE FRAME SPECIAL. FRAMES ARE MACHINED FOR STANDARD HARDWARE AND INCLUDE STRAP ANCHORS UNLESS OTHERWISE SPECIFIED.

FRAMES FOR SINGLE DOORS ARE SHIPPED ASSEMBLED INCLUDING ANGLE TIE RODS AT SILL WHICH MUST BE REMOVED AT ERECTION. DOUBLE DOOR FRAMES ARE SHIPPED KNOCKED-DOWN FOR ASSEMBLY ON JOB.

SLIDING DOOR FRAMES ARE NOT FURNISHED BY D.S.P.Co. SEE PLATE ON SLIDING DOORS FOR FRAME SIZES (DOOR OPENING DIM'S.) AND HEAD AND JAMB CLEARANCES.

HEAVY INDUSTRIAL DOORS ~ MISC. DETAILS Y-552

ACCORDION DOORS



Fenestra "Accordion" Doors

("Light" types are of 14 ga., 5" × 1¾" pressed tubes, for openings up to 16' wide by 15' high. "Heavy" types are of 3" × 2½" rectangular tubing, for openings over 12' × 10' up to openings 22' × 22'.)

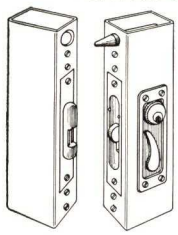
Built for heavy and constant usage in railway structure, mills, warehouses, bus terminals, garages, shops, round houses and fire stations wherever openings require doors of more than ordinary width or height. Doors usually are made four leaves per openings, hinged at jambs and folding against each other with free or active leaves suspended on trolleys from overhead track.

(Special arrangements of 3, 4, 5 or 6 leaf construction can be furnished. Also special pilot doors not over 3' x 7'.)

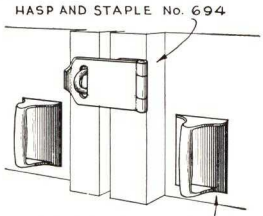
Construction is similar to Light and Heavy Industrial Doors. Hardware includes heavy, flat steel hinges with full knuckles and steel hinge pins; overhead channel track, extension track brackets, four-wheel roller bearing trolleys, Japanned steel safety hasp and keeper, hand pulls, chain bolts and foot bolts as required. Cylinder locks at extra cost but only on a free side-hinged leaf in an opening containing 3, 5 or 6 leaves.

Cylinder locks not furnished for doors over 10' 0" high. Glass, padlocks, flashing or hoods are not supplied. Doors may be operated manually or may be electrically operated and connected to remote control stations, if so specified.

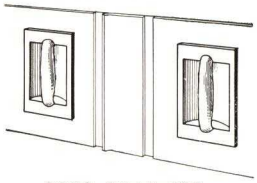
• HARDWARE FOR SLIDING DOORS •



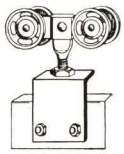
CYLINDER LOCK No. 851
FOR LIGHT TUBE DOORS ONLY (DOORS UP TO & INC. 10'-0" HIGH)



DOOR PULL No. 696
USED ON INSIDE OF DOOR IN CONNECTION WITH PULL No. 697



DOOR PULL No. 697
USED ON OUTSIDE OF DOOR IN CONNECTION WITH PULL No. 696



TROLLEY
TROLLEYS, TRACKS AND HANGERS VARY WITH WEIGHT OF DOOR

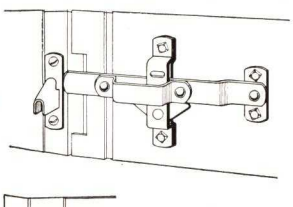
NOTE

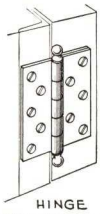
EXCEPT AS NOTED FOR CYLINDER LOCK AND TROLLEY, HARDWARE SHOWN IS STANDARD FOR ALL SIZES OF SINGLE OR DOUBLE SLIDE DOORS OF EITHER LIGHT OR HEAVY TUBE CONSTRUCTION. FOR DETAILS OF SLIDE DOORS SEE PLATES No. Y-551 & Y-552.

• HARDWARE FOR SWINGING DOORS •

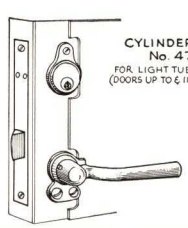
HEAD (CHAIN) BOLT No. 711

TEE-LATCH No. 713





HINGE
No. 701 FOR LIGHT TUBE DOORS
No. 758 FOR HEAVY TUBE DOORS



CYLINDER LOCK No. 472
FOR LIGHT TUBE DOORS ONLY (DOORS UP TO & INC. 10'-0" HIGH)

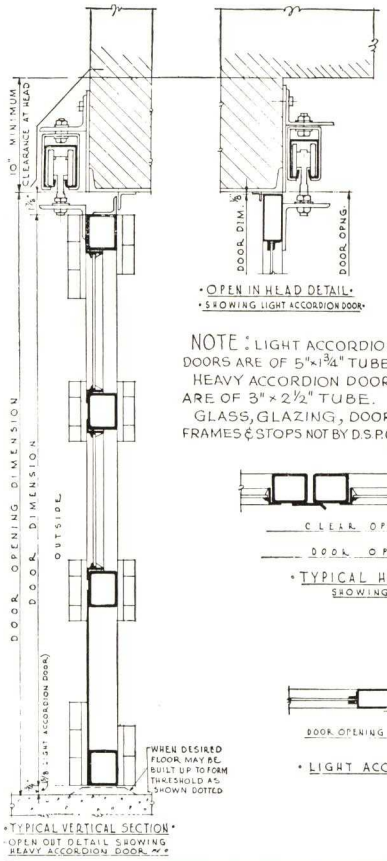
FOOT BOLT No. 712

NOTE

EXCEPT AS NOTED FOR CYLINDER LOCK AND HINGES, HARDWARE SHOWN IS STANDARD FOR ALL SIZES OF SINGLE OR DOUBLE SWING DOORS OF EITHER LIGHT OR HEAVY TUBE CONSTRUCTION. FOR DETAILS OF SWING DOORS SEE PLATES No. Y-550 AND Y-552.

HEAD AND FOOT BOLTS ARE ALWAYS ATTACHED TO THE INACTIVE LEAF OF DOUBLE DOORS. SEE PLATE Y-552.

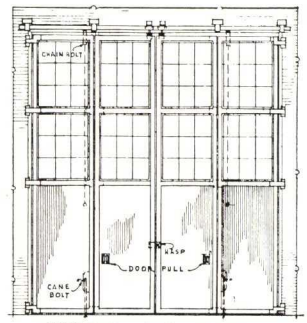
HEAVY INDUSTRIAL DOORS ~ HARDWARE Y-553



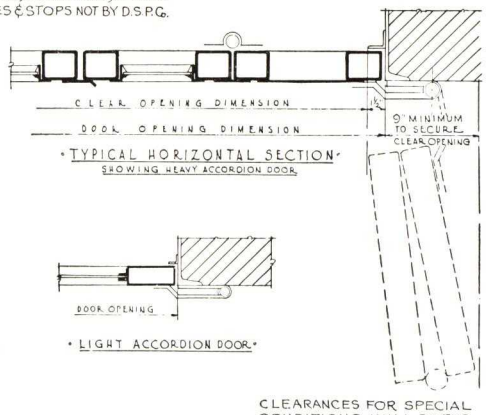
• OPEN IN HEAD DETAIL •
• SHOWING LIGHT ACCORDION DOOR •

• TYPICAL VERTICAL SECTION •
OPEN OUT DETAIL SHOWING HEAVY ACCORDION DOOR

NOTE: LIGHT ACCORDION DOORS ARE OF 5"×1¾" TUBE. HEAVY ACCORDION DOORS ARE OF 3" × 2½" TUBE. GLASS, GLAZING, DOOR FRAMES & STOPS NOT BY D.S.P.Co.



• TYPICAL ELEVATION •



• TYPICAL HORIZONTAL SECTION •
SHOWING HEAVY ACCORDION DOOR

• LIGHT ACCORDION DOOR •

CLEARANCES FOR SPECIAL CONDITIONS WILL BE FURNISHED ON REQUEST.

ACCORDION DOORS ~ TYPICAL DETAILS Y-306

COUNTER-WEIGHTED DOORS

All types of Counterweighted Doors rise from a closed vertical position to an open position at or near the head of the door opening. In some types, the door leaves retain their vertical position as they rise; in others, they tilt as they rise; in still others, the leaves fold as they rise. The opening and closing movements are made easy and uniform by counterbalancing.

These doors are of rugged construction for general industrial use. They occupy no floor space when open; they require no floor tracks. They provide a protecting canopy over the door opening. They do not blind or restrict windows in the sidewalls. Their operation, even in snow and ice, is positive and assured, due to their substantial, trouble-free, operating equipment.

Unusual care is required, both in the design and in the erection of Counterweighted Doors. Full clearances, both for the doors themselves and for counterweights, jamb guides, sheaves and cables, must be allowed as required. The General Contractor must provide and set anchor bolts and anchor bolt supports for door mechanism, accurately as shown. Steel framing, supports and electrical connections must be supplied by the respective trades involved, in accordance with the door manufacturer's requirements.

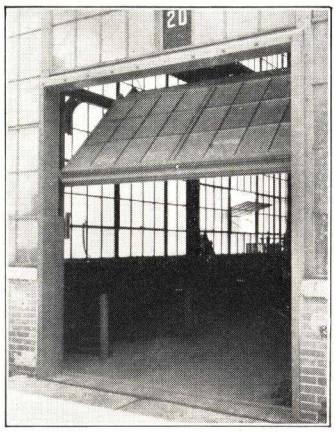
(All Fenestra Counterweighted Doors are erected by the Fenestra Construction Co. Door frames are not supplied by D.S.P.Co.)

FENESTRA "PIER" DOORS

("Light" type, 14 ga., 5" x 1¾" stiles and rails for doors up to 14' x 12' openings. "Heavy" type, 4" channel stiles and rails for doors over 14' x 12' and up to 20' x 20'.)

This door is especially desirable in piers, terminals, warehouses and all types of industrial and storage buildings and railway shops as it operates quickly and easily, permits the maximum use of floor space and requires a minimum clearance above the opening. Does not project.

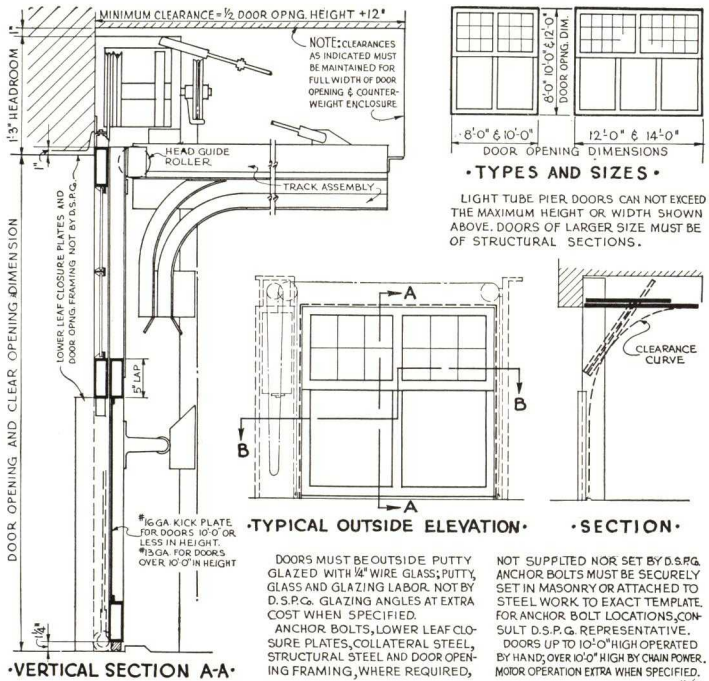
Two door leaves, each approximately half the height of the opening (plus head and meeting rail weatherlaps) are suspended one above the other in vertical guideways and are so motivated that the lower leaf slides vertically upward in guides attached to the upper leaf until it has traveled about half the height of the door opening. The nested leaves then swing inward at the top while the bottom continues to move upward until both leaves, at full open position, are horizontal, clear of the lintel and extending back into the building.



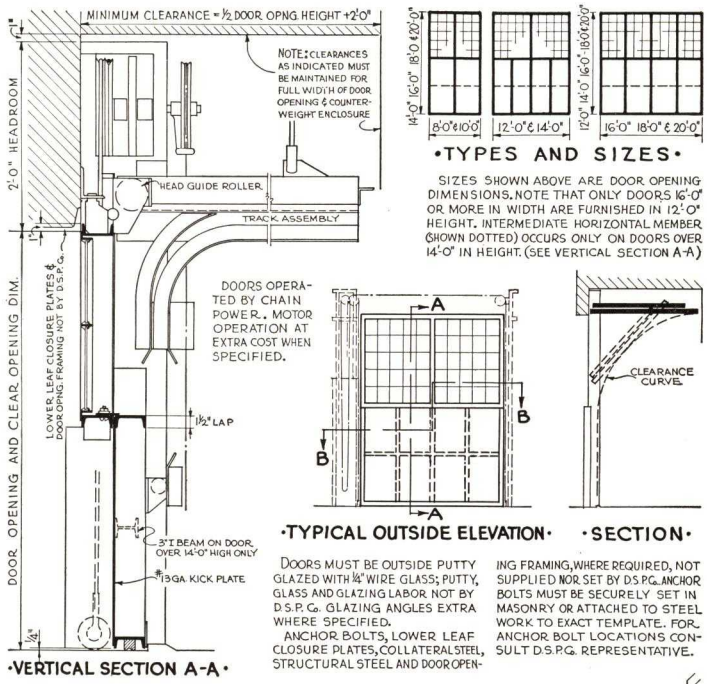
Fenestra Pier Door

"Light" doors 12' high or less have upper portions with muntins membered into stiles and rails to accommodate outside glazing with ¼" glass, putty and glazing clips. Lower portions are covered with steel plate. "Heavy" types have 1⅜" fixed steel sash in the upper portions and 13-gauge steel plates below.

Top and bottom rollers on roller bearings travel in steel guideways and direct the door movement.



PIER DOORS ~ LIGHT TUBE TYPE Y-601-21



PIER DOORS ~ 4" CHANNEL TYPE Y-601-22

Fenestra Pier Door, Partly Open

Suspension is by means of flexible wire cables carried up over cast sheaves on pressure lubricated roller bearings mounted in pressed steel shrouds and thence to counterweights at the jambs. Hand operation is standard with hand chain power extra in openings less than 12′ high. Hand chain power is standard with electric power extra for openings over 12′ high. An inside locking bolt at the counterweight jamb is included.

(Anchor bolts, door frames and collateral steel for attaching door guides and operating hardware are not supplied nor set by DETROIT STEEL PRODUCTS COMPANY.)

PIER DOORS FOR RAILWAY ENTRANCES

For the railway entrances to industrial plants or similar door openings in railway shops, freight terminals or round houses, the Fenestra Railway Door has many advantages.

It is standardized for one size of door opening only,—17′ wide by 22′ high. This we understand is about the minimum opening specified by railway code requirements to give ample clearance for locomotives and cars. The door may be of the Double Vertical Lift type, made from 3″ channel and glazed on the inside with putty and glazing clips (glazing angles at extra cost) or it may be of the "Pier" Type, made from 4″ channel and similarly glazed on the outside. In both types, ¼″ wire glass is recommended.

Where Double Vertical Lift Door is used, a head clearance above the lintel of 12′ 10″ is necessary with 23½″ minimum clearance at the counter weight jamb and 7½″ minimum clearance at the idler jamb. Where Pier Type is used, minimum head clearance is 2′ 0″ with 26½″ minimum clearance at the counter weight jamb and 10½″ minimum clearance at the idler jamb.

Due to the rather large size of the opening, motor driven operator is recommended.

PIER DOORS FOR PIER SHEDS

In piers or other similar structures Fenestra Pier Doors of special design may be used with counterweights concealed between the jamb channels and the columns. (See Plate Y-601-23.) This improves the inside appearance of the door and conserves the space commonly occupied by superimposed counterweights and counterweight guards.

Three Fenestra Pier Doors in the Erie Waterworks, Erie, Pa.
A. K. Hubbard, Architect

Where this construction is used 12″ clearance is required at each jamb and minimum clearance at the head is 22½″.

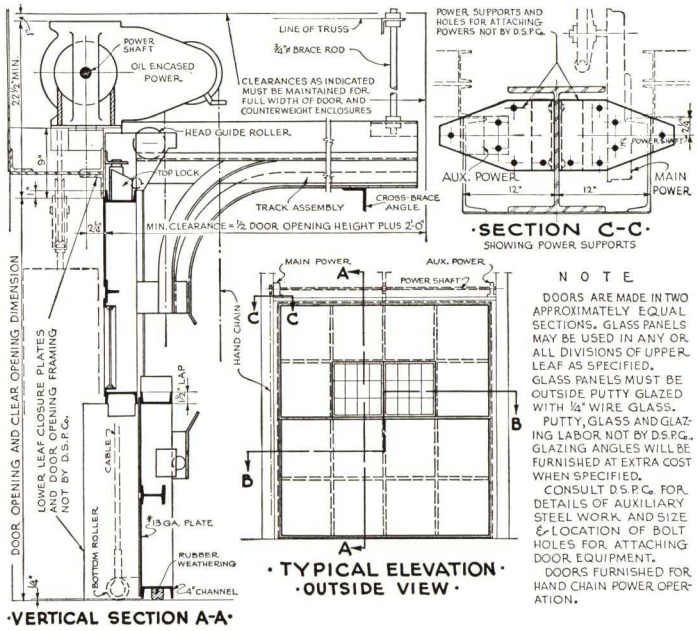
Doors are built in two approximately equal sections constructed of 4″ channel frames, 3″ I-beams and 2¾″ x 1¾″ T-bar intermediates with corners and intersections welded and ground smooth. Covering plates are 13-gauge sheet steel. Upper panels contain 1⅜″ fixed sash for outside glazing with ¼″ wire glass, putty and glazing clips.

Door leaves fit tightly against jambs and header and are weathered at the sill by an extruded rubber section attached to the sill of the lower leaf.

Both door leaves are hung on steel cables running over cast iron sheaves on roller bearings and extend to counterweights at both jambs which accurately balance the door in any position. In operation, the lower leaf slides vertically for approximately one-half the door opening, then both leaves tilt in at the top and continue to move upward and inward to a fully open, horizontal position above the door header and entirely inside the building. In a closed position, automatic locks securely anchor both leaves against wind pressure.

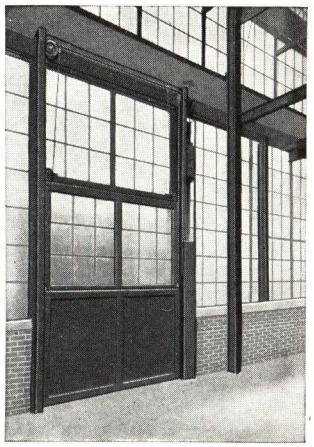
Operation is accomplished by means of a main oil-encased power at one jamb and an auxiliary power at the other, both being of heavy construction and connected by a 1¼″ continuous shaft supported at the center by an outboard bearing.

Structural, collateral or auxilliary steel work is not furnished nor punched for assembly by Detroit Steel Products Co. Neither are the door opening framing members nor lower leaf closure plates.



PIER DOORS ~ FOR PIER SHEDS Y-601-23

FENESTRA "DOUBLE VERTICAL LIFT" DOORS



Fenestra Vertical Lift Door

("Light" types have 14 ga., 5" x 1¾" stiles and rails for doors up to 14' in either dimension. "Heavy" types have 3" channel stiles and rails for doors over 14' in either dimension up to 20' x 20'.)

It is impossible to place too much emphasis on the advantages of the Fenestra Double Vertical Lift Door. Its vertical sliding principle is simple. It requires a minimum of effort for operation. Its first cost is low. It can be recommended with confidence for almost any type of opening where head clearance above the lintel is adequate.

This door is particularly adapted to use in foundries, machine shops, railroad shops and industrial plants. It is ideal in locations where a high door is required for the passage of large castings, machinery and bulky loads of all kinds.

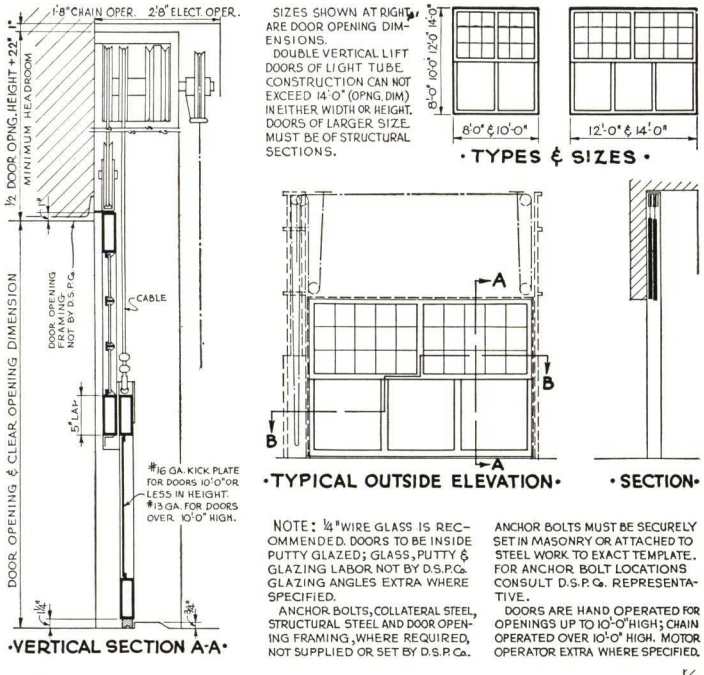
The construction is simplicity itself. Two door leaves, each approximately one-half the height of the door opening, are erected in parallel, vertical guideways and are counterweighted in such a manner that, in opening, the lower and inner leaf rises at twice the speed of the upper and outer leaf. Thus, the two leaves clear the head of the opening at the same time and in fully open position, remain vertically side by side, above the lintel and inside the building.

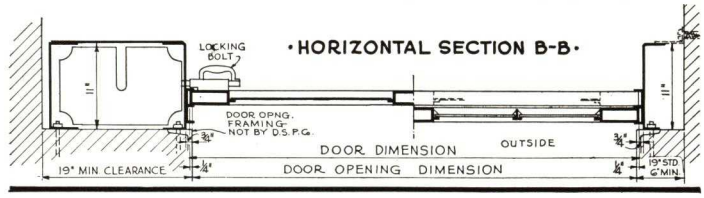
This form of operation insures speedy, smooth, trouble free movement both in opening and closing but it also requires clearance above the lintel equal to one-half the height of the door opening plus 22".

The door leaves have stiles and rails mitered, welded and ground smooth. The upper portion of "Light" door leaves have muntins membered directly into the stiles and rails but the upper portions of "Heavy" type leaves have inserts of 1⅜" fixed light windows. Both types of construction accommodate inside glazing with ¼" glass, spring clips and putty. (Glazing angles are supplied at extra cost where specified.) The lower portion of all door leaves is covered by 13-gauge steel plate.

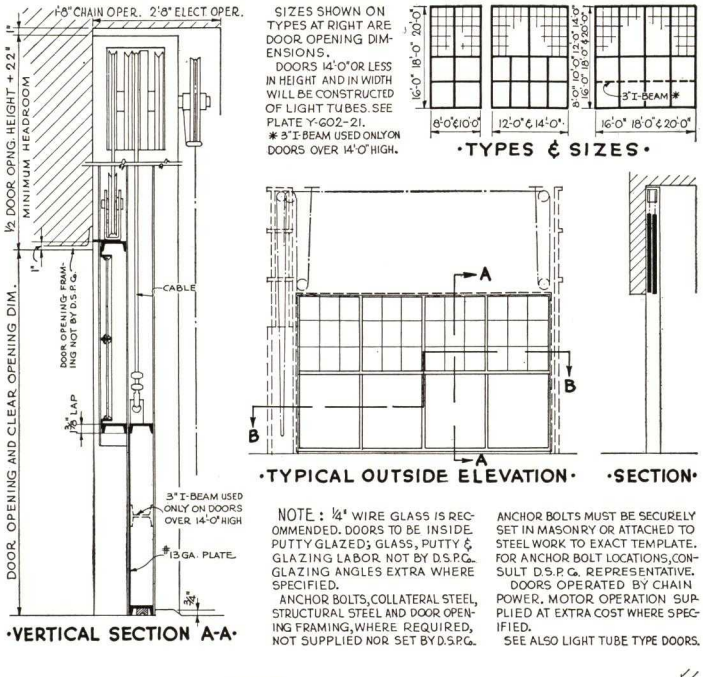
The door leaves are supported in the opening by flexible steel cables which are carried up over cast sheaves mounted on pressure lubricated roller bearings in pressed steel shrouds and which terminate in counterweights at the jambs. Hand operation is standard (hand chain power at extra cost) in openings up to 10' x 12'. Hand chain power is standard (electric power at extra cost) in openings over 10' x12'.

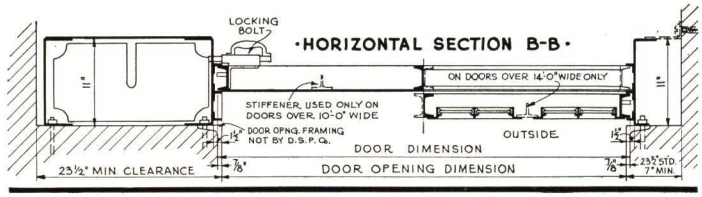
Weathering is accomplished at the head by a rubber baffle; at the jambs by weathering strips and at the sill by a weathering channel and a rubber bumper. A locking bolt is provided at the power jamb but cylinder locks are not supplied.





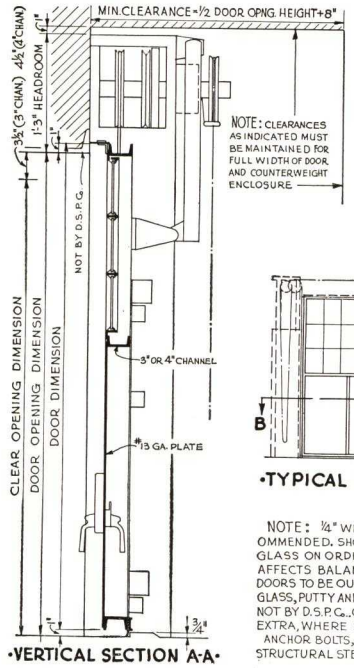
DOUBLE VERTICAL LIFT ~ LIGHT TUBE TYPE Y-602-21



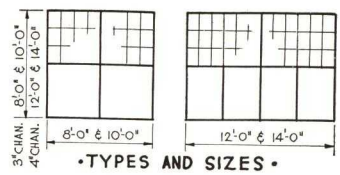


DOUBLE VERTICAL LIFT ~ 3" CHANNEL TYPE Y-602-22

Fenestra

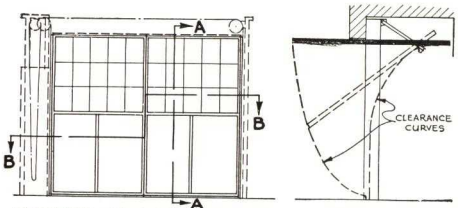


·VERTICAL SECTION A-A·



·TYPES AND SIZES·

SIZES SHOWN ABOVE ARE DOOR OPENING DIMENSIONS. ALL DOORS 10'-0" HIGH OR LESS WILL BE OF 3" CHANNEL CONSTRUCTION. DOORS OVER 10'-0" HIGH MUST BE OF 4" CHANNEL CONSTRUCTION. CANOPY DOORS MUST NOT EXCEED 14'-0" × 14'-0"



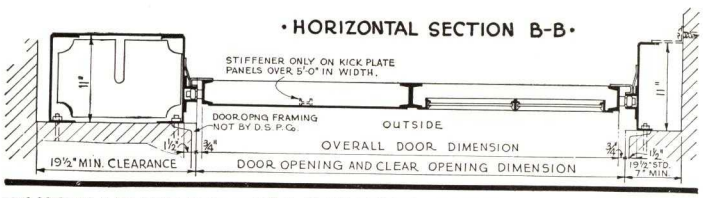
·TYPICAL OUTSIDE ELEVATION· ·SECTION·

NOTE: ¼" WIRE GLASS IS RECOMMENDED. SHOW THICKNESS OF GLASS ON ORDER AS ITS WEIGHT AFFECTS BALANCING OF DOOR. DOORS TO BE OUTSIDE PUTTY GLAZED; GLASS, PUTTY AND GLAZING LABOR NOT BY D.S.P.G.. GLAZING ANGLES EXTRA, WHERE SPECIFIED.

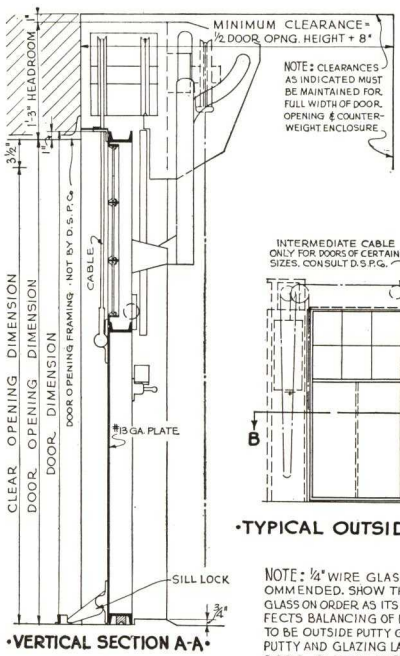
ANCHOR BOLTS, COLLATERAL STEEL, STRUCTURAL STEEL AND DOOR OPENING FRAMING, WHERE REQUIRED, NOT SUPPLIED OR SET BY D.S.P.G. ANCHOR BOLTS MUST BE SECURELY SET IN MASONRY OR ATTACHED TO STEEL WORK TO EXACT TEMPLATE. FOR ANCHOR BOLT LOCATIONS CONSULT D.S.P.G. REPRESENTATIVE.

DOORS HAND OPERATED UP TO 10'-0" HIGH; CHAIN OPERATED OVER 10'-0". MOTOR OPERATION NOT SUPPLIED.

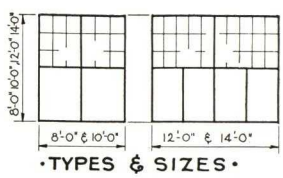
·HORIZONTAL SECTION B-B·



CANOPY DOORS ~ 3" & 4" CHANNEL TYPE Y-600-5

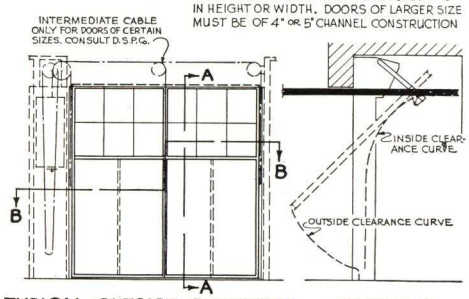


·VERTICAL SECTION A-A·



·TYPES & SIZES·

SIZES SHOWN ABOVE ARE DOOR OPENING DIMENSIONS. ALL DOORS ARE OF 3" CHANNEL CONSTRUCTION AND MAY NOT EXCEED 14'-0" IN HEIGHT OR WIDTH. DOORS OF LARGER SIZE MUST BE OF 4" OR 5" CHANNEL CONSTRUCTION



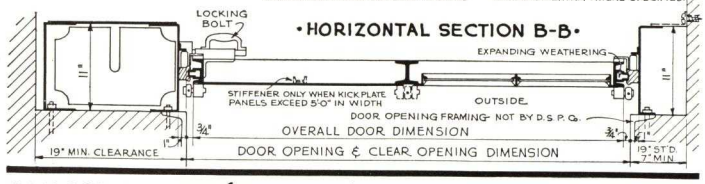
·TYPICAL OUTSIDE ELEVATION· ·SECTION·

NOTE: ¼" WIRE GLASS IS RECOMMENDED. SHOW THICKNESS OF GLASS ON ORDER AS ITS WEIGHT AFFECTS BALANCING OF DOOR. DOORS TO BE OUTSIDE PUTTY GLAZED; GLASS, PUTTY AND GLAZING LABOR NOT BY D.S.P.G.. GLAZING ANGLES EXTRA.

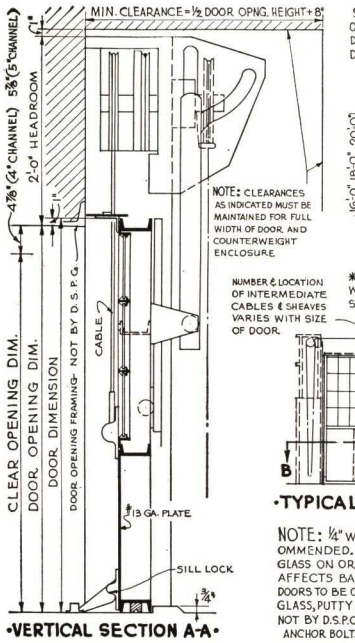
ANCHOR BOLTS, COLLATERAL STEEL, STRUCTURAL STEEL AND DOOR OPENING FRAMING, WHERE REQUIRED, NOT SUPPLIED NOR SET BY D.S.P.G.. ANCHOR BOLTS MUST BE SECURELY SET IN MASONRY OR ATTACHED TO STEEL WORK TO EXACT TEMPLATE FOR ANCHOR BOLT LOCATIONS, CONSULT D.S.P.G. REPRESENTATIVE.

DOORS OPERATED BY CHAIN POWER. MOTOR OPERATION EXTRA WHERE SPECIFIED.

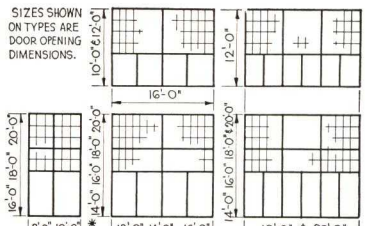
·HORIZONTAL SECTION B-B·



CANOPY DOORS (BYRNE-A) 3" CHANNEL Y-611-3



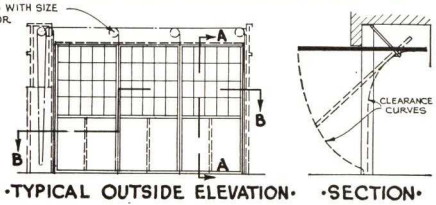
·VERTICAL SECTION A-A·



·TYPES & SIZES·

* 14'-0" HIGH DOOR OF THIS TYPE FURNISHED ONLY IN 16'-0" WIDTH. DOORS OVER 18'-0" HIGH ARE OF 5" CHANNEL CONSTRUCTION. DOOR 18'-0" OR LESS IN HEIGHT ARE OF 4" CHANNEL.

NUMBER & LOCATION OF INTERMEDIATE CABLES & SHEAVES VARIES WITH SIZE OF DOOR.



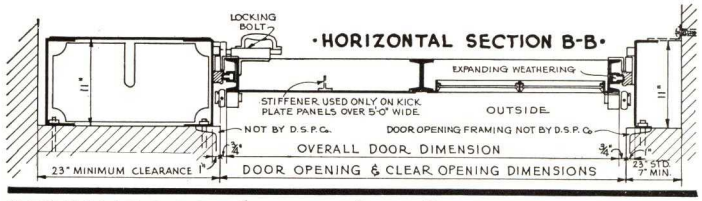
·TYPICAL OUTSIDE ELEVATION· ·SECTION·

NOTE: ¼" WIRE GLASS IS RECOMMENDED. SHOW THICKNESS OF GLASS ON ORDER AS ITS WEIGHT AFFECTS BALANCING OF DOOR. DOORS TO BE OUTSIDE PUTTY GLAZED; GLASS, PUTTY AND GLAZING LABOR NOT BY D.S.P.G.. GLAZING ANGLES EXTRA.

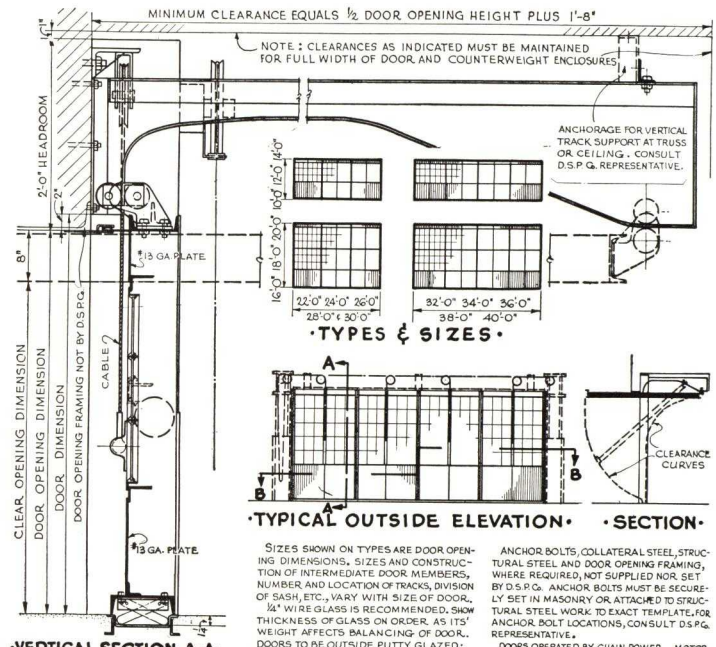
ANCHOR BOLTS, COLLATERAL STEEL, STRUCTURAL STEEL AND DOOR OPENING FRAMING, WHERE REQUIRED, NOT SUPPLIED NOR SET BY D.S.P.G.. ANCHOR BOLTS MUST BE SECURELY SET IN MASONRY OR ATTACHED TO STEEL WORK TO EXACT TEMPLATE. FOR ANCHOR BOLT LOCATIONS, CONSULT D.S.P.G. REPRESENTATIVE.

DOORS OPERATED BY CHAIN POWER. MOTOR OPERATION EXTRA WHERE SPECIFIED.

·HORIZONTAL SECTION B-B·



CANOPY DOORS (BYRNE-A) 4 & 5" CHANNEL Y-611-4



·TYPES & SIZES·

·TYPICAL OUTSIDE ELEVATION· ·SECTION·

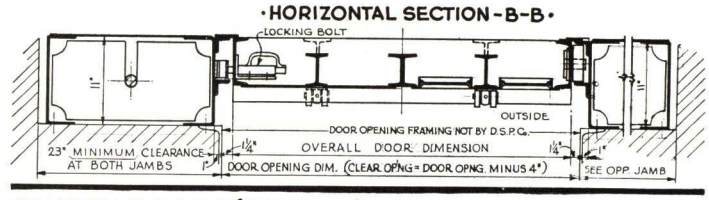
·VERTICAL SECTION A-A·

SIZES SHOWN ON TYPES ARE DOOR OPENING DIMENSIONS. SIZES AND CONSTRUCTION OF INTERMEDIATE DOOR MEMBERS, NUMBER AND LOCATION OF TRACKS, DIVISION OF SASH, ETC., VARY WITH SIZE OF DOOR. ¼" WIRE GLASS IS RECOMMENDED. SHOW THICKNESS OF GLASS ON ORDER AS ITS WEIGHT AFFECTS BALANCING OF DOOR. DOORS TO BE OUTSIDE PUTTY GLAZED; GLASS, PUTTY AND GLAZING NOT BY D.S.P.G..

ANCHOR BOLTS, COLLATERAL STEEL, STRUCTURAL STEEL AND DOOR OPENING FRAMING, WHERE REQUIRED, NOT SUPPLIED NOR SET BY D.S.P.G.. ANCHOR BOLTS MUST BE SECURELY SET IN MASONRY OR ATTACHED TO STRUCTURAL STEEL WORK TO EXACT TEMPLATE. FOR ANCHOR BOLT LOCATIONS, CONSULT D.S.P.G. REPRESENTATIVE.

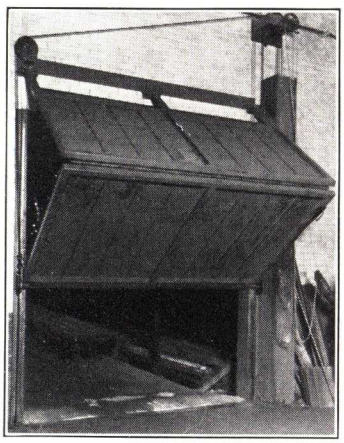
DOORS OPERATED BY CHAIN POWER. MOTOR OPERATION EXTRA WHERE SPECIFIED.

·HORIZONTAL SECTION - B-B·



CANOPY DOORS (BYRNE-A) 6" CHANNEL Y-611-5

FENESTRA "BI-FOLD" DOORS



Fenestra Bi-fold Door

("Light" type only, 14 ga., 5" × 1¾" stiles and rails for doors to maximum of 14' wide × 12' high.)

Desirable on street or driveway elevations or next to craneways where projecting leaves are impractical or forbidden.

Two door leaves, each approximately half the height of the door opening are hung one above the other on heavy steel hinges, the upper leaf being hinged to the building construction above the head of the opening and the lower leaf hinged to the upper leaf.

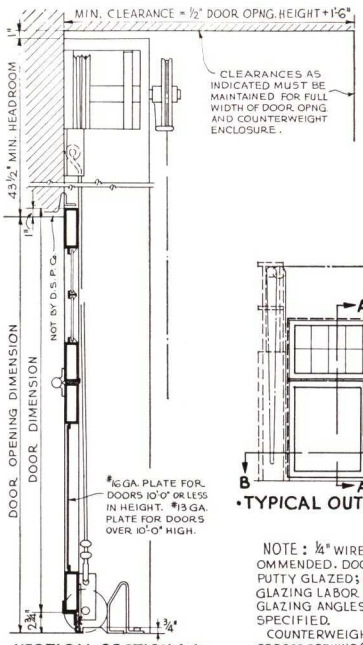
Stiles and rails are mitered, welded and ground smooth at all corners. Upper leaf of door has muntins membered into stiles and rails to accommodate inside glazing with ¼" glass and putty. Lower leaf covered with steel plate.

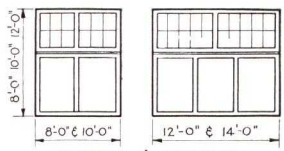
(Steel plate in upper leaf if so specified.)

Cast guide rollers are attached at the jamb near the sill of the lower leaf. Flexible steel cables, also attached near the sill of the lower leaf are carried up over cast sheaves on pressure lubricated bearings mounted in pressed steel shrouds and thence to counterweights.

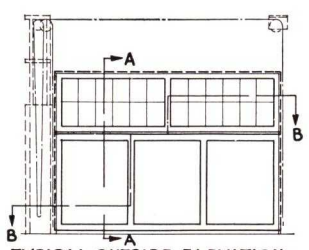
In opening, the door folds inward at the center, the lower leaf folding up toward the outside of the upper leaf and both leaves folding to a position above the opening and entirely inside the building.

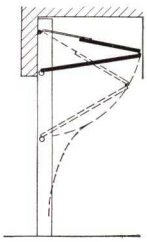
Hand operation is standard, but hand chain power may be supplied at extra cost. Electric powers cannot be used.





BI-FOLD LIGHT TUBE DOORS MUST NOT EXCEED 12'-0" IN HEIGHT AND 14'-0" IN WIDTH (OPNG DIMENSIONS). SIZES SHOWN ABOVE ARE DOOR OPENING DIMENSIONS.



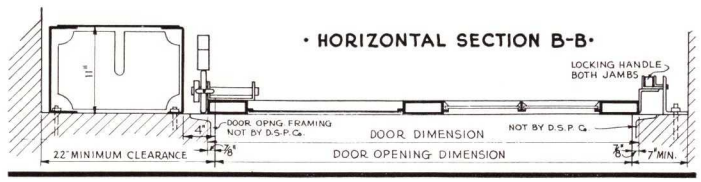


NOTE: ¼" WIRE GLASS IS RECOMMENDED. DOORS TO BE INSIDE PUTTY GLAZED; GLASS, PUTTY & GLAZING LABOR NOT BY D.S.P.Co. GLAZING ANGLES EXTRA WHEN SPECIFIED.

COUNTERWEIGHTS ON LEFT SIDE OF DOOR OPENING (VIEWED FROM OUTSIDE) UNLESS OTHERWISE SPECIFIED.

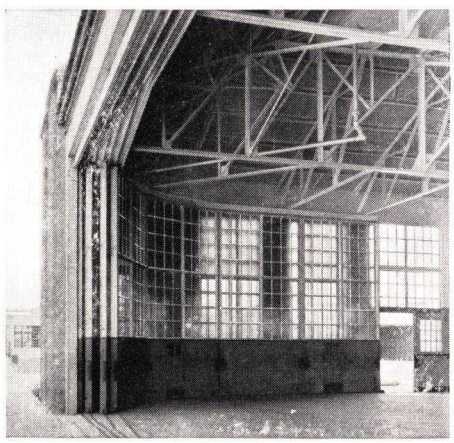
ANCHOR BOLTS, STRUCTURAL STEEL, COLLATERAL STEEL AND DOOR OPENING FRAMING, WHERE REQUIRED, NOT SUPPLIED OR SET BY D.S.P.Co. FOR ANCHOR BOLT LOCATIONS CONSULT D.S.P.Co. REPRESENTATIVE.

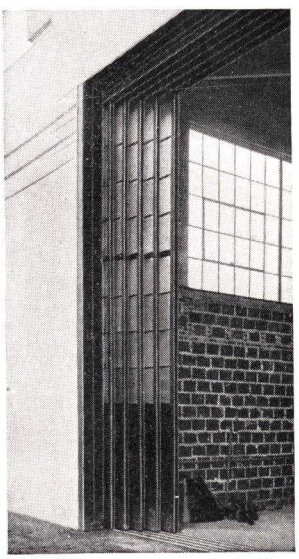
DOORS OPERATED BY HAND UP TO 10'-0" HIGH; BY CHAIN POWER OVER 10'-0". MOTOR OPERATION NOT SUPPLIED.



BI-FOLD DOORS ~ LIGHT TUBE TYPE Y-604-24

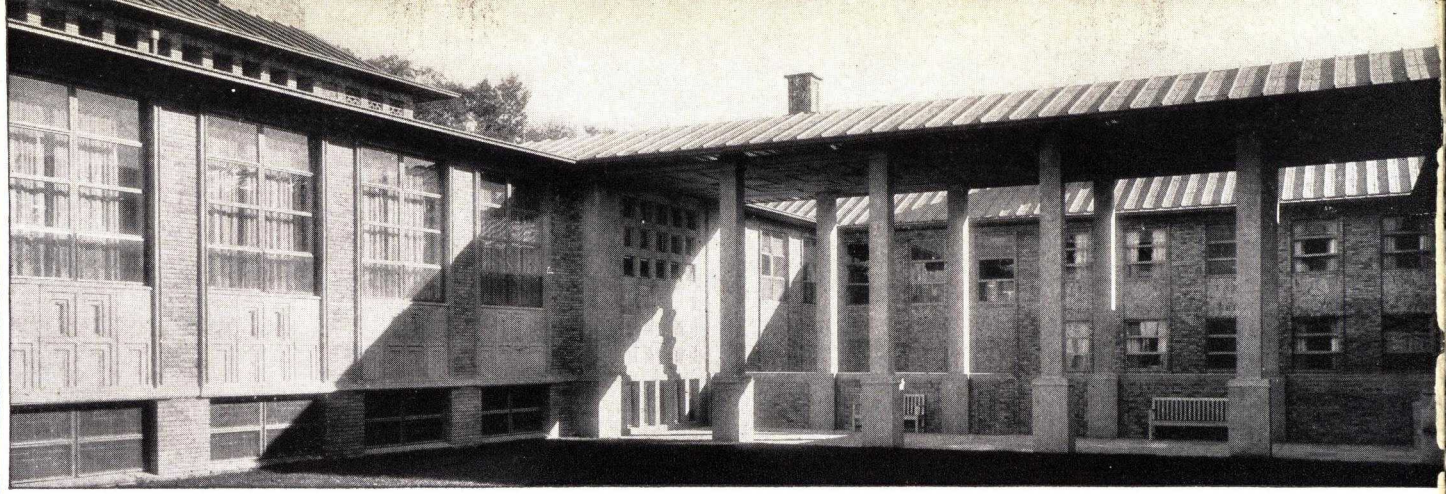
FENESTRA HANGAR DOORS





Doors shown above are typical Fenestra equipment for Hangar openings. At the left is the Municipal Hangar at Pontiac, Michigan, with Fenestra "Round-the-Corner" rolling doors in front and Fenestra side wall windows at the sides. This construction is typical of hundreds of small hangars all over the country.

The "Straight Slide" door at the extreme right shows five rolling doors nesting into a pocket at the side of the opening. A similar pocket accommodates five doors on the opposite side. The center picture shows a "close-up" of "Round-the-Corner" doors with floor tracks and overhead guides.

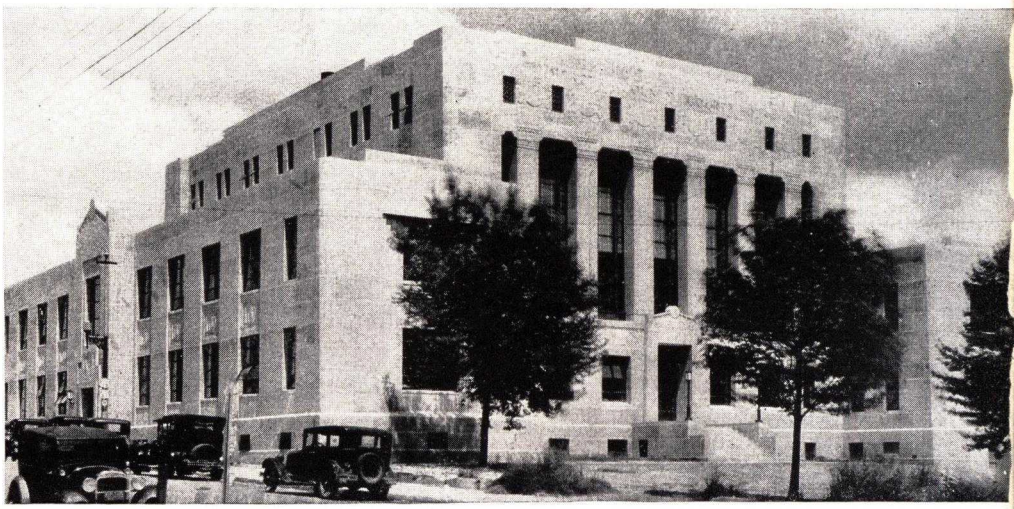


Top: Kingswood School for Girls, Cranbrook Bloomfield Hills, Mich.
Eliel Saarenen, Architect.

Left: Architects' Building, Philadelphia, Pa.
Designed by Committee of Architects.

Center Right: Columbia University Medical School, New York City.
James Gamble Rogers, Architect.

Bottom: Mercer Co. Court House, Princeton, W. Va.
Alex B. Mahood, Architect.



FEDERAL STEEL SASH COMPANY

Manufacturers of Electric Arc Welded Solid Section Steel Windows and Industrial Doors

GENERAL OFFICES AND WORKS

WAUKESHA, WIS.

WINDOWS

Horizontally pivoted
  With center and top pivoted and bottom hinged ventilators
Commercial projected
  With in and out projecting ventilators
Architectural projected
  With in and out projecting ventilators
Utility
Detention
  Industrial detention
  Protection
  Security
Curved, cambered and splayed heads
  Separate units or built-in
Underwriters labeled
Glazing angle
Double glazed
Explosion ventilators
Mullions
  Vertical and horizontal, with or without cover plates
Jamb plates
Hot dip galvanized
Continuous
  Fixed or swing
Basement

MECHANICAL OPERATORS

Lever arm for hand operation
Screw for hand and motor operation
Rack and pinion for hand and motor operation
Tension for hand and motor operation

SCREENS

For all types of ventilators

DOORS

Swing—single or double leaf
  With structural or pressed steel frames
Slide—single or double leaf
Accordion
Bifold—tube and structural
Canopy—tube and structural
  Hand and motor operation
Two section vertical lift—tube and structural
  Hand and motor operation
Hangar—straight and round the corner slide
  Tube and structural

See Our Catalog in Sweet's Engineering Files

COMPLETE CATALOG ON REQUEST

MICHAEL FLYNN MANUFACTURING CO.

SUCCESSORS TO DAVID LUPTON'S SONS COMPANY

Manufacturers of Lupton Steel Windows and Doors

Allegheny Avenue at Tulip Street, PHILADELPHIA, PA.

NEW YORK BRANCH: 51 East 42nd Street

Sales Representatives in Principal Cities

GENERAL

MICHAEL FLYNN MANUFACTURING CO., successors to David Lupton's Sons Company, in continuing this long established window line, are guided by the conviction that a quality product will find ready acceptance by those whom it is designed to benefit.

A constant activity is maintained to keep products in line with modern requirements in building construction, and to achieve that quality in utility and appearance that results invariably from logical design and honest craftmanship.

SERVICE

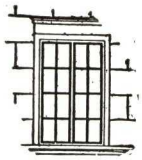
A request to our offices or sales representatives will bring literature fully describing our products and giving information necessary in detailing. When special designs or applications of our products are desired, we shall be glad to furnish consultation service and to submit tentative details.

PRODUCTS

Residence Casements—Low cost standard weight casements for residences and apartments.

Master Casements—Heavier weight casements for residential buildings.

Both Residence and Intermediate Casements are available with or without all-metal screens and underscreen operation. Standard types and sizes are those adopted by the industry.



Casement Doors—Single or double casement doors or French windows equipped with fine hardware. Standard or custom built.

Custom Built Casements—Windows for public and monumental buildings, offices, etc. Custom built to specifications.

Office Windows—Efficiency windows combining maximum light with fully controlled natural ventilation. Available in several types.

Architectural Projected Windows—Windows particularly adapted to classrooms or offices where appropriations will not permit the use of casement type windows. Made for inside or outside glazing in types and sizes standardized by the industry.

Basement Windows—Made of Residence Casement sections in six standard sizes. Welded corners. Top-hinged to open in. Split pin hinge permits removal of entire sash from inside. Provision is made for attaching screens.

Utility Windows—Afford maximum light and controlled natural ventilation in small buildings, private garages, or in basements and basement areaways. Made of steel sections 1⅜ in. deep with angle frame member. Opening size, 3 ft. 4 in. x 3 ft. 7⅝ in. Lower half fixed. Upper half open-in-at-top.

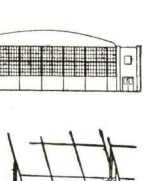
Commercial Projected Windows—Sidewall windows for industrial plants. Made in types and sizes standardized by the industry. Ventilators open horizontally with projected movement.

Pivoted Windows—Similar in application and construction to the Commercial Projected Windows but with the ventilators pivoted horizontally 2 in. above the center.

Underwriters' Label Windows—Commercial Projected and Pivoted Windows meeting Underwriters' requirements.

Continuous Windows—For continuous sidewalls, sawtooth roofs and monitors.

Rolled Steel Skylights—Especially adapted to conditions of unusual severity, such as vibration, wide range of temperatures, and inaccessibility for frequent painting.



Light and Heavy Industrial Steel Doors—Low cost service doors for all industrial requirements.

Airplane Hangar Doors—Improved type meeting government standards.

Operating Devices—Torsion, tension, and rack and pinion types for pivoted and continuous windows.

PERMATITE WINDOWS

WELFARE ISLAND HOSPITAL GROUP, New York City

Associated Architects—York & Sawyer, Butler & Kohn

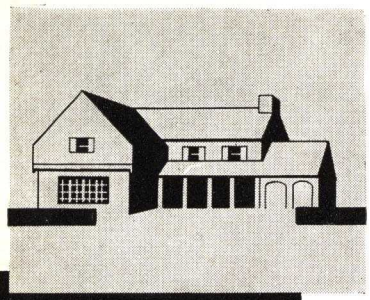
Builders—Cauldwell-Wingate Co.

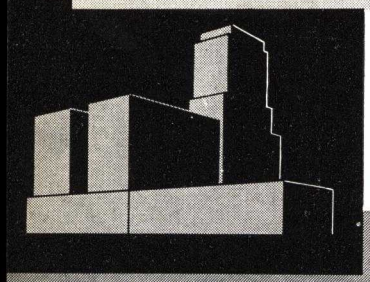
OF BRONZE OR ALUMINUM

Comprising **DOUBLE-HUNG WINDOWS**
CASEMENT WINDOWS • UTILITY WINDOWS
CASEMENT DOORS • • *Also including*
windows of **"POLACHEK"** *Extra heavy sections*

GENERAL BRONZE CORPORATION

34-19 Tenth Street • • Long Island City, N.Y.





OVER many years, General Bronze has been steadily advancing the design and construction of windows—introducing improvements which have kept this company continuously ahead.

Today—it's the remarkable, new and patented Permatite Windows. These windows—casement or double hung—meet the architect's requirements for windows of the finest workmanship and materials. They meet the architect's requirements for highest quality and beauty—at a price that is much below that formerly paid for windows of lower efficiency and no higher quality. They are built with the same superb skill and craftsmanship that are characteristic of all General Bronze architectural and ornamental metal work.

This catalog tells the story—gives specific details of design, construction and operation. We invite your consideration.

PERMATITE WINDOWS

(PEREMI PATENT)

Made in Standard and Special Sizes in Bronze or Aluminum by

GENERAL BRONZE CORPORATION

For Residences, Apartment Houses and Other Buildings Where Economical Maintenance, High Efficiency and Low First Cost Are of Equal Importance

OUTSTANDING FEATURES OF PERMATITE DOUBLE-HUNG AND CASEMENT WINDOWS

CONTINUOUS RESILIENT WEATHERSTRIPPING (of special metal alloy)—which insures a really air and watertight seal throughout the entire perimeter of every operating sash, and which will continue fully efficient after many years of use.

SASH OF SEAMLESS TUBULAR CONSTRUCTION, with solidly reinforced corners, which will never sag nor get out of alignment with their frames. This construction also materially retards condensation.

NO OPEN CHANNELS TO ACT AS DIRT POCKETS, in either sash or frame, as weatherstrips seal frame rebates while windows are open. This feature also enhances the finished appearance.

CONTINUOUS GLAZING KEY around glass opening to receive and key glazing compound to its bed, and protect it from weather deterioration.

HEAVY WELDED STEEL SUB-FRAME, with integrally formed weatherfin, completely encircling window; insulated from bronze or aluminum frame.

SPECIALLY DESIGNED HARDWARE, sturdy, smooth-operating, of solid bronze, finished to match windows and built to last a lifetime.

NO RUSTING, NO PAINTING, NO UPKEEP, will not wear out, and so requires no replacements; does not leak air, and so reduces fuel bills, and eliminates drafts and cold spots in rooms.

NARROW SASH AND FRAME MEMBERS INCREASE GLASS AREA, and thereby admit more light without increasing window size.

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION

34-19 Tenth Street Long Island City, N.Y.

PERMATITE WINDOWS ARE MADE in the FOLLOWING TYPES:

(*For standard sizes see charts on pages* 4 *and* 11; *for installation details see pages* 8 *and* 18)

ALUMINUM DOUBLE-HUNG

***Series* H2.** Aluminum double hung window for openings up to 4′-0″ x 7′-6″. For details of construction see pages 5 and 6.

***Series* H3.** Aluminum double hung window for openings up to 5′-0″ x 8′-6″. For details of construction see Note, page 7.

BRONZE DOUBLE-HUNG

***Series* H.** Bronze double hung window for openings up to 4′-0″ x 7′-6″. For details of construction see Note, page 5.

***Series* H1.** Bronze double hung window for openings up to 5′-0″ x 8′-6″. For details of construction see page 7.

ALUMINUM CASEMENT

***Series* K1.** Aluminum out-swinging casement window. For details of construction see pages 12 and 13.

***Series* K2.** Aluminum in-swinging casement window. For details of construction see Note, page 15.

BRONZE CASEMENT

***Series* K.** Bronze out-swinging casement window. For details of construction see Note, page 12.

***Series* K3.** Bronze in-swinging casement window. For details of construction see page 15.

***Series* K4.** Bronze casement window for apartment houses and public buildings. For details of construction see page 14.

BRONZE OR ALUMINUM SPECIAL WINDOWS AND DOORS

Basement and Utility Casement Windows. See page 16.
Doors, Transoms and Sidelights. See page 17.

FOR DETAILS OF EXTRA HEAVY SECTIONS FOR MONUMENTAL BUILDINGS — *see pages* 20 *to* 22

LABORATORY TESTS FOR AIR INFILTRATION

Tests made in the Laboratory of Daniel Guggenheim School of Aeronautics, at New York University, produced the following results:

TESTS ON DOUBLE-HUNG WINDOWS

PERMATITE Double-Hung Windows (5′-0″ wide by 8′-0″ high) were tested with a view to determining what could be expected of this design under extreme conditions.

At a wind velocity of 25 miles per hour (the usually stipulated velocity in standard test specifications) the volume of air infiltration per foot of sash perimeter was but 8.4 cubic feet per hour, or 0.14 of a cubic foot per minute, as compared to 1.25 per minute allowed for such windows in U. S. Government specifications. Even at 40 miles per hour velocity (the pressure from which bulged the glass deeply and seemed on the point of blowing it out) air infiltration was but 0.4 of a cubic foot per minute, less than one-third of the air leakage allowed by the Government with a wind velocity of only 25 miles per hour.

TESTS ON CASEMENT WINDOWS

The Laboratory made air infiltration tests on three PERMATITE Casement Windows, two bronze, one aluminum. In no case was its staff able to send us a chart showing the infiltration at the various wind velocities developed, for the reason that its sensitive recording instruments FAILED TO REGISTER ANY MEASURABLE AMOUNT OF AIR INFILTRATION, EVEN AT A WIND VELOCITY OF 40 MILES PER HOUR.

We quote from Dr. Alexander Klemin's letter forwarding to us these test reports:

"The tests indicate that both the double hung and casement windows are unusually air-tight—as a matter of fact, the casement windows had so little infiltration that no air flow was detected up to pressures corresponding to speeds of 40 miles an hour."

Original certified test reports will be exhibited gladly upon request.

15/12 PERMATITE DOUBLE-HUNG WINDOWS

IN BRONZE AND ALUMINUM

In PERMATITE Double - Hung Windows all exposed members of sash and frame are solid bronze or aluminum, built into a fully concealed and thoroughly insulated steel subframe, with corners solidly welded and all possible interstices filled with leakproof mastic applied under 100 pound air pressure.

Stiles and rails of all sash are made of seamless tubing, the strongest and most rigid structural form obtainable. The extremely narrow members in PERMATITE design afford the maximum of daylight opening. These, in combination with the clean, sharp lines of precise extrusion and the exact fitting of hair line joints, impart an ultra-smart appearance to these windows.

All exposed hardware is of solid bronze, finished to match the windows in color. Adjustable spring sash balances, which tests have proven will outlast the useful life of the building, eliminate the need of weight pockets; thus making it possible to use mullions only $1\frac{1}{8}$" wide, which overcomes the principal objection to multiple double-hung windows.

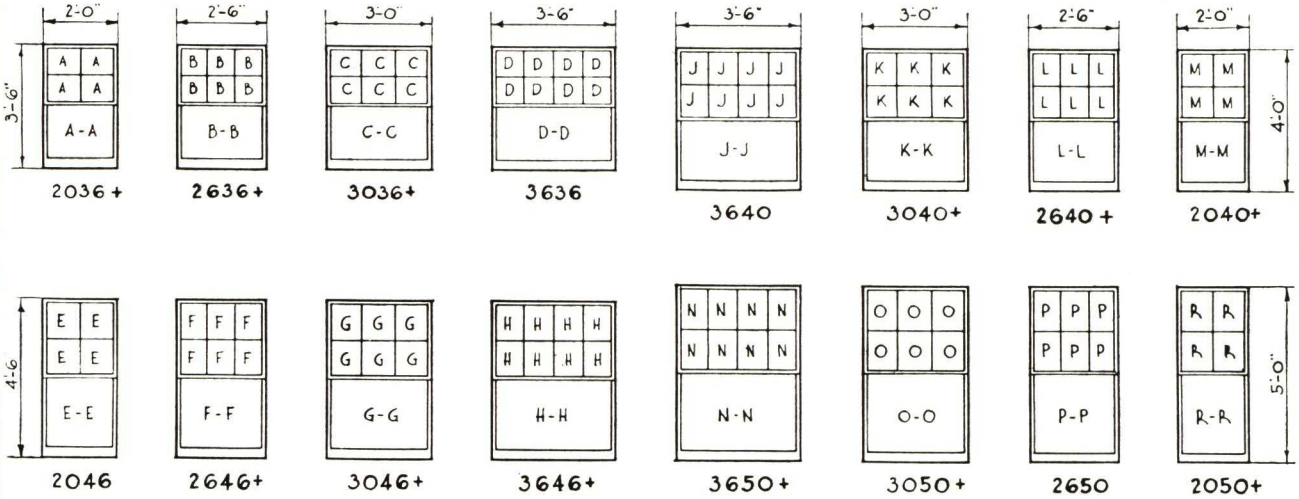
In addition, PERMATITE Double-Hung Windows possess several features which surpass any former standards for superior window construction. Taking advantage of the unusually wide smooth contact surface of the outer edge of the sash afforded by its tubular construction, a unique patented design of weatherstripping has been employed. Weatherstrips of hard resilient special metal alloy are rolled in such shape and so held in integrally formed pockets in the frame jambs and head, that they form two continuous bands of positively sealing contact, and at the same time a floating contact, between the frame and sash. Similar weatherstrips, housed in pockets in the sill of frame and the meeting rail of upper sash, form continuous sealed contacts with the bottom and top rails, respectively, of lower sash.

These pockets in the frame and meeting rail are of such form that the weatherstrips, while free to move in the direction desired, are securely trapped with all edges fully guarded and concealed. Thus when sash are opened, the weatherstrips appear as a part of the frame's smooth surface, with no sharp edges to offend the eye or catch fingers or fabrics. The wide lines or bands of continuous metal-to-metal contact so effectively seal the closed window against leakage as to give it the greatest resistance to air infiltration of any double-hung window on the market. (See Page 3.)

Notwithstanding the greater contact surfaces in PERMATITE Windows, the sash operate smoothly and with surprising ease. They will not bind or stick because they actually are floating between the jambs on the yielding cushions created by the self-adjusting opposing pressures of the weatherstrips. Thus these windows will function with full efficiency even if erected slightly out of plumb.

Full outside screens in either aluminum or bronze can be supplied for PERMATITE double-hung windows.

· PERMATITE · DOUBLE · HUNG · WINDOWS · · STANDARD · SIZES · OF · RESIDENTIAL · SERIES · H · & · H2 ·



· GLASS · SIZES ·

A	$10\frac{9}{16} \times 9\frac{1}{16}$	A-A	$21\frac{1}{2} \times 18\frac{7}{16}$
B	$8\frac{15}{16} \times 9\frac{1}{16}$	B-B	$27\frac{1}{2} \times 18\frac{7}{16}$
C	$10\frac{15}{16} \times 9\frac{1}{16}$	C-C	$33\frac{1}{2} \times 18\frac{7}{16}$
D	$9\frac{5}{8} \times 9\frac{1}{16}$	D-D	$39\frac{1}{2} \times 18\frac{7}{16}$
E	$10\frac{9}{16} \times 12\frac{1}{16}$	E-E	$21\frac{1}{2} \times 24\frac{7}{16}$
F	$8\frac{15}{16} \times 12\frac{1}{16}$	F-F	$27\frac{1}{2} \times 24\frac{7}{16}$
G	$10\frac{15}{16} \times 12\frac{1}{16}$	G-G	$33\frac{1}{2} \times 24\frac{7}{16}$
H	$9\frac{5}{8} \times 12\frac{1}{16}$	H-H	$39\frac{1}{2} \times 24\frac{7}{16}$

~ NOTE ~ DIMENSIONS · GIVEN · ARE · SIZES · OF · OPENINGS ~ MUNTINS · MAY · BE · OMITTED · OR · ARRANGED · AS · PREFERRED · ON · SPECIAL · ORDER ~ TYPES · MARKED · THUS + · STOCKED · IN · LONG · ISLAND · CITY · N.Y. · WAREHOUSE ~ REFER · TO · PAGES · 5 · & · 6 · FOR · SECTIONAL · DETAILS ~ ► USE · ONLY · D.S. · AA · SHEET · GLASS · OR · $\frac{1}{8}$ · POLISHED · PLATE · GLASS, · SET · IN · BEST · QUALITY · METAL · GLAZING · COMPOUND ~

· GLASS · SIZES ·

J	$9\frac{5}{8} \times 10\frac{9}{16}$	J-J	$39\frac{1}{2} \times 21\frac{7}{16}$
K	$10\frac{15}{16} \times 10\frac{9}{16}$	K-K	$33\frac{1}{2} \times 21\frac{7}{16}$
L	$8\frac{15}{16} \times 10\frac{9}{16}$	L-L	$27\frac{1}{2} \times 21\frac{7}{16}$
M	$10\frac{9}{16} \times 10\frac{9}{16}$	M-M	$21\frac{1}{2} \times 21\frac{7}{16}$
N	$9\frac{5}{8} \times 13\frac{9}{16}$	N-N	$39\frac{1}{2} \times 27\frac{7}{16}$
O	$10\frac{15}{16} \times 13\frac{9}{16}$	O-O	$33\frac{1}{2} \times 27\frac{7}{16}$
P	$8\frac{15}{16} \times 13\frac{9}{16}$	P-P	$27\frac{1}{2} \times 27\frac{7}{16}$
R	$10\frac{9}{16} \times 13\frac{9}{16}$	R-R	$21\frac{1}{2} \times 27\frac{7}{16}$

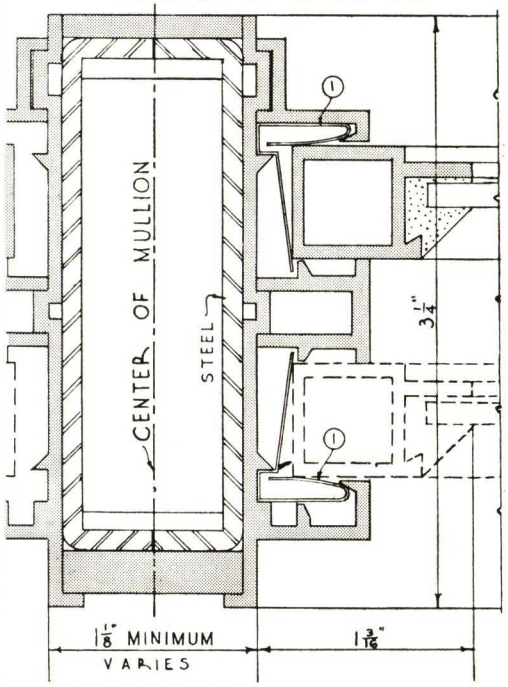
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION

34-19 Tenth Street Long Island City, N.Y.

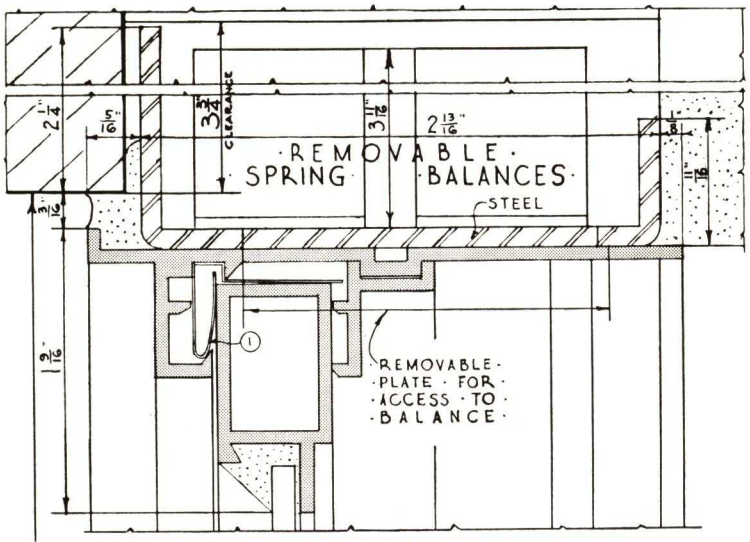
DETAILS
· PERMATITE ·
SERIES · H2 · ALUMINUM DOUBLE · HUNG · WINDOW

· THESE · SECTIONS · MAY · BE · USED · FOR · · WINDOWS · UP · TO · 4'-0" · 7'-6" ·

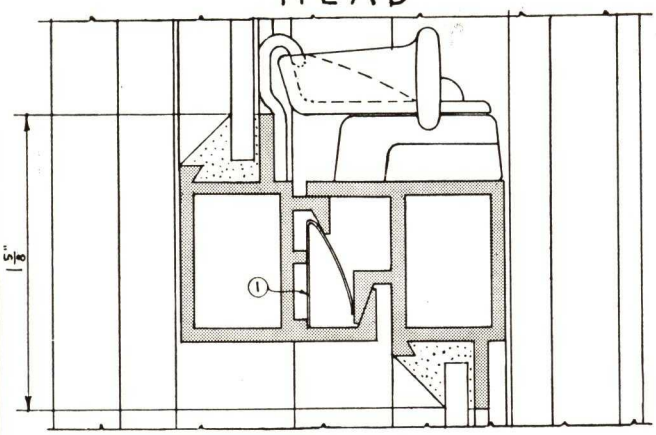


· MULLION ·

· ① · PATENTED · · WEATHER-STRIP ·

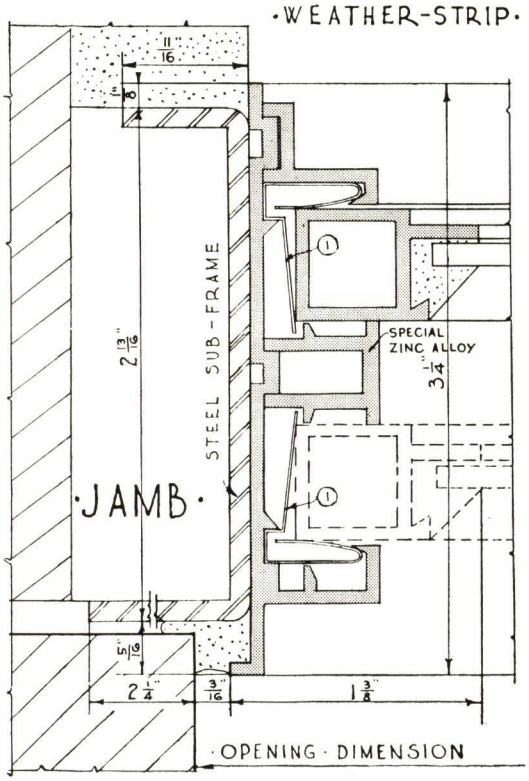


· HEAD ·

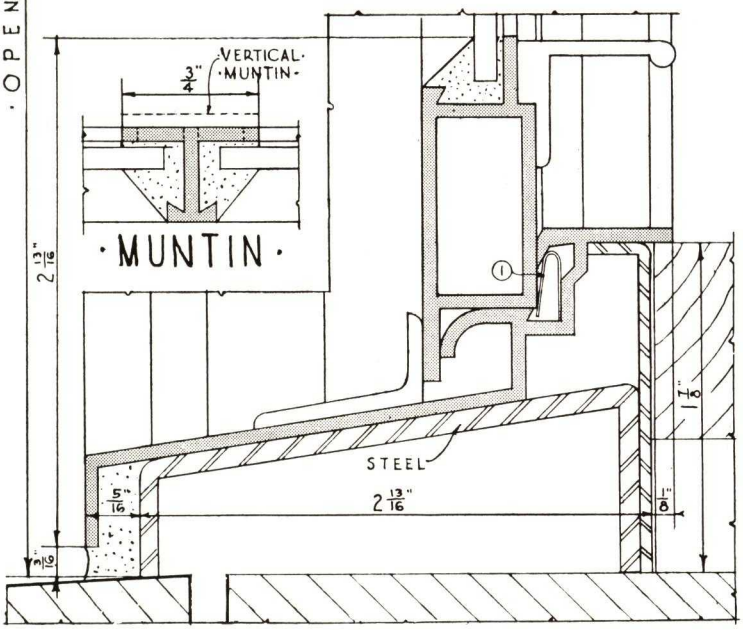


· MEETING · RAIL ·

· OPENING · DIMENSION ·



· JAMB ·



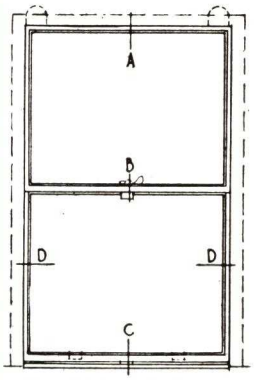
· SILL ·

NOTE: Construction of Permatite Series H Bronze Double-Hung Window similar to above.

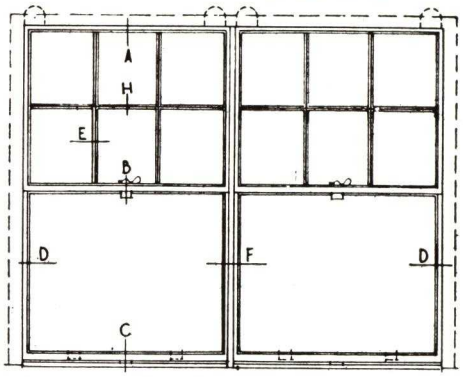
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

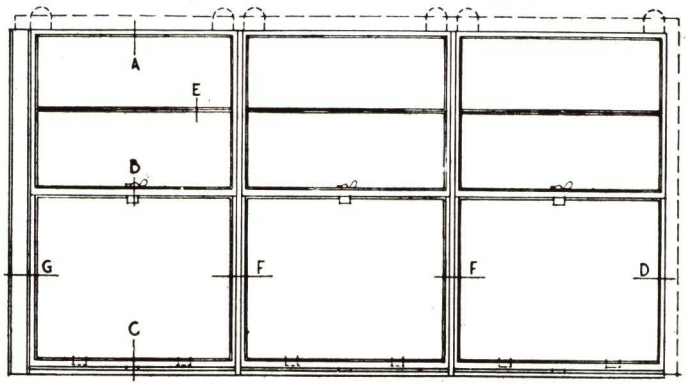
SCALE · ℄ · HALF · FULL · SIZE · DETAILS
PERMATITE · SERIES · H · ℄ · H2 ·
· DOUBLE · HUNG · WINDOWS ·



· SINGLE · WINDOW ·
· WITHOUT · MULLION ·

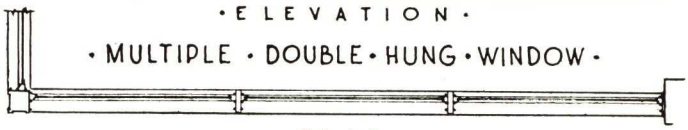


· DOUBLE · WINDOW · WITH · MULLION ·
· MUNTIN · IN · UPPER · SASH ·

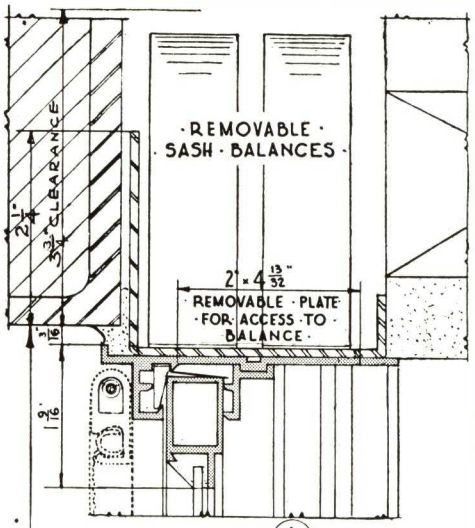


· ELEVATION ·

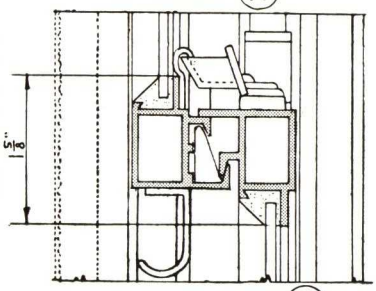
· MULTIPLE · DOUBLE · HUNG · WINDOW ·



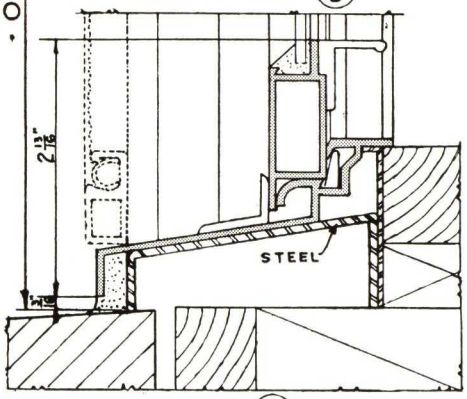
· PLAN ·



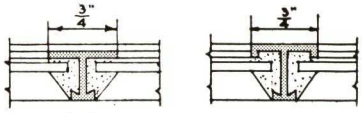
· HEAD · (A) ·



· MEETING · RAIL · (B)

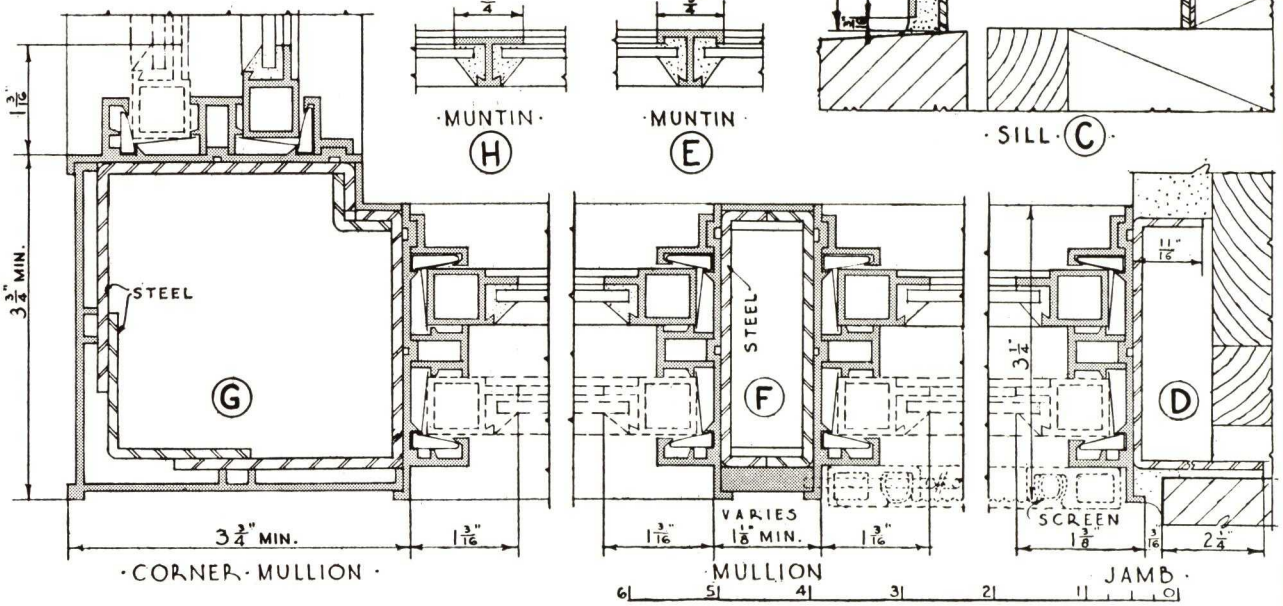


· SILL · (C)



· MUNTIN · (H)

· MUNTIN · (E)



· CORNER · MULLION ·

· MULLION ·

· JAMB ·

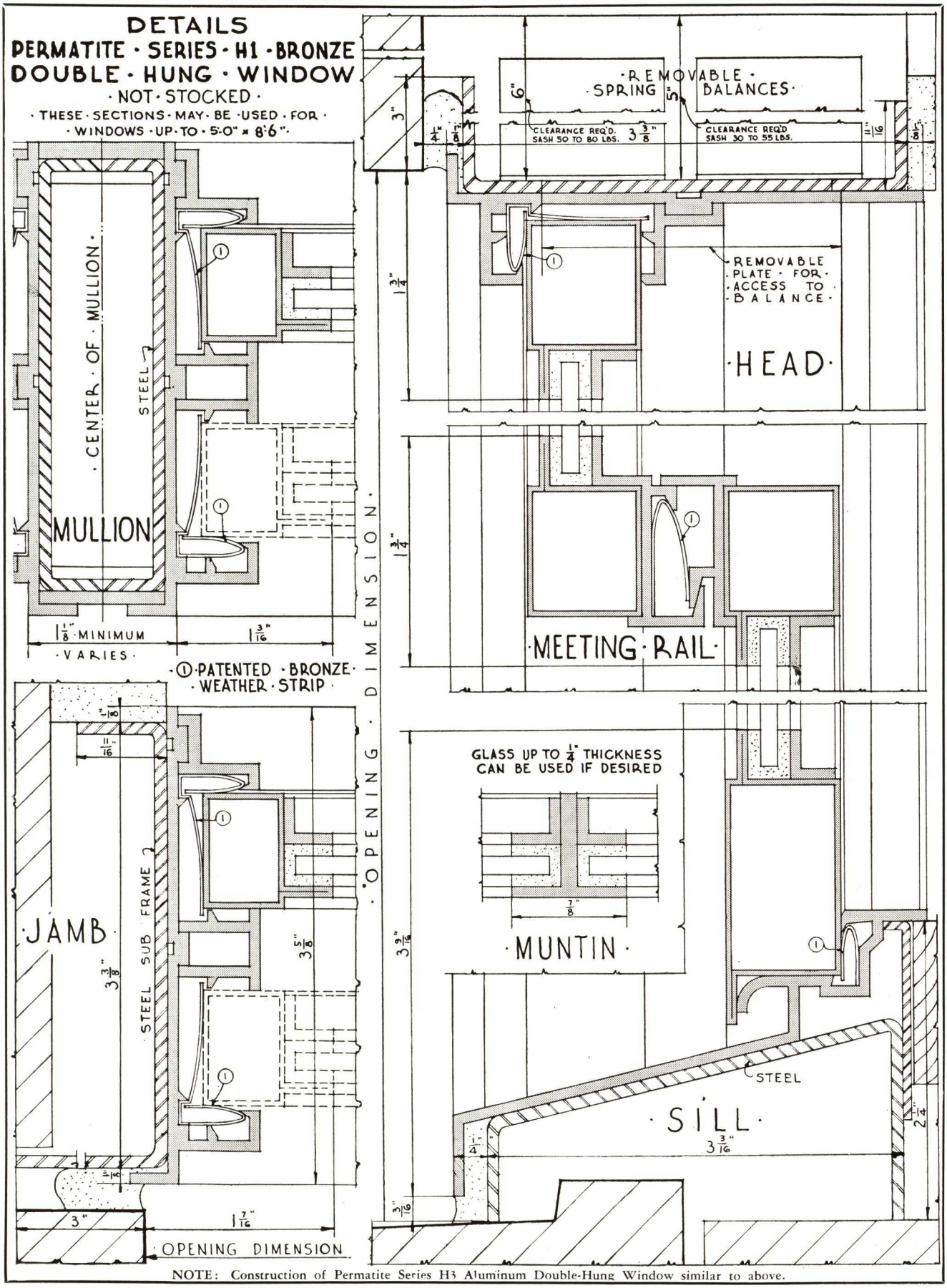
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

DETAILS
PERMATITE · SERIES · H1 · BRONZE DOUBLE · HUNG · WINDOW

· NOT · STOCKED ·

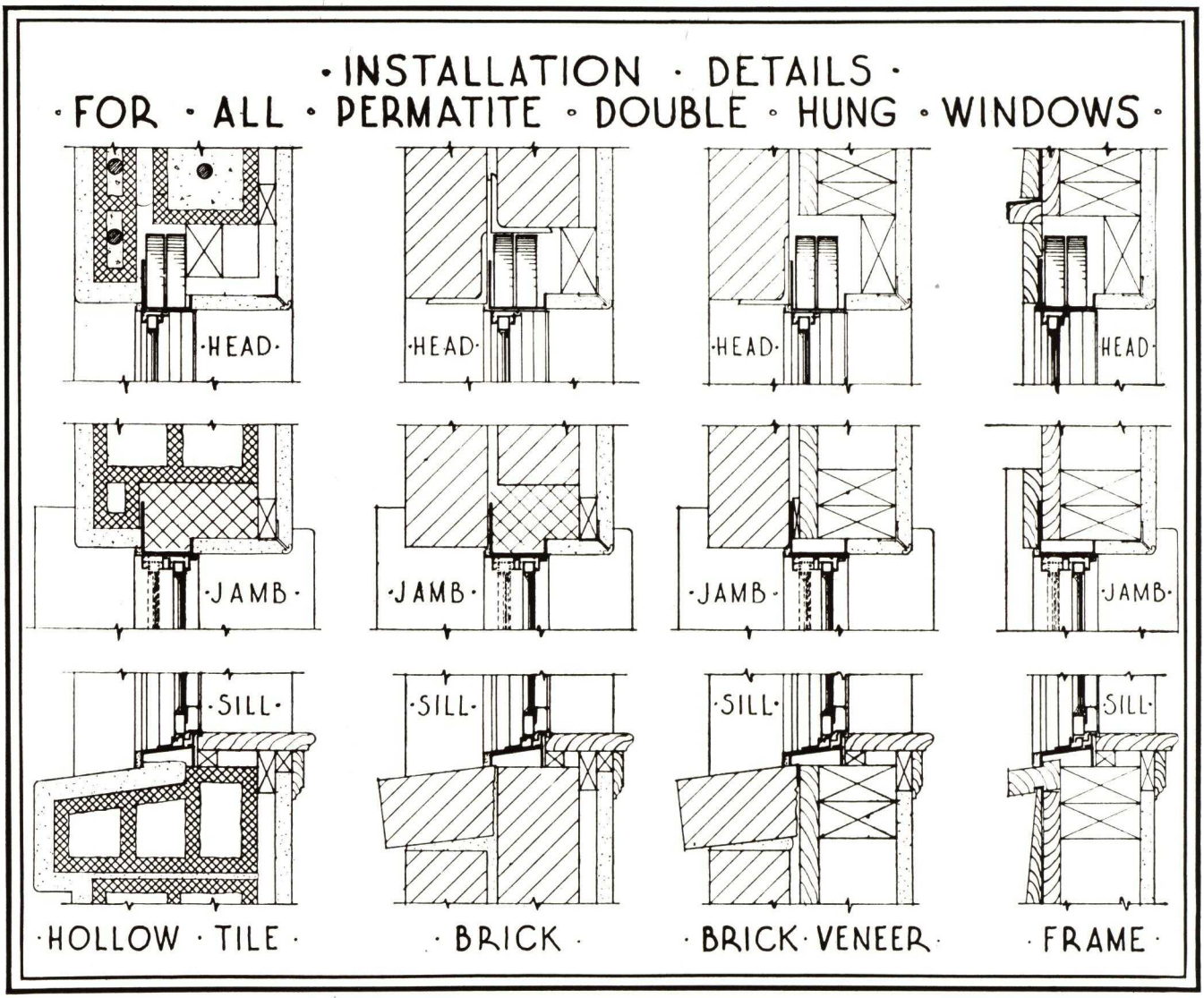
· THESE · SECTIONS · MAY · BE · USED · FOR · · WINDOWS · UP · TO · 5'-0" × 8'-6" ·



NOTE: Construction of Permatite Series H3 Aluminum Double-Hung Window similar to above.

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.



STANDARD SPECIFICATIONS FOR PERMATITE SERIES "H" DOUBLE-HUNG WINDOWS

1. **Scope of Work:** This contractor shall furnish PERMATITE Series "H" bronze (or aluminum) Double Hung Windows, including all hardware and steel sub-frames, as manufactured by General Bronze Corporation, Long Island City, New York, for all window openings shown on Architects drawings for.....
(Here insert extent of windows which are to be bronze or aluminum.)

2. **Materials:** Except as is hereinafter specified, all parts of window frames and sash shall be of solid bronze (or aluminum). All frame members shall be extruded bronze (or aluminum) not less than #12 B & S gauge. Stiles and rails of all sash shall be of seamless bronze tubing of #17 B & S gauge (or if aluminum of #12 B & S gauge).

   Finished members of sash and frames shall be true to dies and all moulded sections shall have clean sharp arrises, free from twists, bends or other imperfections. After extrusion, each piece shall be drawn through forming dies to insure absolute straightness and uniform thickness throughout its length.

   Weatherstripping shall be of hard resilient special metal alloy of the required thickness to resist movement from the pressure exerted by wind at a velocity of 60 miles per hour.

   Each window shall be provided with steel sub-frame, formed into special channel shape from #12 U. S. gauge blue annealed sheet; welded at corners into a continuous frame.

3. **Design, Construction and Workmanship:** Jamb, head and sill members of frames shall be designed to provide integrally formed pockets to receive and retain the metal weatherstripping in such manner that no raw edge of same will be exposed. Weatherstripping at jambs and head shall be so formed and positioned as to provide two continuous lines of flexible but positively sealing

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK
GENERAL BRONZE CORPORATION
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contact between frame and closed sash without in any way binding the sash when operated. Similar weatherstrips shall be housed in the sill of the frame and in the meeting rail of the upper sash to form continuous sealed contact with top and bottom rails of lower sash. Weatherstripping and its housings shall be so formed that strips may be readily removed or replaced without dismantling the window.

Tubular stiles and rails of sash shall be seamless, designed with overlapping flanges to effect face contacts with the frame members and so formed as to provide a continuous wedge shaped groove all around the sash opening to effectively key the glazing putty in its bed and permanently retain it in place. The design of the sash and their engagement with the frames shall be such as to prevent the sash from rattling when in any position.

The outer flange of the steel channel sub-frames shall be extended to form a continuous fin or weather stop for the entire extent of the window jambs and head. Provide holes at proper spacings in these extended flanges to receive built-in anchors or bolts, for anchoring windows to the walls. Removable access plates shall be provided in the heads of all window frames and subframes to afford access to sash balances.

All joints, copes and miters shall be precision machined and carefully fitted to create tight, hairline joints. All holes, slots, etc., shall be accurately drilled to template and holes for machine screws carefully tapped. Removable members such as parting strips, guide stops, access plates, etc., shall be accurately machined and shop fitted. All screws, bolts and rivets shall be made from special alloys to provide maximum strength at fastenings and, where exposed, shall match window material in color.

All material shall be carefully inspected before assembly to insure same has been accurately and thoroughly prepared. All surfaces of sub-frames shall be given a heavy coat of bitumastic paint before attaching non-ferrous frame members to same. Finish jambs, heads, and sills are to be riveted to corresponding members of sub-frames under pressure; then assembled into complete frame units by solidly welding each corner. After welding, all corners shall be filled with leak proof compound under 100 lb. air pressure. Stiles and rails of sash shall be assembled by welding or sweating together at corners which shall first be heavily reinforced. Ample reinforcements shall be built into the sash to receive the hardware.

Removable members shall be secured by special head machine screws of proper size and approved spacings. All other fastenings of exposed members shall be fully concealed.

(NOTE: If required, the following should also be included.)
Provide muntins, arranged as shown, neatly and accurately fitted and assembled at the shop. Intersections of muntins and between muntins and sash members shall be fully lapped to insure firm engagement.

Provide, where shown, mullions between double-hung units amply and continuously reinforced with steel to insure rigidity. All contacts between mullions and steel reinforcements shall be fully insulated by an extra heavy coat of bitumastic paint, applied before mullion is assembled. Mullion jambs shall fully correspond with jambs hereinbefore specified.

4. **Hardware:** Each double-hung window shall be equipped with four (4) completely housed adjustable sash balances, mounted within the head of the frame in such manner that the weight of the sash is not sustained by the fastening screws. Pulley tapes shall be of special alloy bronze to safely meet all strains to which they may be subjected. (If windows are aluminum, pulley tapes shall be of white metal.) All other parts of sash balances shall be of steel. Balances shall be removable. Sash tapes shall be firmly attached to sash rails by specially designed fasteners.

   Each pair of double-hung sash shall be fitted with solid bronze hardware consisting of the following: two sash lifts, one sash lock, one sash pull, two sash bumpers for upper sash, and two combination bumpers and tape hooks for lower sash. For aluminum windows, finish hardware shall be dull chrome plated to match aluminum.

5. **Shop Drawings:** Before proceeding with the work, this contractor shall prepare and submit, for Architect's approval, complete shop drawings showing all parts of the frames and sash and fully dimensioned. Shop drawings shall be submitted in triplicate and no work shall be proceeded with until Architect's approval has been received.

6. **Infiltration Tests:** All double hung windows shall be so designed and constructed that, when subjected to an air pressure equivalent to that exerted by wind at a velocity of twenty-five (25) miles per hour, the infiltration of air through the window shall not exceed one-third (1/3) of one cubic foot per minute per linear foot of sash perimeter. One window will be selected at random by the Architect and subjected to this infiltration test. If the first sample shall fail to meet the test, a second will be similarly selected and tested. If it also fails, the Architect may, in his discretion, reject all the windows made, and require new windows to be furnished which will fulfill all the above requirements. All infiltration tests shall be at the expense of this contractor.

   The Architect may, but shall not be required to, waive infiltration tests on windows, provided the manufacturer thereof can furnish certified reports of tests, made by a testing laboratory approved by the Federal Government, showing that windows made by the manufacturer of the same type and design as are being furnished on this project have met or exceeded the requirements hereinabove specified.

7. **Protection:** Before shipment, this contractor shall apply an approved protective solution to all exposed surfaces of the frame and sash in order to protect the metal from plaster, etc. The General Contractor shall be required to provide proper protection to the windows to prevent damage during the course of operations and shall remove the same before final inspection and cleaning down of the windows is started.

FINAL: Complete instructions will be mailed at the time of shipment of windows for the proper setting, caulking, grouting, glazing, cleaning and adjustment of the windows. **Note that 1/8" thick glass should be used and same should be set with a good grade of metal glazing putty.** A sufficient quantity of special glazing clips will be furnished with the windows, without charge.

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

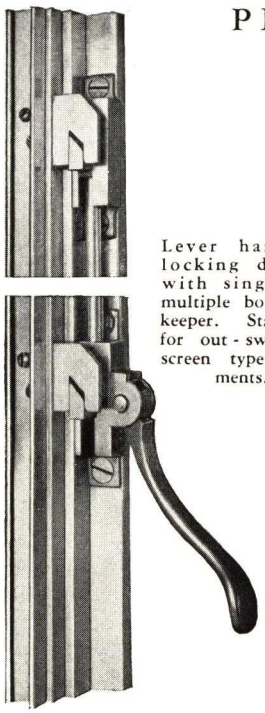
GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

PERMATITE CASEMENT WINDOWS

IN BRONZE OR ALUMINUM

PERMATITE Casement Windows have the same high standard of construction as PERMATITE Double-Hung Windows, which are described in detail on page 4. Casement sash are built of seamless tubing, welded at the corners, and sash and frames are of solid bronze or aluminum, built into a fully concealed and thoroughly insulated steel sub-frame, with corners welded and interstices filled with mastic under pressure, thus making the entire window leakproof. Screens can be supplied for PERMATITE Casement Windows in either bronze or aluminum. The ease of installing or removing these screens is indicated in the adjoining illustration, which illustrates type 4426+. (See opposite page.)

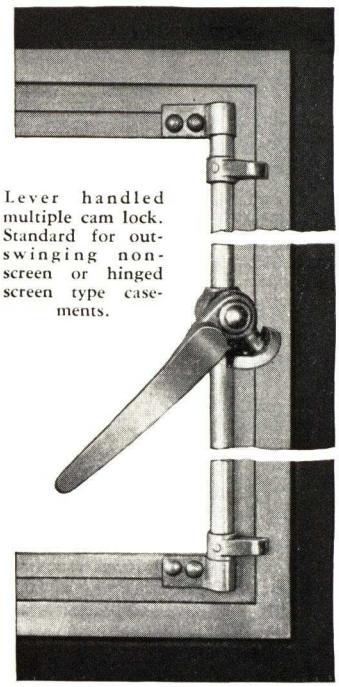
PERMATITE CASEMENT WINDOW HARDWARE



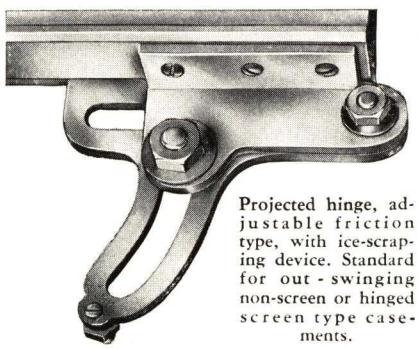
Lever handled locking device with single or multiple bolt and keeper. Standard for out-swinging screen type casements.

Worm and gear sash operator. Standard for out-swinging screen type casements.

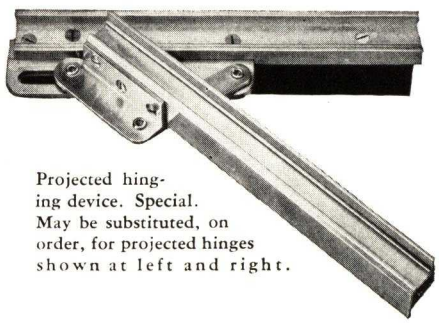
Telescoping bar sash adjuster with positive locking device. Standard for out-swinging screen type casements over bottom ventilator sash.



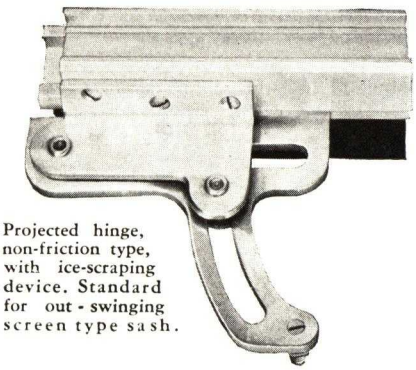
Lever handled multiple cam lock. Standard for out-swinging non-screen or hinged screen type casements.



Projected hinge, adjustable friction type, with ice-scraping device. Standard for out-swinging non-screen or hinged screen type casements.



Projected hinging device. Special. May be substituted, on order, for projected hinges shown at left and right.

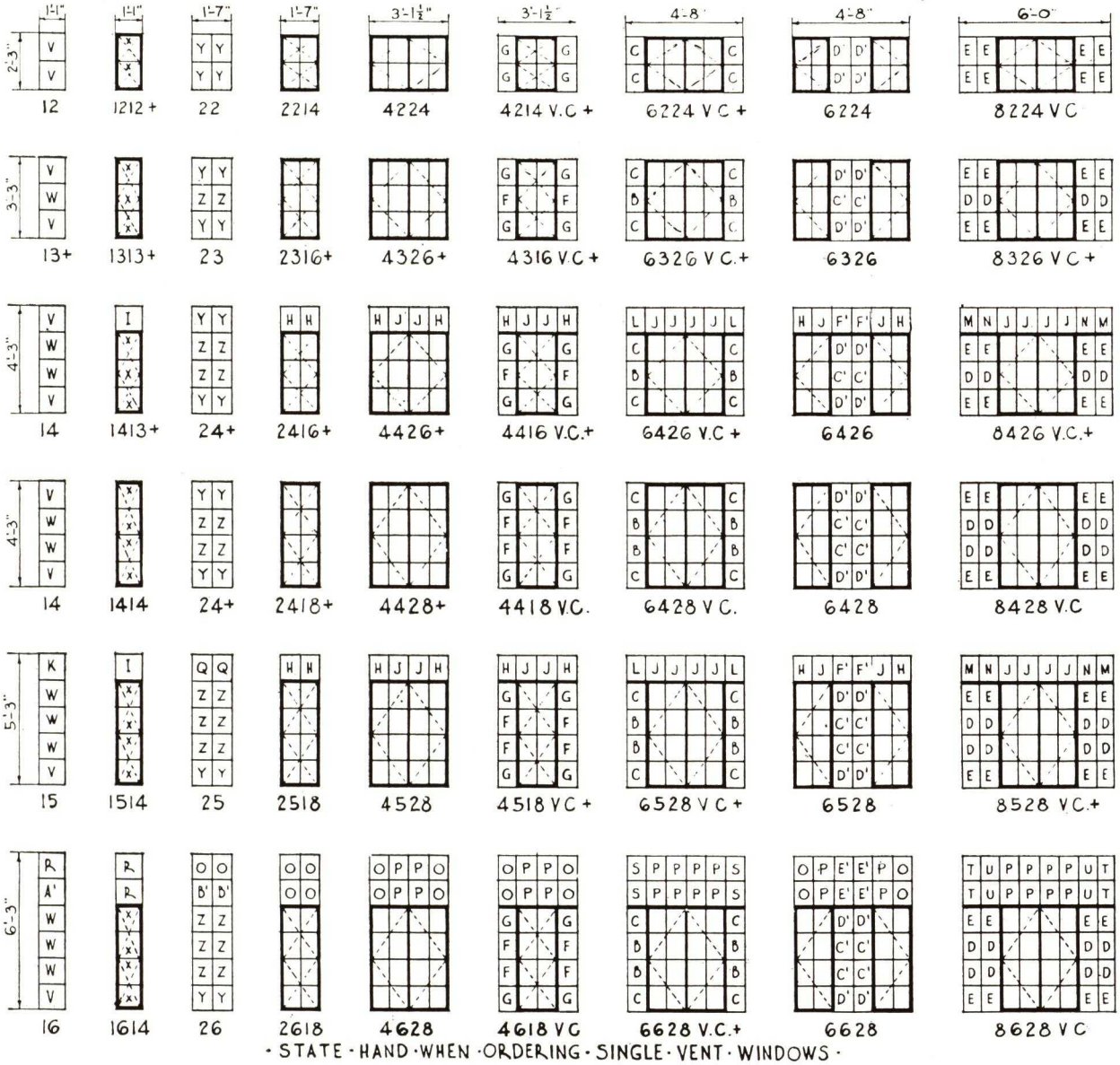


Projected hinge, non-friction type, with ice-scraping device. Standard for out-swinging screen type sash.

WINDOWS • REVOLVING DOORS • TABLETS • ARCHITECTURAL METAL WORK

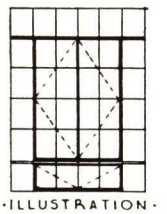
GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

· PERMATITE · CASEMENT · WINDOWS ·
· STANDARD · SIZES · FOR · SERIES · K · & · K1 ·



· STATE · HAND · WHEN · ORDERING · SINGLE · VENT · WINDOWS ·

~NOTE~ DIMENSIONS · GIVEN · ARE · SIZES · OF · OPENINGS ~ · WINDOWS · WITH · SINGLE · VENTS · ARE · MADE · EITHER · RIGHT · OR · LEFT · HAND · VIEWED · FROM · OUTSIDE ~ V.C. VENT · IN · CENTER ~ TYPES · MARKED · THUS + · STOCKED · IN · LONG · ISLAND · CITY · N.Y. · WAREHOUSE ~ SEE · PAGES · 12 to 15. · FOR · SECTIONAL · DETAILS ~ USE · ONLY · D.S. · AA · SHEET · · GLASS · OR · 1/8" · POLISHED · PLATE · GLASS · SET · IN · · BEST · QUALITY · METAL · GLAZING · COMPOUND ~

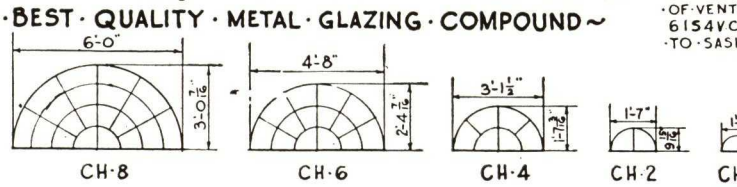


· ILLUSTRATION · · OF · VENTILATOR · 6154 V.C · APPLIED · · TO · SASH · 6528 V.C ·

· GLASS · SIZES ·

A	7 7/8 × 11 13/16	L	8 3/4 × 11 1/8	W	11 1/2 × 11 13/16
B	8 7/16 × 11 13/16	M	8 1/16 × 11 1/8	X	10 1/16 × 11 13/16
C	8 7/16 × 12 9/16	N	8 5/16 × 11 1/8	Y	8 5/8 × 12 5/8
D	8 1/16 × 11 13/16	O	8 5/8 × 11 7/16	Z	8 5/8 × 11 13/16
E	8 1/16 × 12 9/16	P	8 7/8 × 11 7/16	A'	11 1/2 × 12 3/4
F	8 5/16 × 11 13/16	Q	8 5/8 × 12 1/2	B'	8 5/8 × 12 3/4
G	8 5/16 × 12 9/16	R	11 1/2 × 11 7/16	C'	8 11/16 × 11 13/16
H	8 5/8 × 11 1/8	S	8 3/4 × 11 7/16	D'	8 11/16 × 12 9/16
I	11 1/2 × 11 1/8	T	8 1/16 × 11 7/16	E'	9 × 11 7/16
J	8 1/8 × 11 1/8	U	8 5/16 × 11 7/16	F'	9 × 11 1/8
K	11 1/2 × 12 1/2	V	11 1/2 × 12 5/8		

· LIGHTS · NOT · LETTERED · ARE · SIZE "A" ·

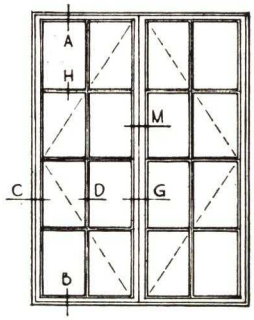


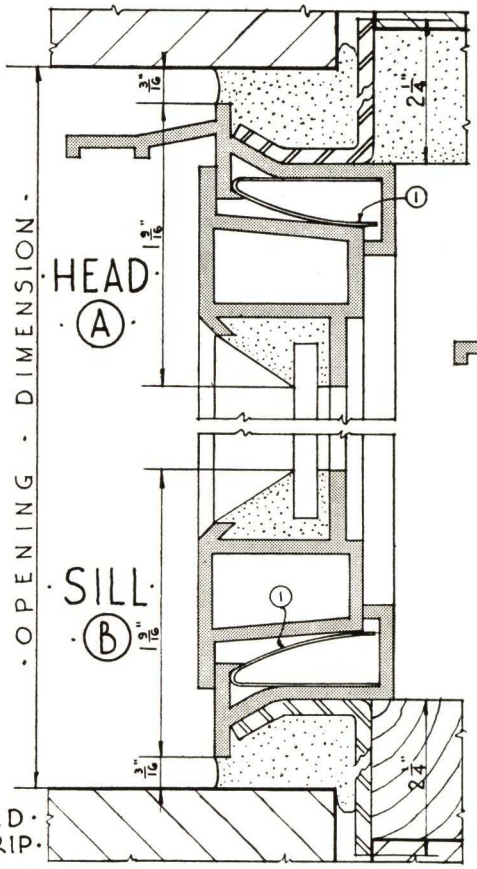
~ MUNTINS · MAY · BE · OMITTED · OR · ARRANGED · AS · PREFERRED · ON · SPECIAL · ORDER ~

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

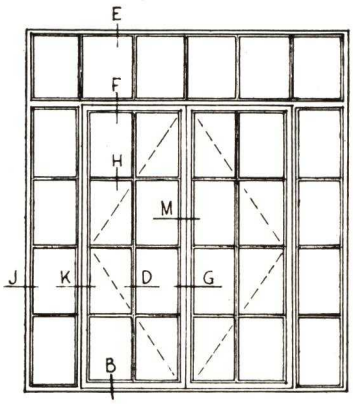
GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

DETAILS
PERMATITE · SERIES · K1 · ALUMINUM · CASEMENT · WINDOW ·



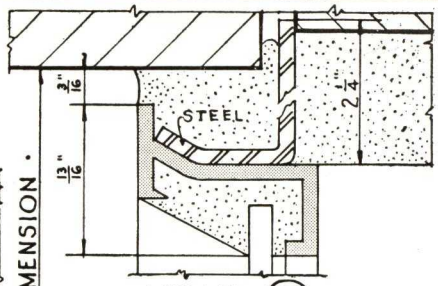


·HEAD· (A)

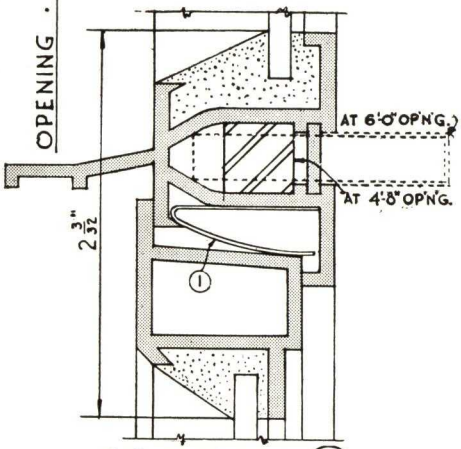


·SILL· (B)

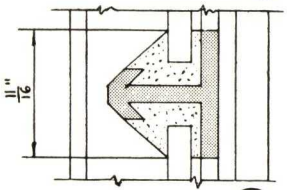
·①·PATENTED·
·WEATHER-STRIP·



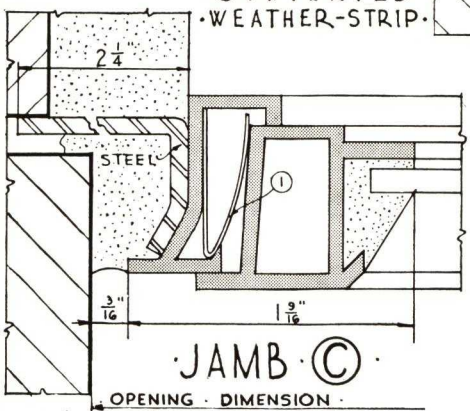
·HEAD· (E)



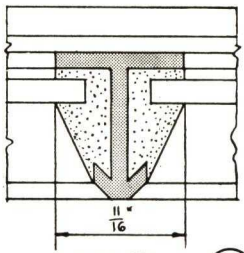
·TRANSOM· (F)



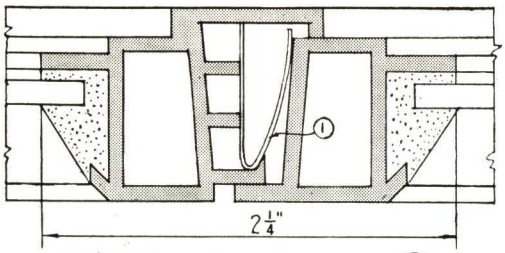
MUNTIN· (H)



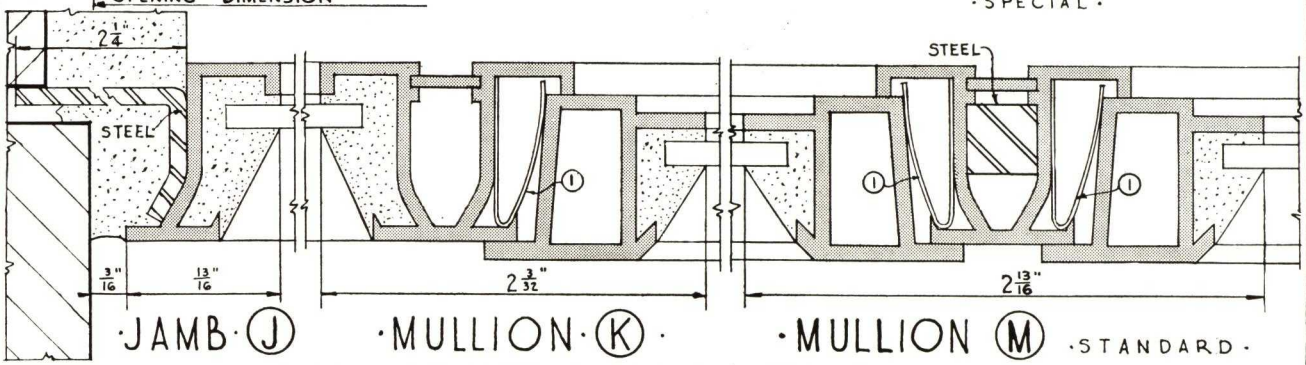
·JAMB· (C)



·MUNTIN· (D)



·MEETING··STILE· (G)
·SPECIAL·



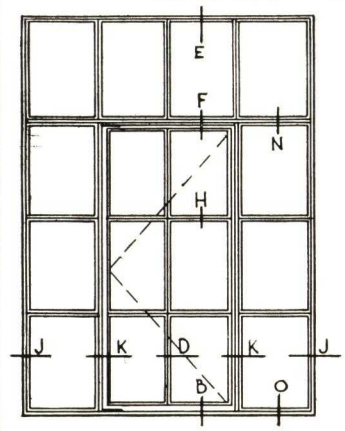
·JAMB· (J) ·MULLION· (K) ·MULLION (M) ·STANDARD·

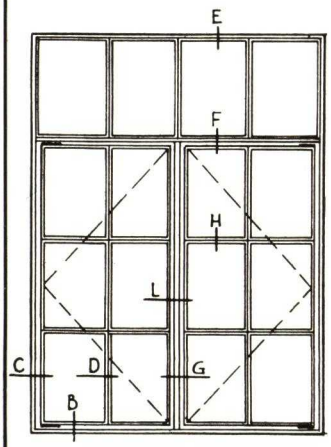
NOTE: Construction of Permatite Series K Bronze Casement Window similar to above.

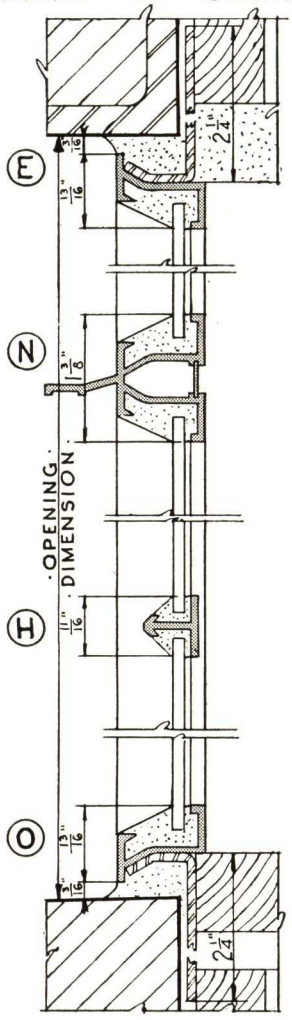
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

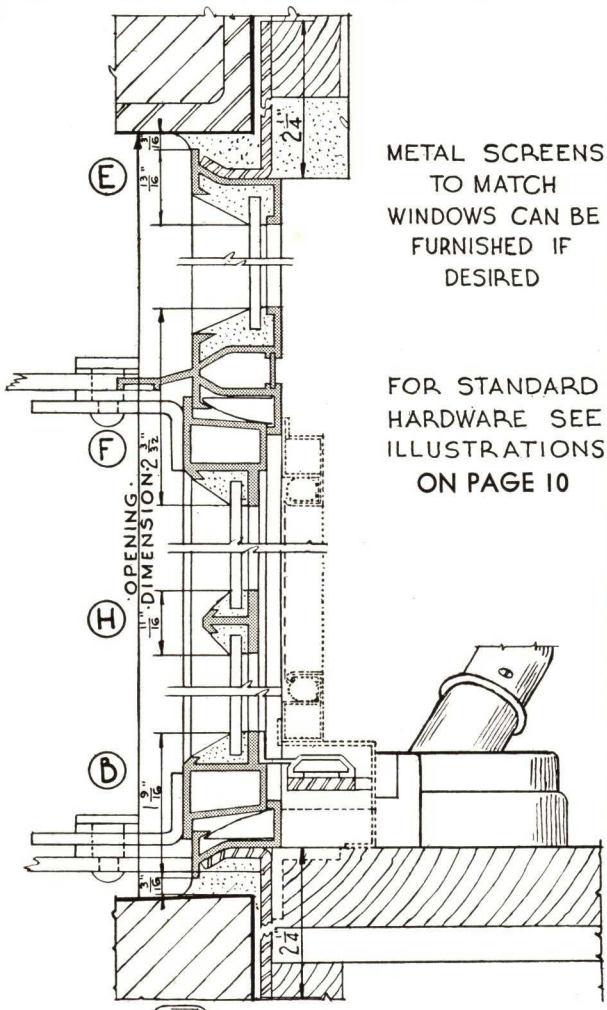
GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

· SCALE · & · HALF · FULL · SIZE · DETAILS ·
· PERMATITE · CASEMENT · WINDOW ·
· SHOWING · APPLICATION · OF · STANDARD · SCREEN · AND · HARDWARE ·



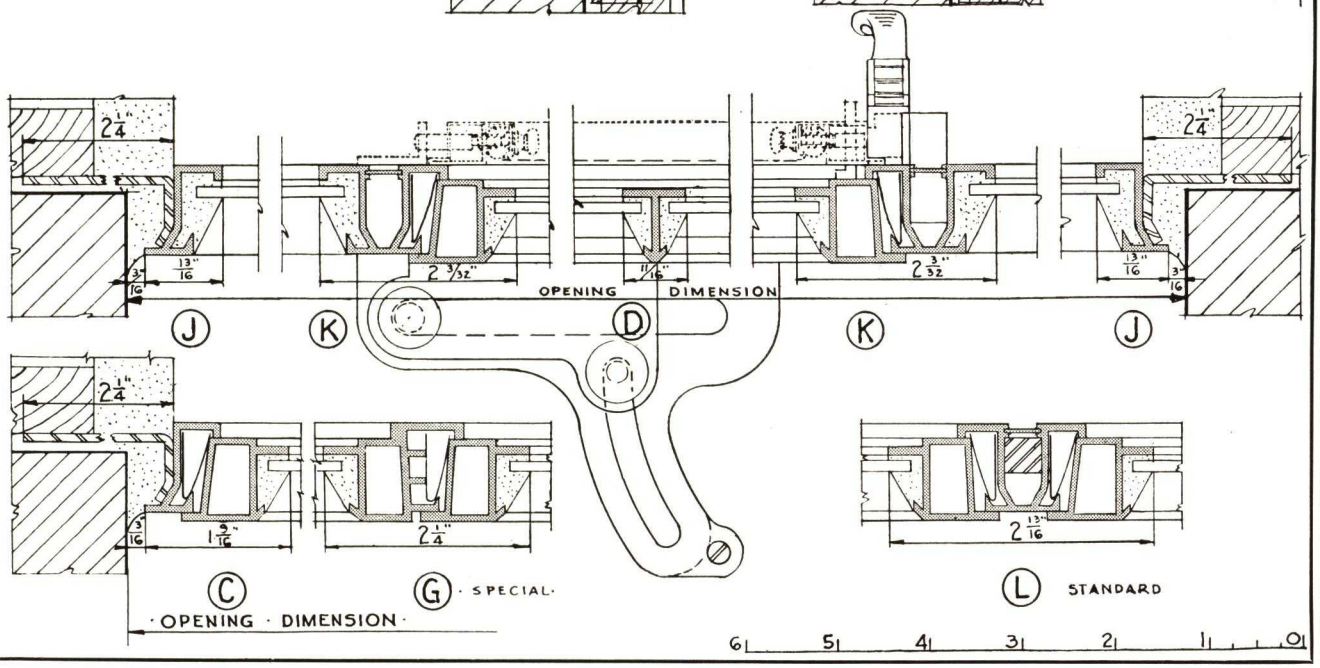






METAL SCREENS TO MATCH WINDOWS CAN BE FURNISHED IF DESIRED

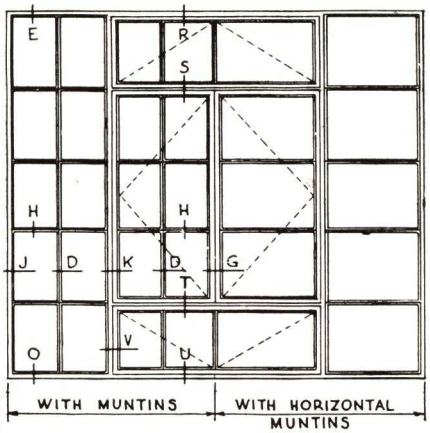
FOR STANDARD HARDWARE SEE ILLUSTRATIONS ON PAGE 10

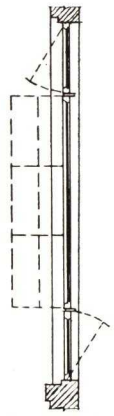


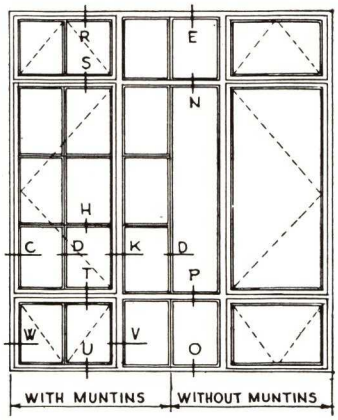
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

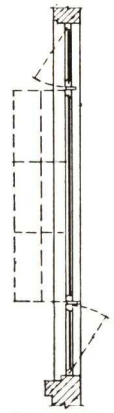
GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

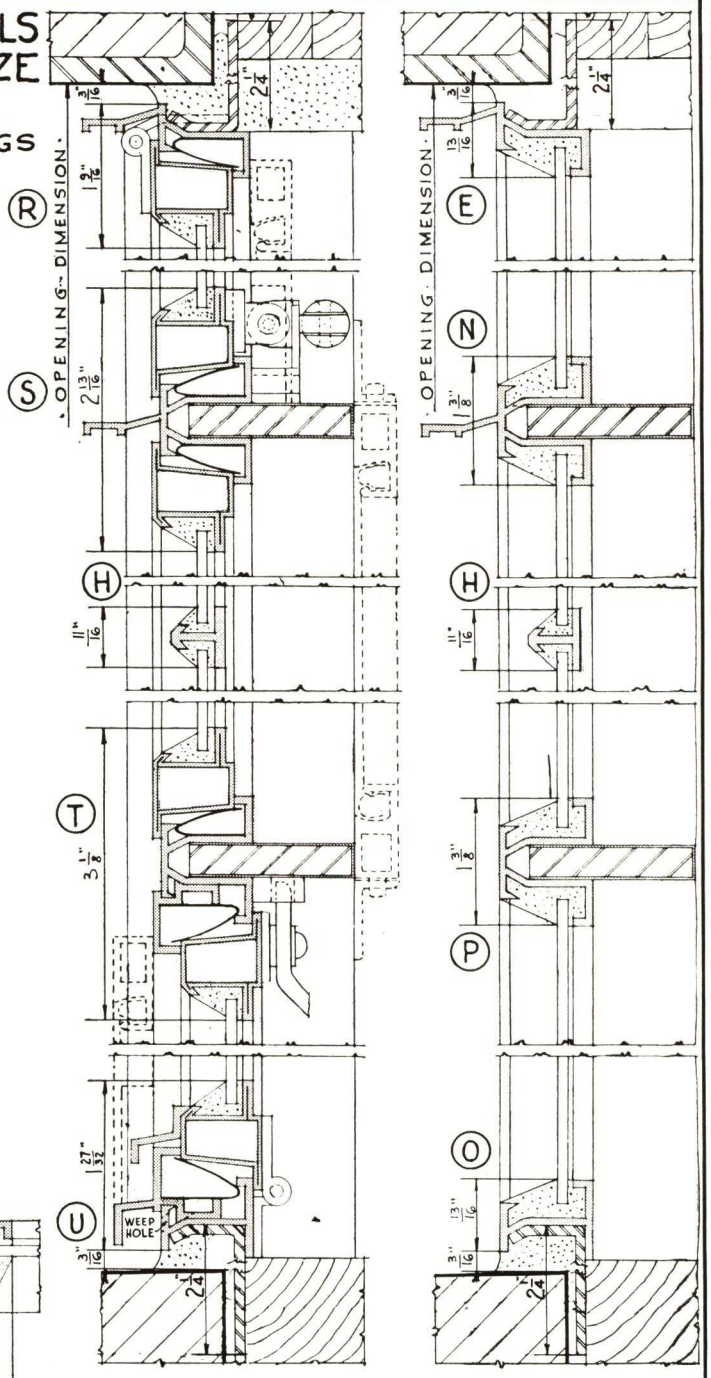
SCALE · & · HALF · FULL · SIZE · DETAILS
PERMATITE · SERIES · K4 · BRONZE
· CASEMENT · WINDOW ·
FOR APARTMENTS · AND · PUBLIC · BUILDINGS

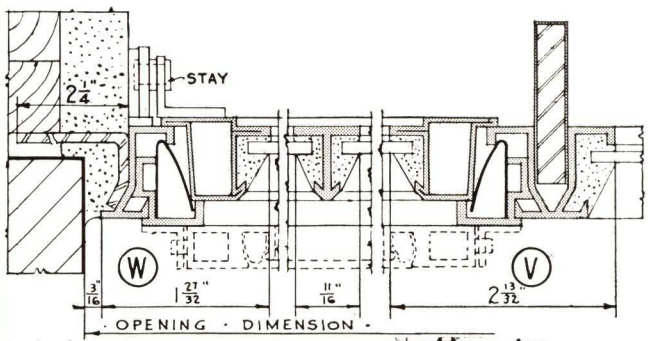


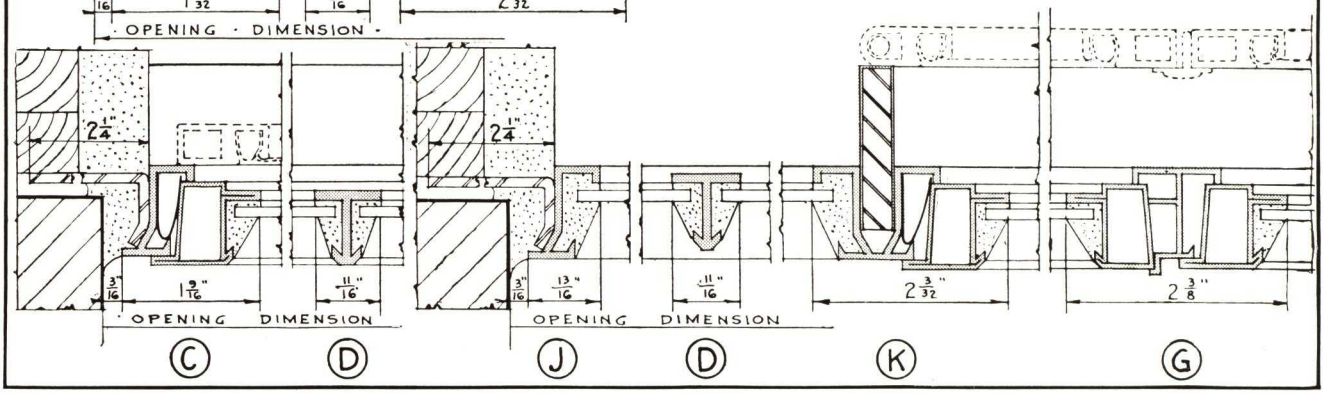










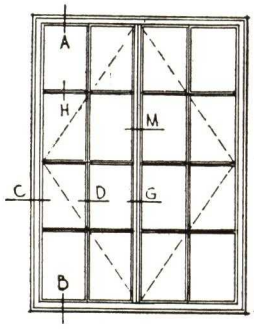


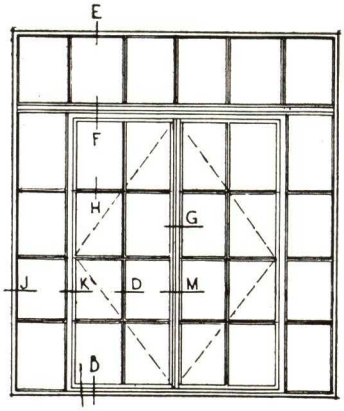
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

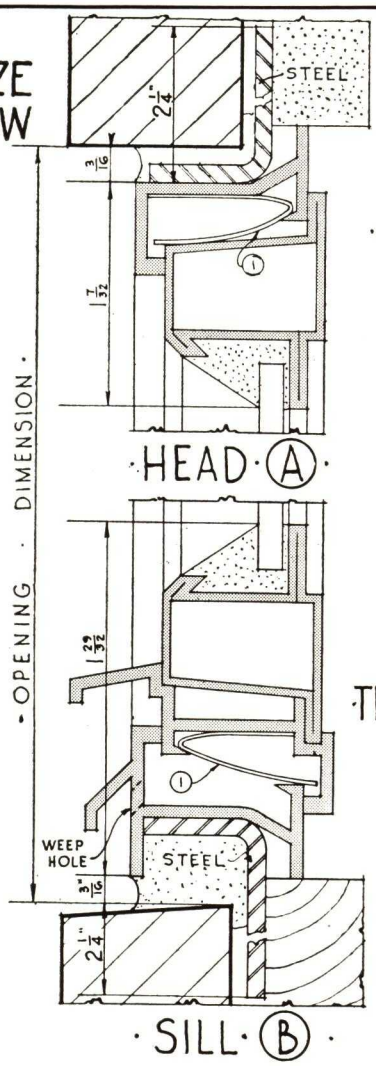
GENERAL BRONZE CORPORATION
34-19 Tenth Street · Long Island City, N.Y.

DETAILS
PERMATITE · SERIES · K3 · BRONZE IN · SWINGING · CASEMENT · WINDOW

· NOT · STOCKED ·

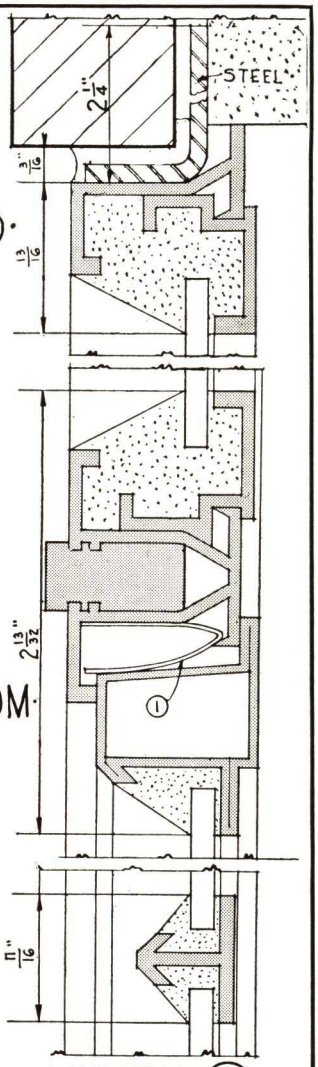






· HEAD · (A) ·

· SILL · (B) ·

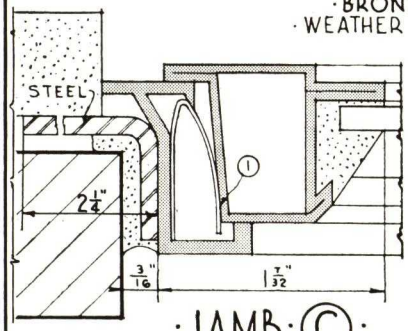


· HEAD · (E) ·

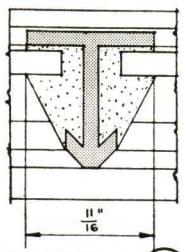
· TRANSOM · (F) ·

· MUNTIN · (H) ·

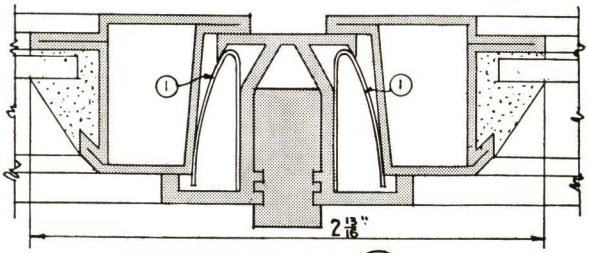
· ① PATENTED · BRONZE · WEATHER · STRIP ·



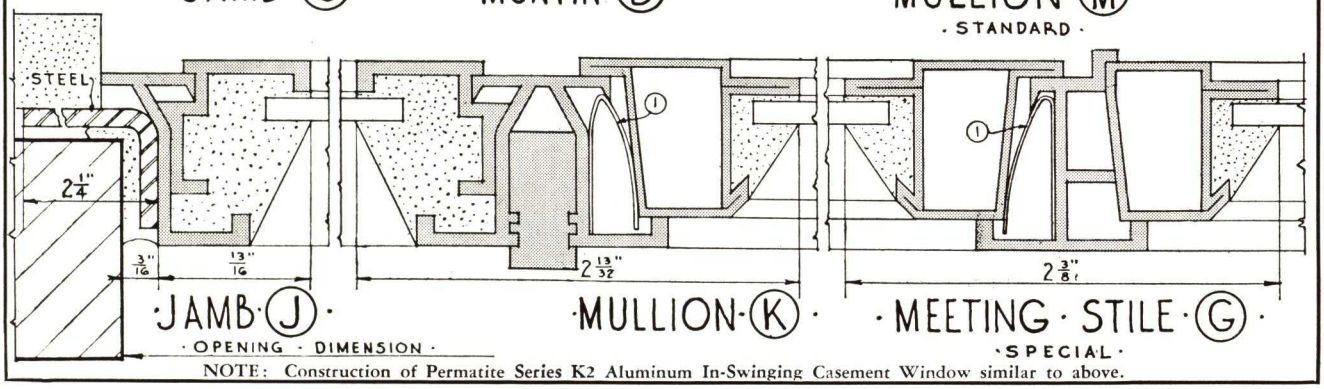
· JAMB · (C) ·



· MUNTIN · (D) ·



· MULLION · (M) ·
· STANDARD ·



· JAMB · (J) ·
· OPENING · DIMENSION ·

· MULLION · (K) ·

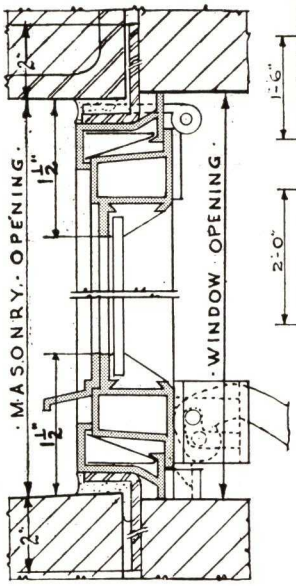
· MEETING · STILE · (G) ·
· SPECIAL ·

NOTE: Construction of Permatite Series K2 Aluminum In-Swinging Casement Window similar to above.

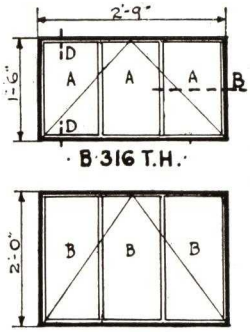
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

· SCALE · & · HALF · FULL · SIZE · DETAILS ·
PERMATITE · BASEMENT & UTILITY · ALUMINUM · CASEMENT · WINDOWS
· CAN · ALSO · BE · FURNISHED · IN · BRONZE ·

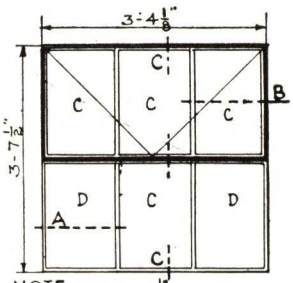


· SECTION D-D ·

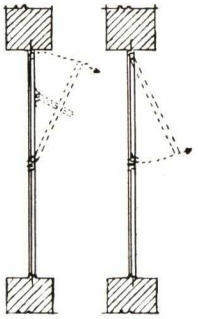


· B 316 T.H. ·

· B 320 T.H. ·



· NOTE · DEDUCT · ⅛ · EACH · WAY · FOR · MASONRY · OPENING ·

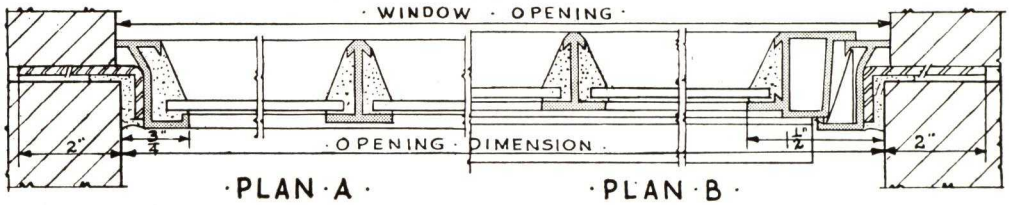


· 3213 B.H. · 3213 T.H. ·

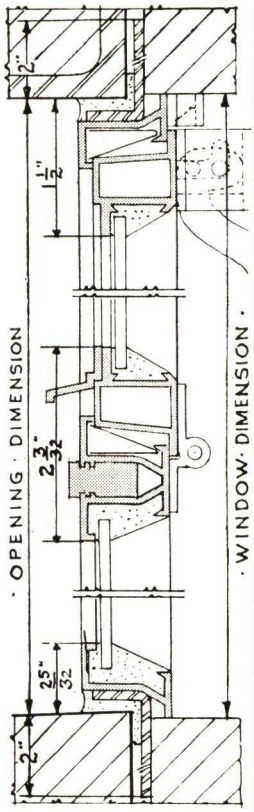
The line of utility windows hereon illustrated, conforming to the requirements of basement, garage, attic, play-room, etc., enables the Architect or Builder to provide for PERMATITE Windows throughout the house, in either Bronze or Aluminum.

The sections of frame and sash and the construction are similar in all respects, to that of other PERMATITE Windows, as the large scale details clearly show. Also, utility windows are equipped with continuous airsealing, non-corrosive metal weatherstrips. All hinges, stays and locks are of solid bronze, match the windows, and are smooth, noiseless and efficient in operation.

· GLASS · SIZES ·
- · A · 9 5/16 × 15½ ·
- · B · 9 5/16 × 21½ ·
- · C · 12 5/16 × 20" ·
- · D · 13" × 20" ·
- · E · 7¼ × 10½ ·
- · F · 8⅛ × 10½ ·
- · G · 8 9/16 × 12 9/16 ·
- · H · 8 1/16 × 12 9/16 ·

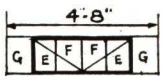


· PLAN · A · · PLAN · B ·

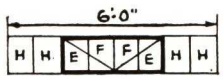


· SECTION · C-C ·

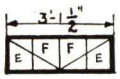
BOTTOM VENTILATORS



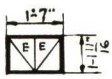
6154 V.C.



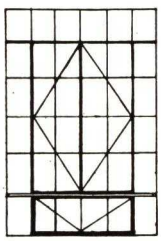
8154 V.C.



4154



2152

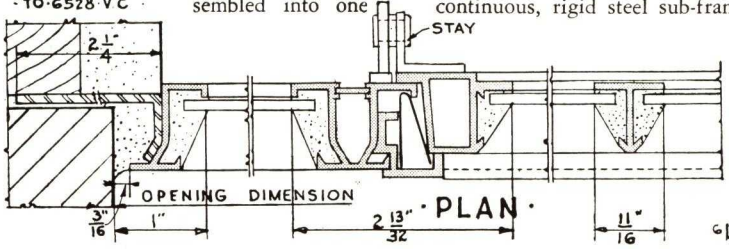


· ILLUSTRATION OF · VENTILATOR · 6154 V.C. APPLIED · TO G528 V.C ·

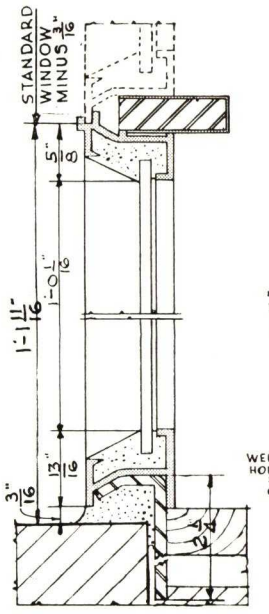
The bottom-hinged, in-swinging sash and frame here illustrated may be used, if desired, as a separate window; but it is designed, primarily, to combine with our PERMATITE Casement Windows to form a bottom, hopper type ventilator, as is indicated; and may be obtained in combination with any of our stock or special casements.

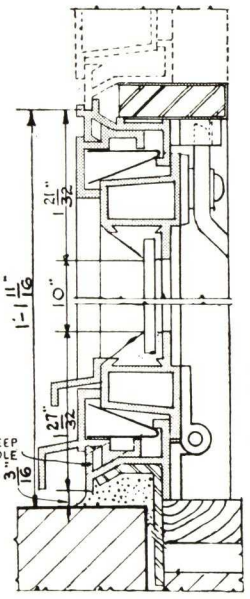
Sash and frame members exactly match in section those for stock casements, and are made of the same non-corrosive metal. Patented weatherstripping throughout is also non-corrosive. Heavy hardware, consisting of stays, hinges and cam-lock, correspond in material, color and finish with the balance of the hardware.

Each window ordered with bottom ventilator is assembled into one continuous, rigid steel sub-frame.



· PLAN ·





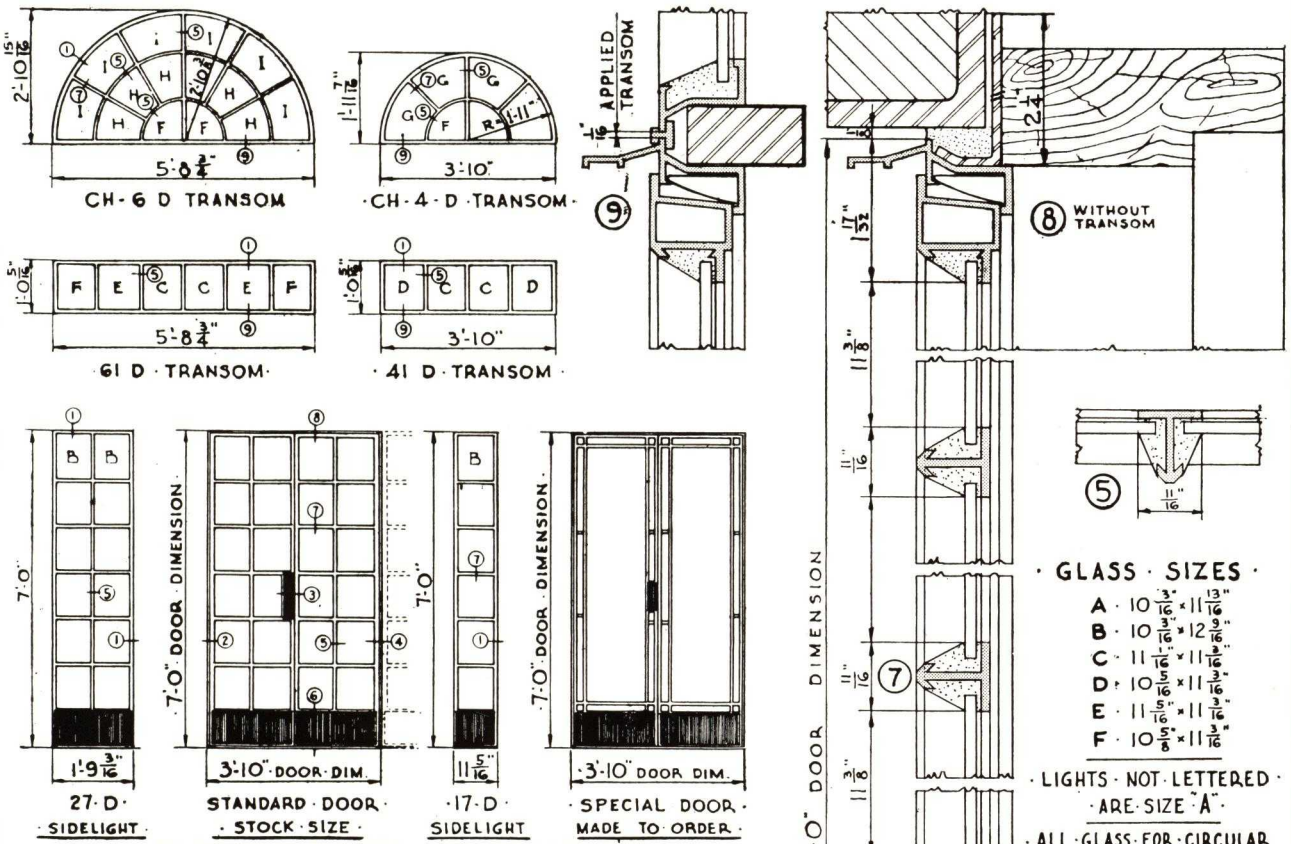
· SECTION · AT · SIDELIGHTS · & · THRU · VENT

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

· SCALE · & · HALF · FULL · SIZE · DETAILS · PERMATITE · DOORS, · TRANSOMS, · & · SIDELIGHTS · IN · ALUMINUM

· CAN · ALSO · BE · FURNISHED · IN · BRONZE ·



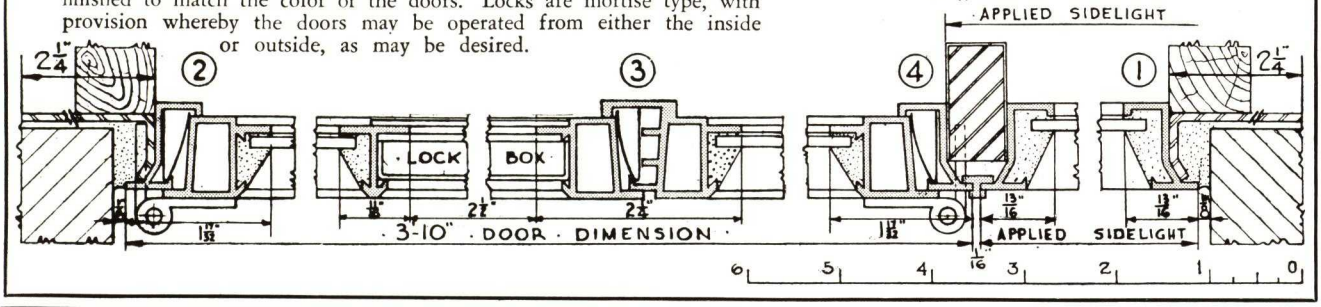
CASEMENT DOORS AND TRANSOMS

Consistent with our plan that PERMATITE design and construction shall cover the full range of reasonable variety in building requirements, we offer PERMATITE Casement Doors and Transoms. The illustrations on this page indicate a few of the many combinations obtainable.

Materials, construction and workmanship are the same as in the regular stock windows: door stiles and rails of seamless tubing; frames, mullions, etc., of extruded metal; and built-in resilient weatherstripping again combine to create an air-tight and dust-proof installation. At the extruded metal saddle, the weatherstripping, although attached to the door to prevent damage from traffic, is so arranged that the air sealed contacts between door and frame are continued across the sill; completely eliminating that all-too-frequent trouble during violent rain storms, water blowing through beneath the door.

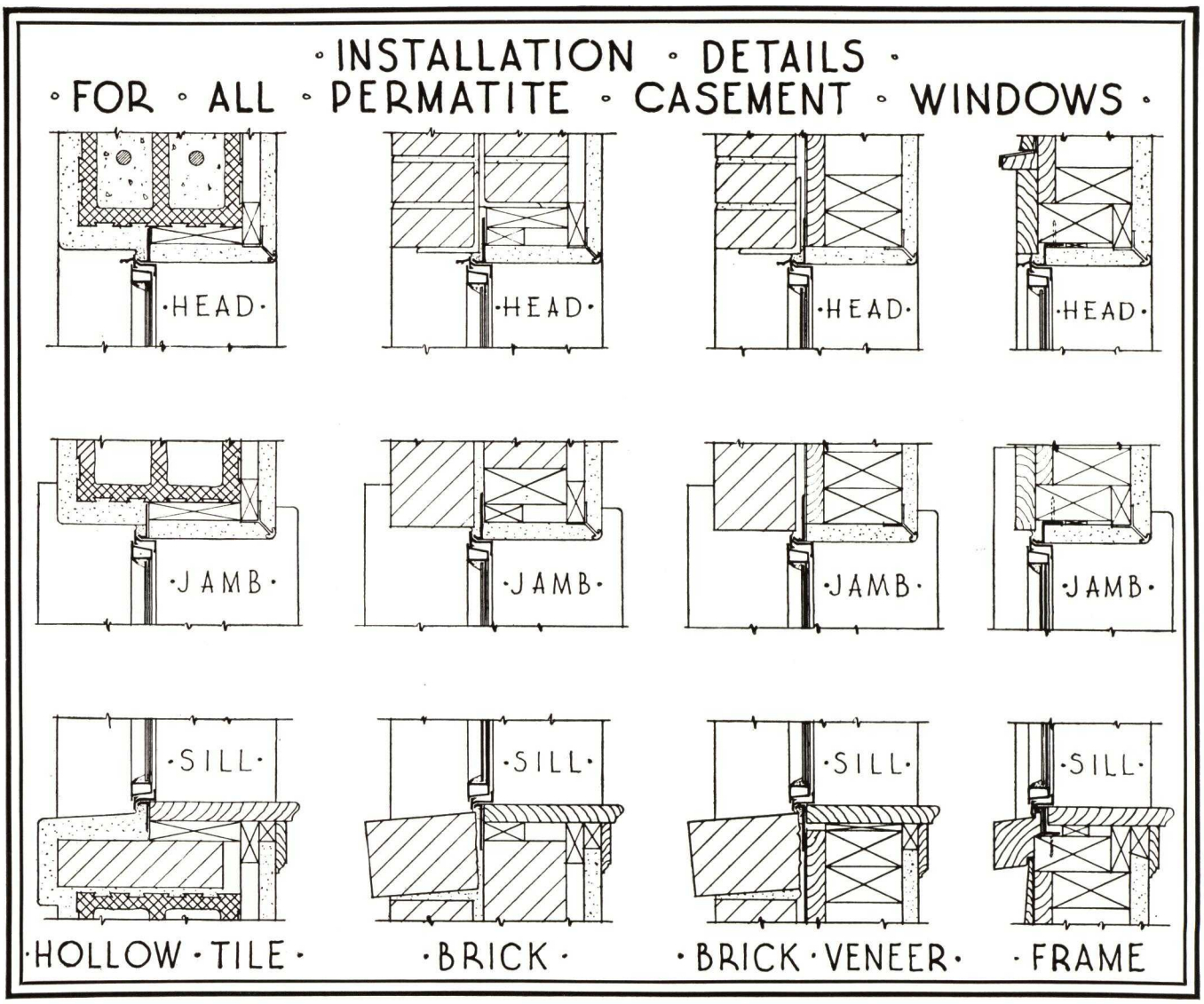
Square and circle-head transoms and side-lights are also of extruded material; and may be combined with the doors in any arrangement desired, either by means of reinforced mullions and transom bars, as illustrated, or with wood surrounds; a flexibility every Architect will appreciate. These units are especially suitable for sun porches, solariums, etc.

Hardware is of special design, sturdy construction and solid bronze, finished to match the color of the doors. Locks are mortise type, with provision whereby the doors may be operated from either the inside or outside, as may be desired.



WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.



STANDARD SPECIFICATIONS FOR PERMATITE SERIES "K" CASEMENT WINDOWS

1. **Scope of Work:** This contractor shall furnish PERMATITE Series "K" bronze (or aluminum) Casement Windows, including all hardware and steel sub-frames, as manufactured by General Bronze Corporation, Long Island City, New York, for all window openings shown on Architect's drawings for.....

.....

(Here insert extent of windows which are to be bronze or aluminum.)

18

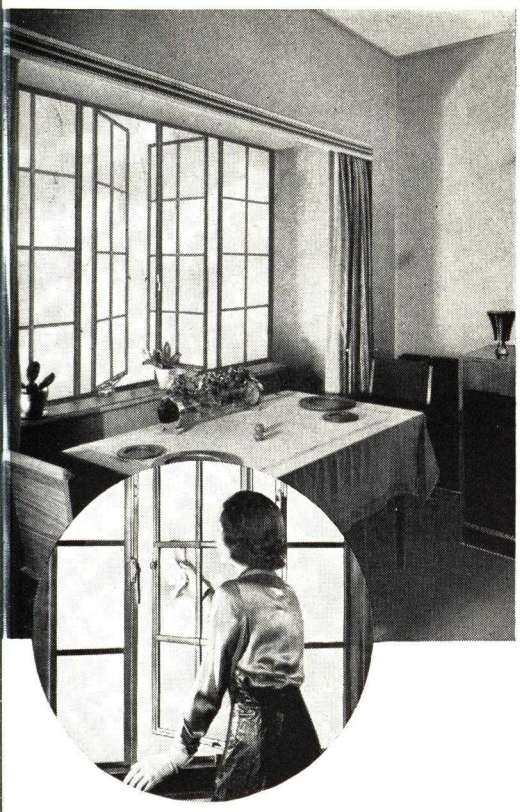
2. **Materials:** Except as is hereinafter specified, all parts of window frames and sash shall be of solid bronze (or aluminum). All frame members shall be extruded bronze (or aluminum) not less than #12 B & S gauge. Stiles and rails of all sash shall be of seamless bronze tubing of #17 B & S gauge (or if aluminum of #12 B & S gauge).

Finished members of sash and frames shall be true to dies and all moulded sections shall have clean sharp arrises, free from twists, bends or other imperfections. After extrusion, each piece shall be drawn through forming dies to insure absolute straightness and uniform thickness throughout its length.

Weatherstripping shall be of hard resilient special metal alloy of the required thickness to resist movement from the pressure exerted by wind at a velocity of 60 miles per hour.

Each window shall be provided with steel sub-frame, formed into special angle shape from #12 U. S. gauge blue annealed sheet; welded at corners into a continuous frame.

3. **Design, Construction and Workmanship:** Jamb, head and sill members of frames shall be designed to provide integrally formed pockets to receive and retain the metal weatherstripping in such manner that no raw edge of same will be exposed. Weatherstripping at jambs, sill



and head shall be so formed and positioned as to provide continuous lines of flexible but positively sealing contact between frame and closed sash without in any way binding the sash when operated. A similar weatherstrip shall be housed in the meeting stile of the sash to also form continuous contact. Weatherstrips and their housings shall be so formed that strips may be readily removed or replaced without dismantling the window.

Stiles and rails of sash shall be seamless tubing, designed with overlapping flanges to effect face contents with the frame members and so formed as to provide a continuous wedge shaped groove all around the glass opening, to effectively key the glazing compound in its bed and permanently retain it in place. The design of the sash and their engagement with the frames shall be such as to prevent any rattling.

The free leg of the steel angle sub-frames shall be extended to form a continuous fin or weather stop for the entire extent of the window jambs and head. Provide holes at proper spacing in this leg to receive built-in anchors or bolts to attach the windows to the building structure.

All joints, copes and miters shall be precision machined and carefully fitted to create tight, hairline joints. All holes, slots, etc., shall be accurately drilled to template and holes for machine screws carefully tapped. All screws, bolts and rivets shall be made from special alloys to provide maximum strength at fastenings and where exposed shall match window material in color.

All material shall be carefully inspected before assembly to insure same has been accurately and thoroughly prepared. All surfaces of sub-frames shall be given a heavy coat of bitumastic paint before attaching non-ferrous frame members to same. Jambs, heads and sills are to be riveted to corresponding steel sub-frames under pressure, then assembled into complete frame units by solidly welding each corner. After welding, all corners shall be filled with leak proof compound under 100 lb. air pressure.

Stiles and rails of sash shall be assembled by welding or sweating together at corners which shall first be heavily reinforced. Ample reinforcements shall be built into the sash to receive the hardware.

Removable members and hardware shall be secured by special head machine screws of proper size and approved spacings. All other fastenings of exposed members shall be fully concealed.

(NOTE: If required, the following should also be included).

Provide muntins, arranged as shown, neatly and accurately fitted and assembled at the shop. Intersections of muntins and between muntins and sash members shall be fully lapped to insure firm engagement.

Provide, where shown, mullions between window units amply and continuously reinforced with steel to insure rigidity. All contacts between mullions and steel reinforcements shall be fully insulated by an extra heavy coat of bitumastic paint, applied before mullion is assembled. Mullion jambs shall correspond in every particular with design of window jambs as hereinbefore specified.

4. **Hardware:** Each casement window sash shall be equipped with the following hardware all of which shall be of solid bronze except where otherwise noted herein:

   For non-screen type; each sash shall have one pair of projected adjustable friction type hinges and one three point locking device operated by lever handle.

   For screen type; each sash shall have one pair projected non-friction type hinges, one rack and pinion lock operated by lever handle and one worm and gear type sash operator.

   NOTE: For aluminum windows all bronze hardware shall be dull chrome plated to match aluminum, except worm and gear sash operators for aluminum windows shall be of special white metal alloy, die cast, with solid bronze sleeve on handle.

5. **Shop Drawings:** Before proceeding with the work, this contractor shall prepare and submit, for Architect's approval, complete shop drawings showing all parts of the frames and sash and fully dimensioned. Shop drawings shall be submitted in triplicate and no work shall be proceeded with until Architect's approval has been received.

6. **Infiltration Tests:** All casement windows shall be so designed and constructed that, when subjected to an air pressure equivalent to that exerted by wind at a velocity of twenty-five (25) miles per hour, the infiltration of air through the window shall not exceed one-fourth (¼) of one cubic foot per minute per linear foot of sash perimeter. One window will be selected at random by the Architect and subjected to this infiltration test. If the first sample shall fail to meet the test, a second will be similarly selected and tested. If it also fails, such failure shall be sufficient grounds for the Architect, in his discretion, to reject all the windows made, and require new windows to be furnished which will fulfill all the above requirements. All infiltration tests shall be at the expense of this contractor.

   The Architect may, but shall not be required to, waive infiltration tests on windows, provided the manufacturer thereof can furnish certified reports of tests, made by a testing laboratory approved by the Federal Government, showing that windows made by the manufacturer of the same type and design as are being furnished on this project have met or exceeded the requirements hereinabove specified.

7. **Protection:** Before shipment, this contractor shall apply approved protective solution to all exposed surfaces of the frame and sash in order to protect the metal from plaster, etc. The General Contractor shall be required to provide proper protection to the windows to prevent damage during the course of operations and shall remove the same before final inspection and cleaning down of the windows is started.

   FINAL: Complete instructions will be mailed at the time of shipment of windows for the proper setting, caulking, grouting, glazing, cleaning and adjustment of the windows. **Note that ⅛" thick glass should be used and same should be set with a good grade of metal glazing putty.** A sufficient quantity of special glazing clips will be furnished with the windows, without charge.

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION

34-19 Tenth Street Long Island City, N.Y.

POLACHEK WINDOWS

DOUBLE-HUNG AND CASEMENT

(PATENTED)

Bronze or Aluminum

FOR HEAVY DUTY REQUIRED IN MONUMENTAL BUILDINGS

New York Life Insurance Co.
New York, N. Y.
Cass Gilbert, Architect

Special Features ~

Rigid construction and exact alignment which prevent binding on the vertical movement, and lever type lifts to break contact at the sill.
A concealed device, built into the side stiles and instantly adjustable, prevents all lateral movement of sash when in any position.

Weatherstripping is formed through steel dies as an integral part of main sash and frame members and to the same thickness. The University of Wisconsin tests prove the effectiveness of this sealing. Immovable from its initial position, too heavy to bend, too thick to wear out, this weatherstripping can never lose its effectiveness.

Careful designing of self-reinforced members has reduced face widths to the minimum compatible with rigid construction requirements.

Pulleys and chain are readily replaceable. Sash and frame, being of extra heavy non-ferrous metal, and so fitted and assembled that no joint can ever open or leak, will outlast the useful life of the building without repairs, replacements or painting.

BRIEF DESCRIPTION OF THE POLACHEK PATENTED DOUBLE-HUNG AND CASEMENT WINDOWS

The POLACHEK Patented Double-Hung Window, owned and manufactured exclusively by General Bronze Corporation, is air-tight, weatherproof, rattle-proof, non-rusting, permanent and quiet in operation. Salient patent features are a series of accurately-matched integral wedge-shaped tongues and grooves, effecting positive multiple contacts throughout the perimeter of both sashes when closed, and adjustable devices concealed within the sash construction which effectively prevent sash rattling while in any position.

The design of the window is simple, dignified and architecturally correct. Frame and Sash are so designed as to combine sufficient strength with the maximum obtainable of daylight opening. Sash provided for glazing from inside. Construction is rigid and permanent. Mitres, copes, tenons, and all other inter-sections are precision machined; members are carefully fitted and assembled, and each unit thoroughly inspected before assembly. Workmanship is assured through employment of artisans trained in handling fine ornamental bronze work.

STANDARD EQUIPMENT: General Bronze Hardware is standard for all casements. Attractive, sturdy and efficient, it harmonizes perfectly with this most attractive type of window. Note particularly the absence of extreme projections and the general compactness of operating and engaging parts, not obtainable in other makes.

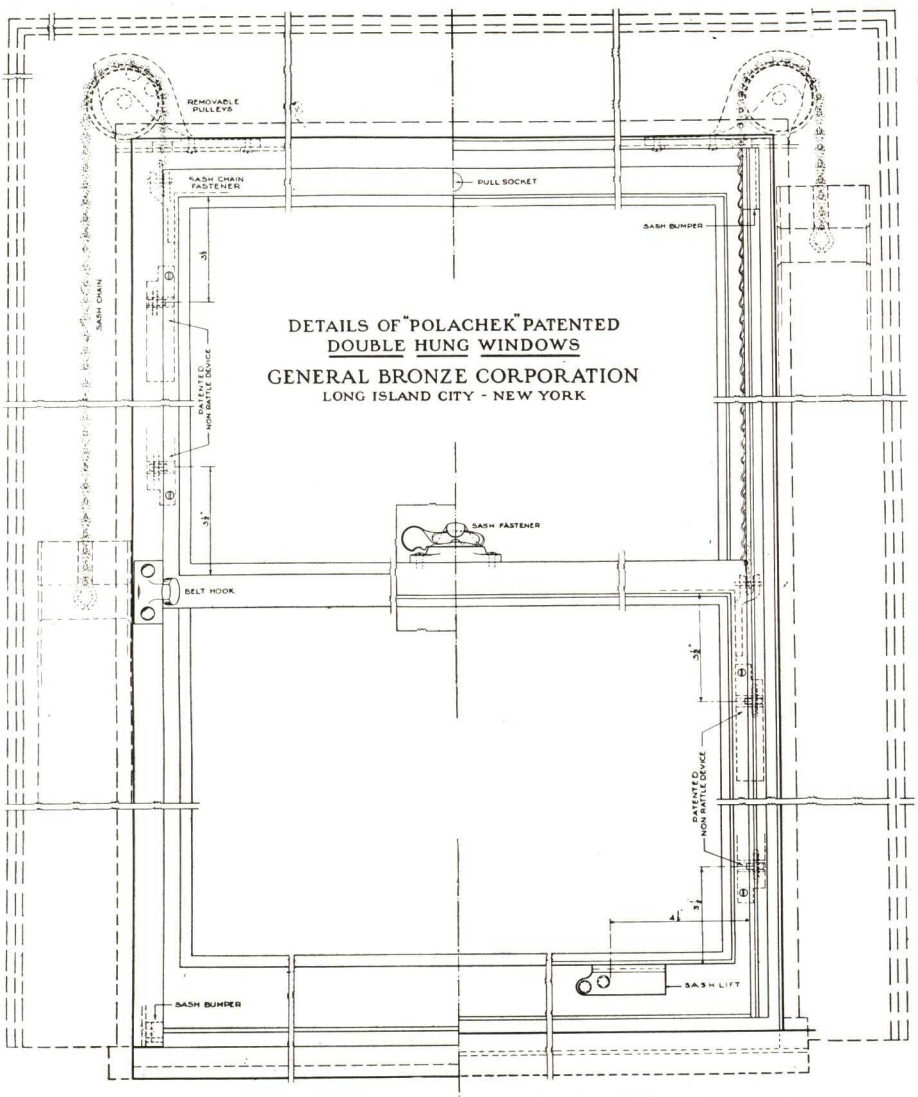
STANDARD AND SPECIAL EXTRA EQUIPMENT for casement windows is the same as noted for Double Hung Windows.

Complete architectural specifications and details will be supplied on request.

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

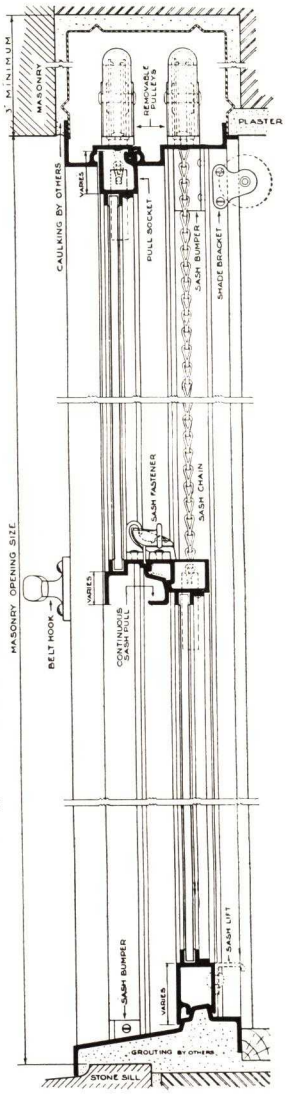
GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N. Y.

SCALE DETAIL OF POLACHEK DOUBLE-HUNG WINDOW

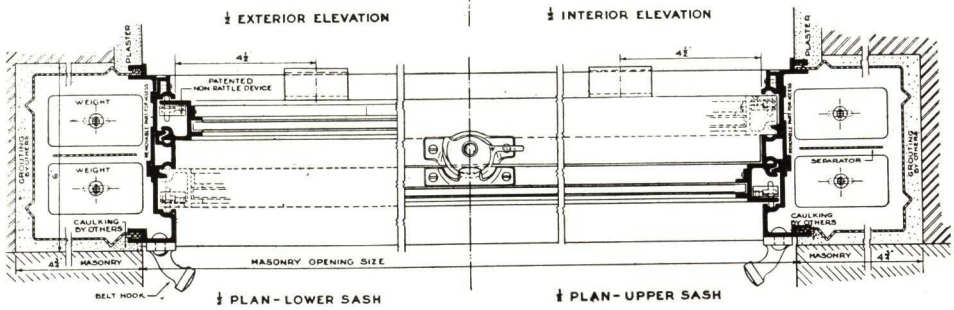


½ EXTERIOR ELEVATION

½ INTERIOR ELEVATION



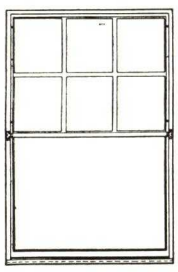
SECTION



½ PLAN - LOWER SASH

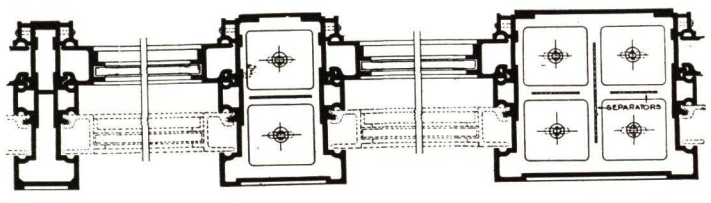
½ PLAN - UPPER SASH

MUNTINS



EXTERIOR ELEVATION OF WINDOW WITH MUNTINS

INTERIOR ELEVATION OF WINDOW TWO LIGHT



MULLION

2 WEIGHT MULLION

4 WEIGHT MULLION

12 9 6 3 0

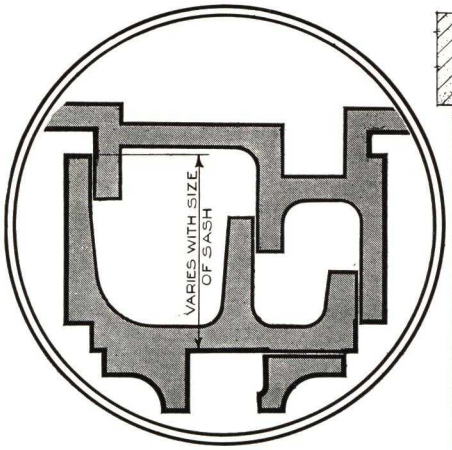
WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION

34-19 Tenth Street Long Island City, N.Y.

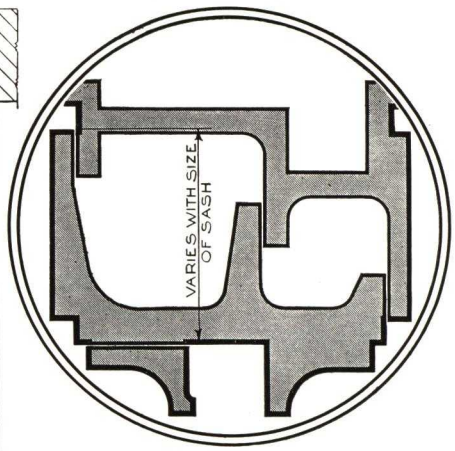
DETAILS OF TYPES "A" POLACHEK CASEMENT WINDOWS

F.S. DETAIL

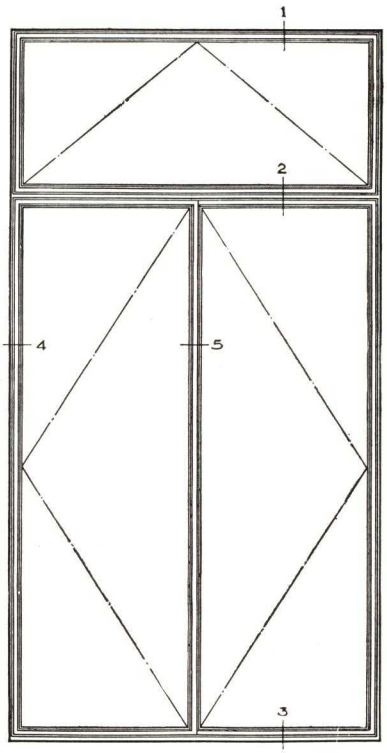


TYPE "A1"

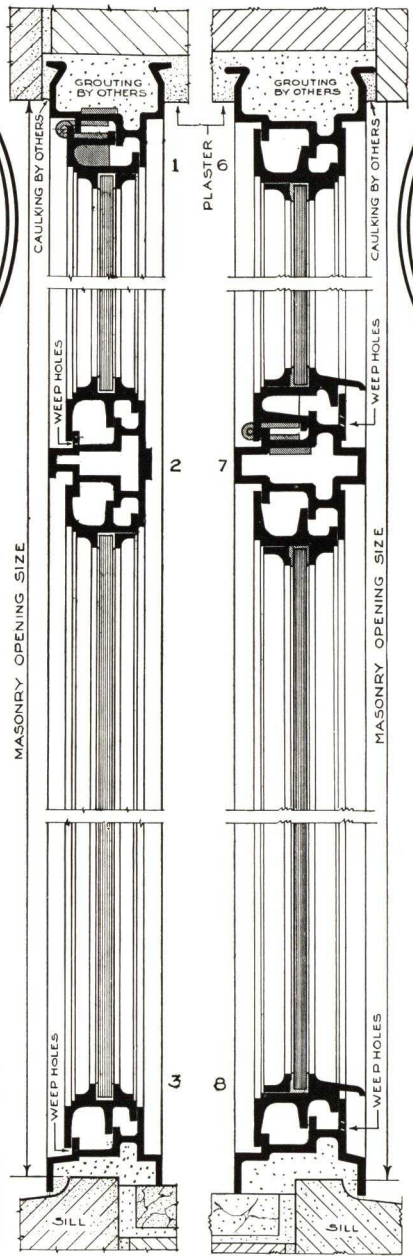
F.S. DETAIL



TYPE "A2"

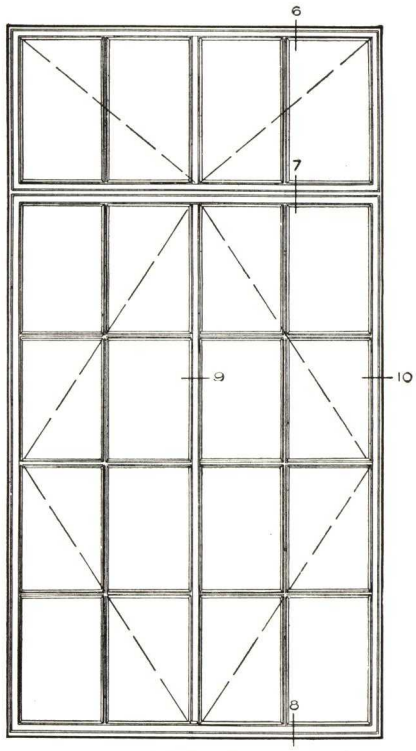


TYPE A
3 POINT CONTACT OPEN SECTION
CASEMENT WINDOW

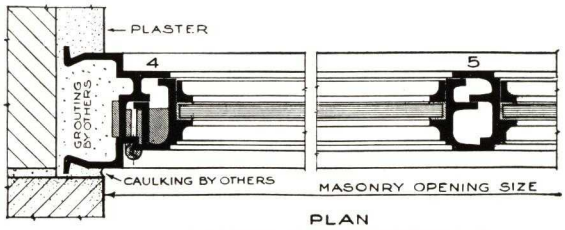


SECTION

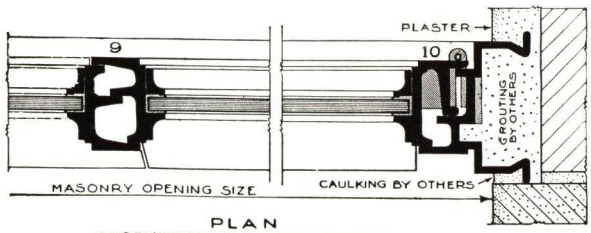
SECTION



TYPE A2
3 POINT CONTACT OPEN SECTION
CASEMENT WINDOW



PLAN
CASEMENT WINDOW SWINGING OUT.



PLAN
CASEMENT WINDOW SWINGING IN

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION
34-19 Tenth Street Long Island City, N.Y.

PARTIAL LIST OF INSTALLATIONS OF BRONZE AND ALUMINUM DOUBLE HUNG AND CASEMENT WINDOWS

Building	*Location*	*Architects*
N. Y. Life Insurance Co.	New York, N. Y.	Cass Gilbert
Prudential Life Insurance Bldg.	Newark, N. J.	Cass Gilbert
West Virginia State Capitol	Charleston, West Va.	Cass Gilbert
U. S. Supreme Court Bldg.	Washington, D. C.	Cass Gilbert, Cass Gilbert, Jr., & J. R. Rockart and David Lynn, Archt. of the Capitol
U. S. Court House Building	New York, N. Y.	Cass Gilbert, Inc., & U. S. Supervising Archt.
Pennsylvania Railroad Building	Philadelphia, Pa.	Graham, Anderson, Probst & White
Medical Arts Building	Cleveland, Ohio	Graham, Anderson, Probst & White
Koppers Building	Pittsburgh, Pa.	Graham, Anderson, Probst & White
Foreman National Bank	Chicago, Ill.	Graham, Anderson, Probst & White
Chase National Bank	New York, N. Y.	Graham, Anderson, Probst & White
Mitsui Main Building	Tokyo, Japan	Trowbridge & Livingston
Central Union Trust Co.	66 Broadway, N. Y.	Cross & Cross
First National Bank of Boston	Buenos Ayres Branch	York & Sawyer
Northwestern Mutual Life Ins. Co.	Milwaukee, Wis.	Holabird & Root
Mutual Benefit Life Ins. Co.	Newark, N. J.	John H. & Wilson C. Ely
Municipal Building	East Orange, N. J.	John H. & Wilson C. Ely
U. S. Post Office, Court House & Customs, Etc.	Detroit, Michigan	Robert O. Derrick, Inc., & U. S. Supervising Archt.
Nebraska State Capitol Building	Lincoln, Neb.	Bertram Goodhue Associates
New York County Court House	New York, N. Y.	Guy Lowell
N. Y. State Office Building	Albany, N. Y.	W. E. Haugaard
N. Y. State Office Building	New York, N. Y.	W. E. Haugaard
City Hall Annex	Philadelphia, Pa.	Phillip H. Johnson
Sterling Memorial Library	New Haven, Conn.	James Gamble Rogers
U. S. Post Office	Philadelphia, Pa.	Rankin & Kellogg & U. S. Supervising Archt.
Chemical National Bank	New York, N. Y.	Walker & Gillette
Ozone Park National Bank	Woodhaven, N. Y.	Uffinger, Foster & Bookwalter
Newport Savings Bank	Newport, R. I.	Thomas M. James
Apartment 740 Park Avenue	New York, N. Y.	Rosario Candela
Fred F. French Co. Building	New York, N. Y.	Fred F. French Co.
Phillips Office Building	Butler, Pa.	Janssen & Cocken
Goelet Building	New York, N. Y	E. H. Faile & Co.
Depts. of Health, Hospitals & Sanitation Building	New York, N. Y.	Chas. B. Meyers
Federal Reserve Board	Washington, D. C.	Paul P. Cret
State Capitol Building	Salem, Oregon	Trowbridge & Livingston, Francis Keally Assoc. Architects
N. Y. Historical Society	New York, N. Y.	Walker & Gillette
Rackham Graduate School	Ann Arbor, Mich.	Smith, Hinchman & Grylls, Inc.
Apt. House, 19 E. 72nd St.	New York, N. Y.	Mott B. Schmidt & Rosario Candela
St. Luke's Hospital	New York, N. Y.	York & Sawyer
Columbia Presbyterian Hospital	New York, N. Y.	James Gamble Rogers
Lenox Hill Hospital	New York, N. Y.	York & Sawyer
Wm. K. Vanderbilt Residence	Palm Beach, Fla.	Treanor & Fatio
Orange County Office Bldg.	Goshen, N. Y.	Whitman S. Wick
N. Y. C. Ferry Boats (3)	Mariners Harbor, S. I.	Dept. of Plant & Structures
Fire Stations (9)	Chicago, Ill.	Paul Gerhardt, Jr.
Arthur C. Nielsen, Residence	Winnetka, Ill.	Benjamin H. Marshall Co.
Municipal Building	New York, N. Y.	Borough President's Office
Franklin B. Kirkbride, Residence	New Canaan, Conn.	Robertson Ward
Hospital for Chronic Diseases	Welfare Island, N. Y.	Butler & Kohn, York & Sawyer
Julian Street, Jr., Residence	Scarborough, N. Y.	Harrison & Fouilhoux

WINDOWS · REVOLVING DOORS · TABLETS · ARCHITECTURAL METAL WORK

GENERAL BRONZE CORPORATION

34-19 Tenth Street Long Island City, N. Y.

PERMATITE WINDOWS

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WELFARE ISLAND HOSPITAL GROUP, New York City

Associated Architects—York & Sawyer, Butler & Kohn

Builders—Cauldwell-Wingate Co.

OF BRONZE OR ALUMINUM

Comprising **DOUBLE-HUNG WINDOWS**
CASEMENT WINDOWS • UTILITY WINDOWS
CASEMENT DOORS • • *Also including*
windows of **"POLACHEK"** *Extra heavy sections*

GENERAL BRONZE CORPORATION
34-19 Tenth Street • • Long Island City, N.Y.

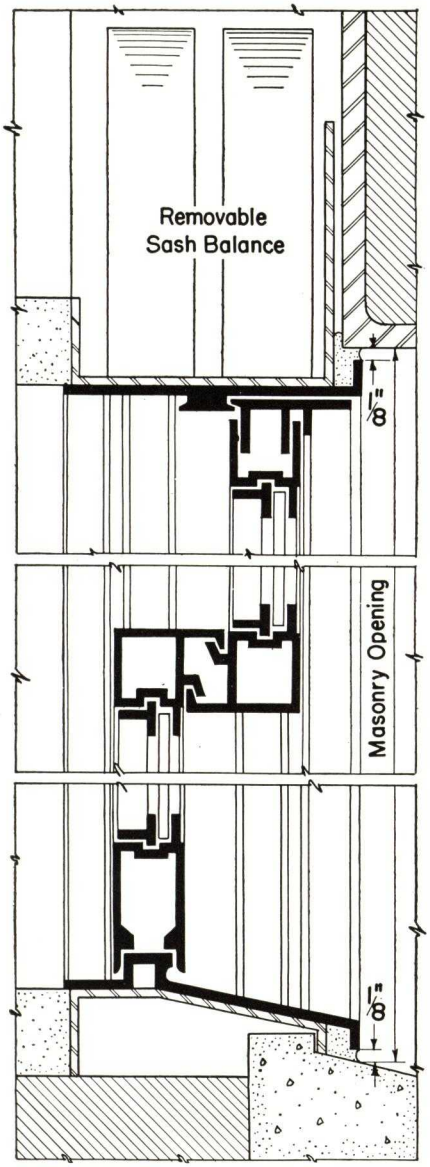
ESTABLISHED 1876

HERRMANN & GRACE CO.

Manufacturers of "Alumex" Extruded Aluminum Double Hung Windows

FACTORY AND MAIN OFFICE

671-689 Bergen Street, BROOKLYN, N. Y.



SECTION THROUGH HEAD MEETING RAIL AND SILL

"ALUMEX" EXTRUDED ALUMINUM DOUBLE HUNG WINDOWS

Material

ALUMEX windows are made of extruded 53 ST-5 aluminum having a tensile strength of 22,000 pounds per square inch.

Construction

ALUMEX windows are entirely constructed with mitred and welded corners, thus giving additional strength to the members. The aluminum frame is attached to a steel sub-frame which is an integral part of the window and sash are installed in the guide strip.

The sash are operated by *spring balances* in dust-proof housings.

The head of the window is constructed so that the spring balances are easily removable, which is an added feature of the window.

All parts of the window are made of extruded sections and mitres are cut by special machines, thus insuring perfect alignment.

Weatherstripping

The bottom rail of the sash is so constructed that it fits snugly over the sill member, making an absolutely tight sill. The sash are weatherstripped with zinc in all sliding parts, which makes the sash weather-tight and insures ease of operation.

Glazing

Glass is secured in place by an improved glass stop which fits into a groove, insuring rigidity.

Glass may be divided with muntins as desired.

Hardware

Sash locks and lifts are made of solid white metal to match the aluminum, and are of our own standard design.

Screens and Shades

ALUMEX windows are designed to receive screens and shade brackets.

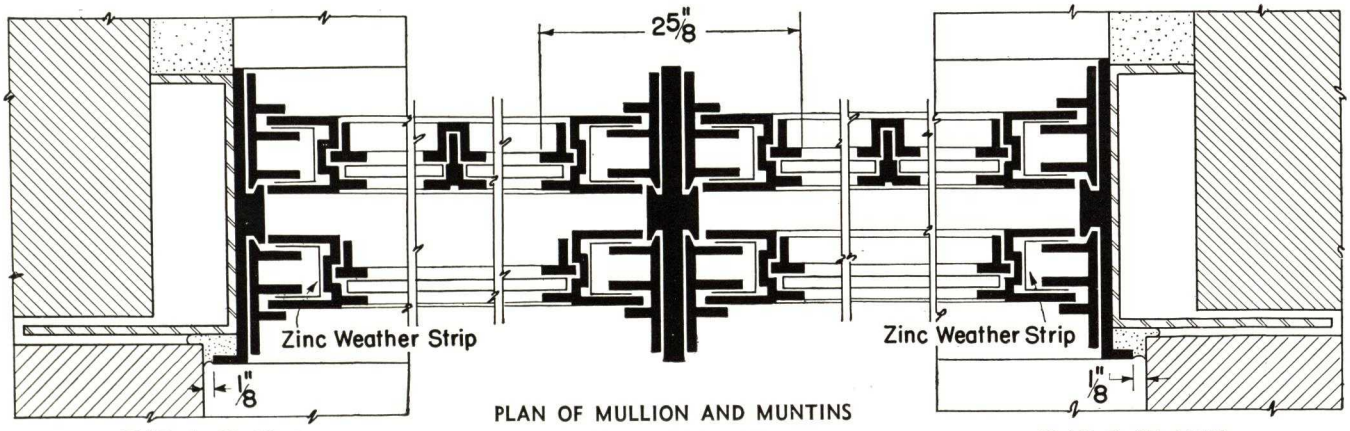
Salient Features

Sash are easily glazed.

The outstanding feature of aluminum is its resistance to atmospheric corrosion.

Narrow members of window insure admittance of more light. Designed for use in either brick or wood construction.

Windows can be grouped with mullions between, and the width of the mullion is only 2⅝ inches from glass to glass.



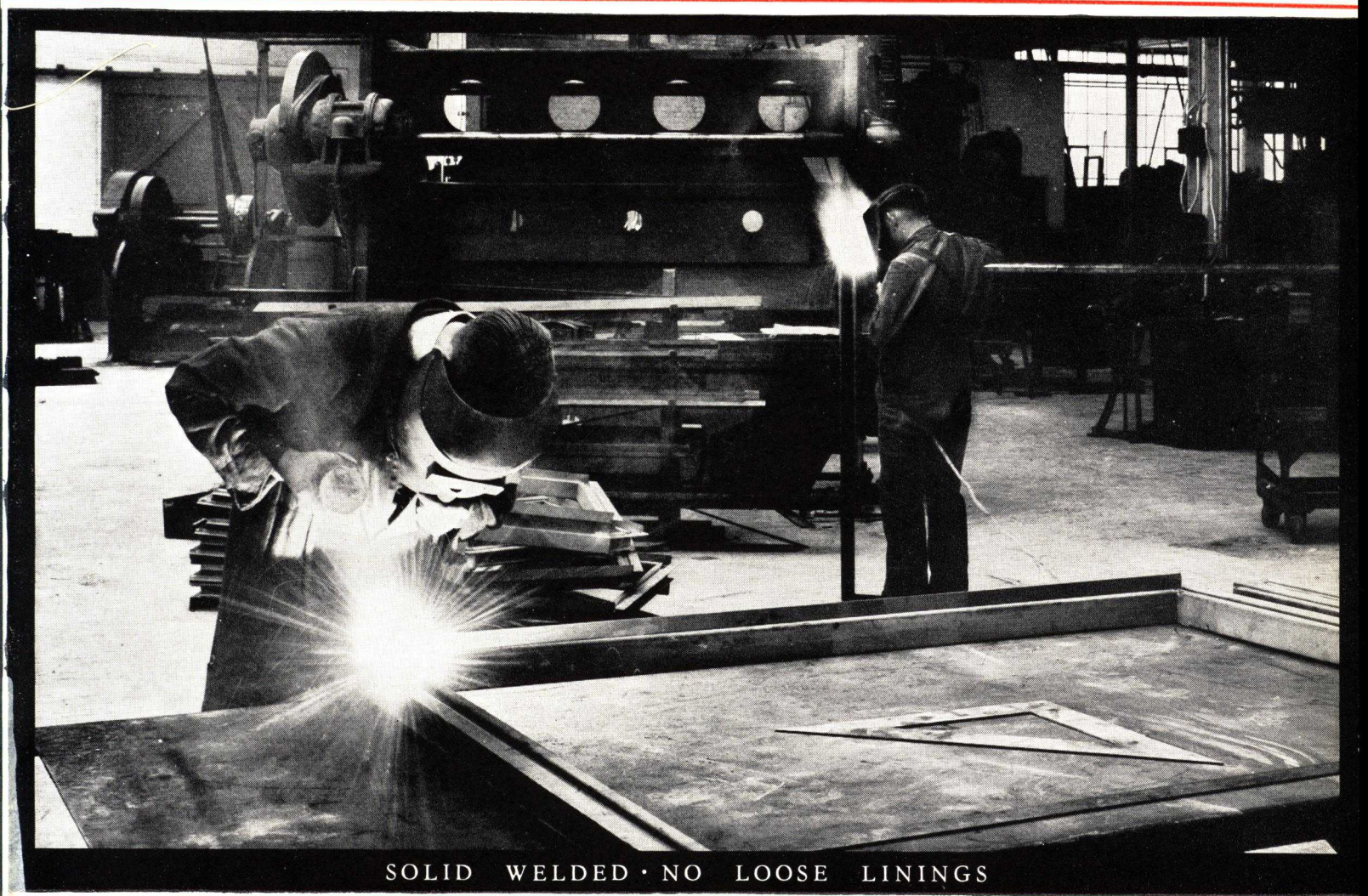
PLAN A OF JAMB

PLAN OF MULLION AND MUNTINS
ONE-HALF SIZE DETAIL

PLAN B OF JAMB

MEMORANDA

"The Name HOPE'S *Guarantees"*



SOLID WELDED · NO LOOSE LININGS

1818 WINDOWS 1938

· HOPE'S · WINDOWS · INC · JAMESTOWN · NEW · YORK ·

· HOPE'S · WINDOWS · INC ·

· JAMESTOWN ·:· NEW YORK ·

GRADUATE COLLEGE, PRINCETON, N. J. CRAM, GOODHUE & FERGUSON, Archts.

HOPE'S have been making windows for over a hundred years and have built up what is now known throughout the world as "The HOPE Standard of Quality." This standard is without extravagance, but embodies all those features which our experience has taught us are necessary for permanent service in permanent buildings. We make windows of all kinds and whether it is an elaborate bronze window for a monumental building or a simple steel casement for a small house, the same care is taken that it is of an appropriate design and that it shall serve its purpose properly. HOPE'S windows are a buyer's guide to a good building.

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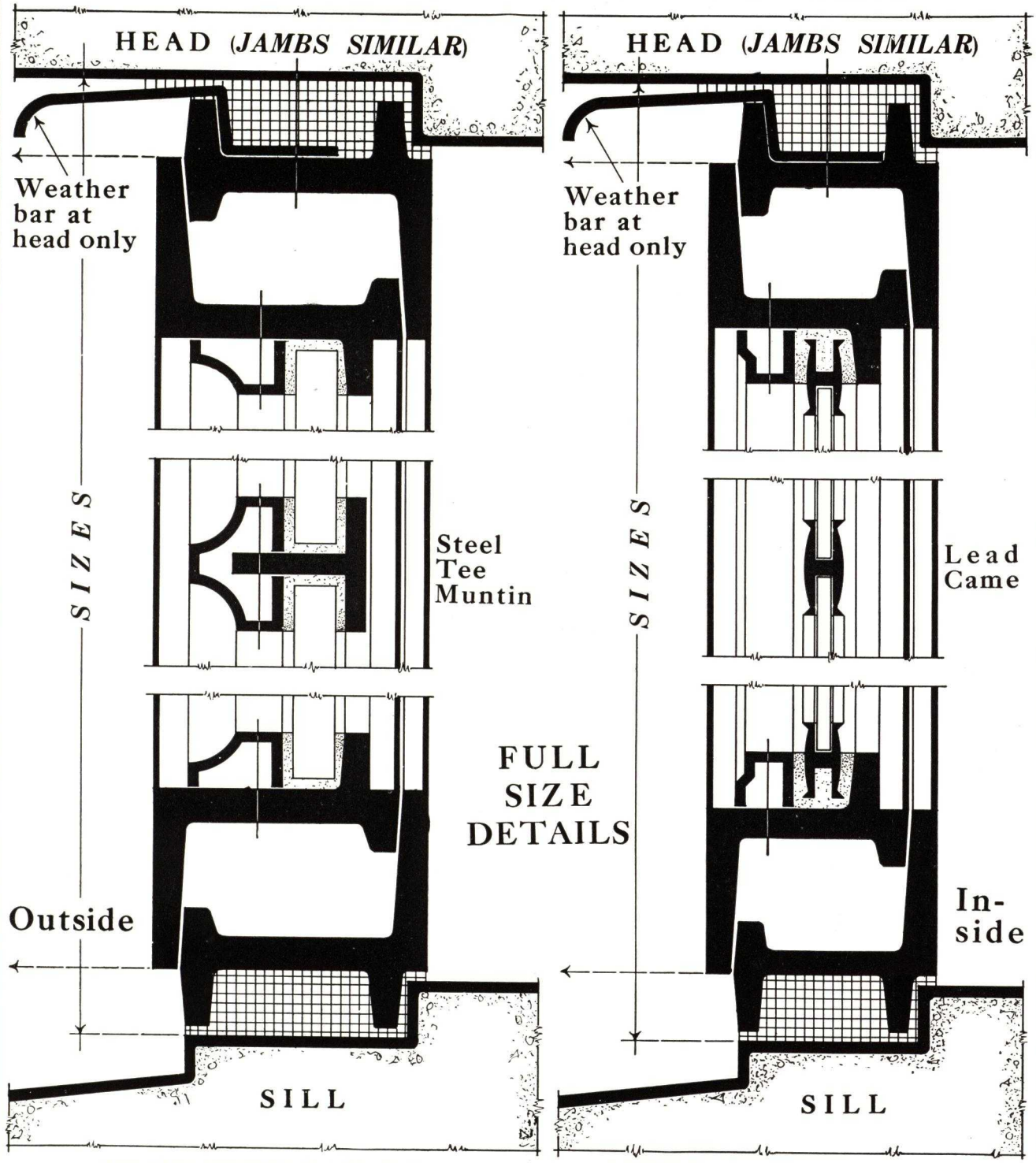
· CASEMENTS · OPENING · OUTWARDS ·

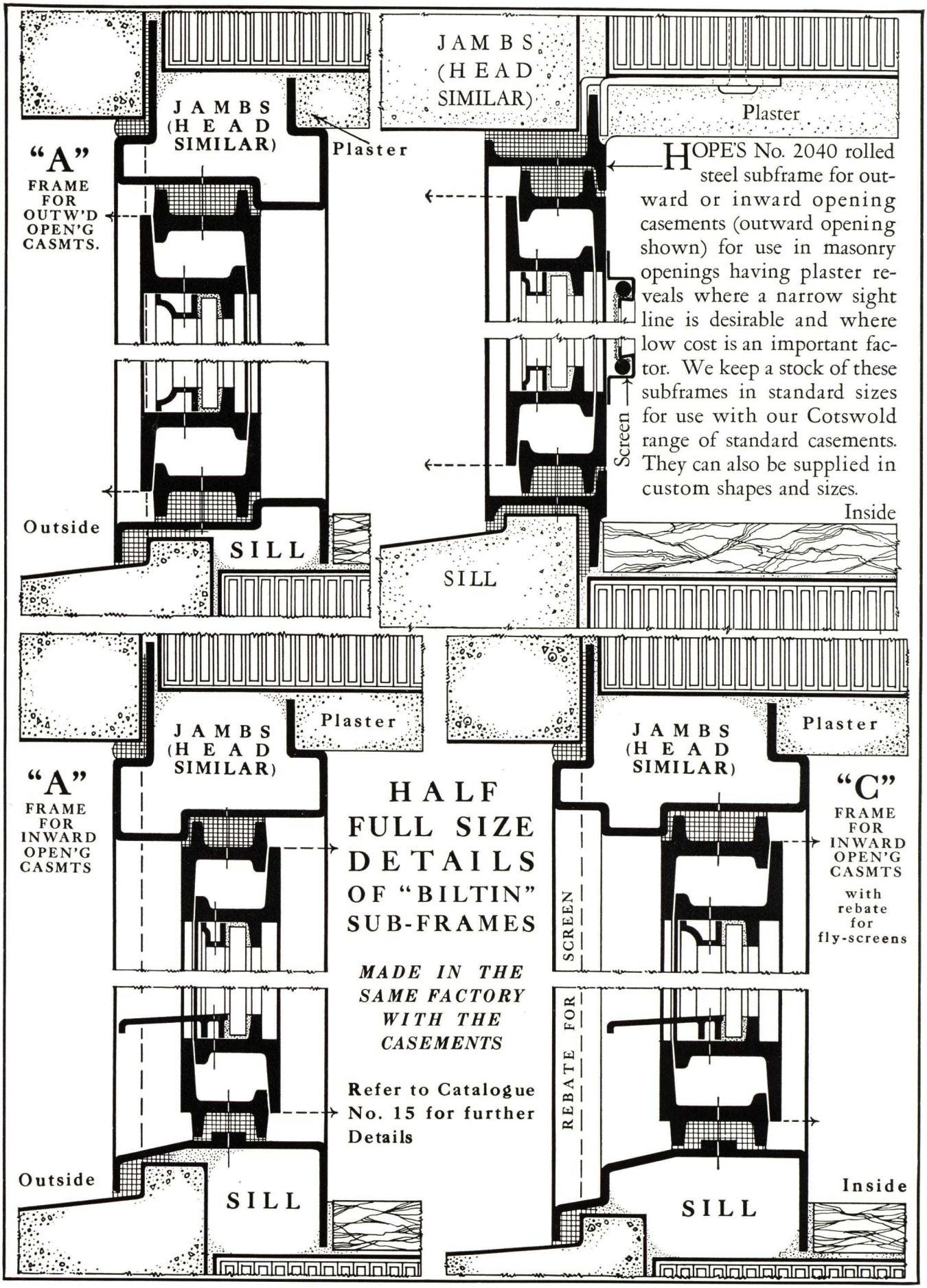


HEAVY SECTION NO. 3000
Maximum size 3′ 0″ x 8′ 0″.
Weight of combined sections 4.61 lbs. per lineal foot.

MEDIUM SECTION NO. 1000
Maximum size 2′ 6″ x 6′ 0″.
Weight of combined sections 3.55 lbs. per lineal foot.

SIDE HUNG CASEMENTS, TOP HUNG CASEMENTS SIMILAR

Our sections No. 3000 and No. 1000 may be glazed either from outside or from inside. Appearance usually governs choice, but we recommend outside glazing. Casements are made to open outwards as shown above, or by reversing the sections they can be made to open inwards, hinged at side or bottom. Or they may be pivoted vertically or horizontally. For more complete information, refer to our Casement Catalogue or to any of our sales offices.


JAMBS (HEAD SIMILAR)
Plaster
"A" FRAME FOR OUTW'D OPEN'G CASMTS.
JAMBS (HEAD SIMILAR)
Plaster
HOPE'S No. 2040 rolled steel subframe for outward or inward opening casements (outward opening shown) for use in masonry openings having plaster reveals where a narrow sight line is desirable and where low cost is an important factor. We keep a stock of these subframes in standard sizes for use with our Cotswold range of standard casements. They can also be supplied in custom shapes and sizes.
Screen
Outside
SILL
SILL
Inside
JAMBS (HEAD SIMILAR)
Plaster
"A" FRAME FOR INWARD OPEN'G CASMTS
HALF FULL SIZE DETAILS OF "BILTIN" SUB-FRAMES
MADE IN THE SAME FACTORY WITH THE CASEMENTS
Refer to Catalogue No. 15 for further Details
JAMBS (HEAD SIMILAR)
Plaster
"C" FRAME FOR INWARD OPEN'G CASMTS with rebate for fly-screens
SCREEN
REBATE FOR
Outside
SILL
SILL
Inside

· SPECIFICATIONS ·

Custom Made Casements

All windows shall be HOPE'S WINDOWS, manufactured in Jamestown, New York, by HOPE'S WINDOWS INC. from solid rolled steel sections of suitable design and weight for the size of the openings. This contractor shall not commence fabrication until shop drawings bear the approval stamp of the architects. All bars shall be hydraulically straightened and free from hammer marks or distortions of any kind. All corners shall be accurately machined, electrically welded and cleaned free from flux. Frames and casements shall be solid welded units and shall provide continuous double weathering contact without the aid of loose or applied linings. Horizontally and vertically pivoted casements shall be hung on patent bronze cup pivots. The former shall be fitted with solid bronze spring catch, cord eye and pulley and the latter with solid bronze fasteners and double bar adjusters; when more than 5 ft. high, double grip bolts shall be supplied. Top hung, bottom hung and side hung casements shall be hung on drop forged steel pivots bronze bushed. Top hung casements shall be fitted with solid bronze cam opener capable of convenient pole operation. Bottom hung casements shall be fitted with solid bronze spring catches and concealed friction side arms. Side hung casements both outward and inward opening over 5 ft. high shall be fitted with solid bronze fasteners having double grip bolts, double bar adjusters, and intermediate hinges: under 5 ft. the double grip bolts and intermediate hinges shall be omitted. All hardware shall be individually fitted by skilled mechanics at the factory. Fixed sash shall be made from channel sections which provide the same sight line and glass plane as the casements. Moulded steel glazing beads attached with brass screws and having mitered corners shall be neatly fitted to casements and fixed sash. All steel work shall be cleaned free from rust and scale and painted two coats DuPont special rust-resisting paint, each coat baked on separately. The installation of the windows shall form part of this contractor's work. Windows to be properly bedded and pointed inside and out with HOPE'S Mastic Cement, the whole guaranteed weathertight. Glass and glazing by glazing contractor; field painting by painting contractor.

For full size details, refer to page 3.

For more complete information, refer to our Casement Catalogs.

For specifications covering bronze or aluminum, refer to our sales offices.

"Biltin" Sub-frames

This contractor shall furnish and deliver to the building HOPE'S "Biltin" sub-frames of type and profile shown on drawings, in time to suit the requirements of the building. Sub-frames shall be of No. 12 gauge steel, with corners welded solid to form one complete frame, except where of too great a size for shipment in ordinary box cars, in which event they shall be assembled at the factory with screwed and plated joints, dissembled, packed and shipped "K. D." for assembly by general contractor. All corners shall be properly cleaned off and the sub-frames shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed.

After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between the casements and the sub-frames are properly filled with HOPE'S Mastic Cement neatly pointed inside and out. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

For half full size details, refer to page 4.

For more complete information, refer to our Catalog No. 15.

For specifications covering bronze or aluminum, refer to our sales offices.

No. 2040 Rolled Steel Sub-frames

This contractor shall furnish and deliver to the building HOPE'S "No. 2040" sub-frames to the shapes and sizes shown on the drawings. When specifying 2040 frames for Standard Cotswold Casements, specify that they are to be in standard types and sizes as shown by reference numbers on elevations in accordance with the standards established by HOPE. They shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on, and they shall be delivered to the site in time to meet the requirements of the building. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed. After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between casements and sub-frames are properly filled with HOPE'S Mastic Cement neatly pointed. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

For half full size details, refer to page 4.

For more complete information, refer to our Catalog No. 15.

For specifications covering bronze or aluminum, refer to our sales offices.

For Holford and Econwin window specifications, screened or non-screened, refer to page 7.

For standard Cotswold casement specifications, refer to page 9.

For Austral window specifications, refer to page 11.

For Projected window specifications, refer to page 12.

For Hopkins window specifications, refer to page 13.

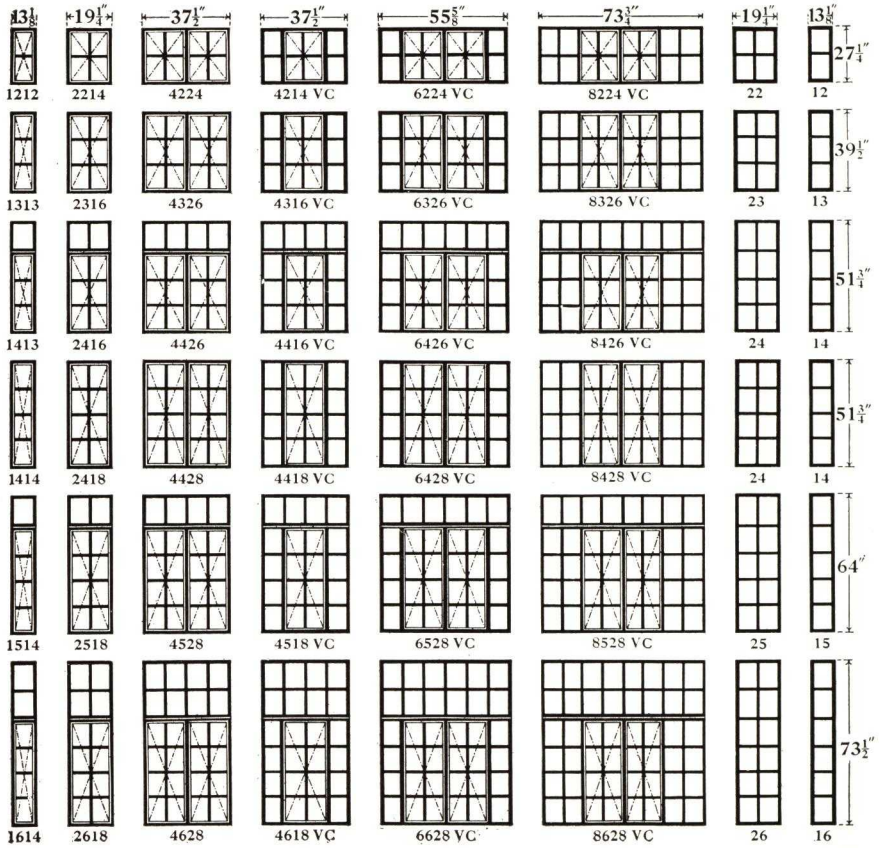
UNDERWRITERS' LABEL

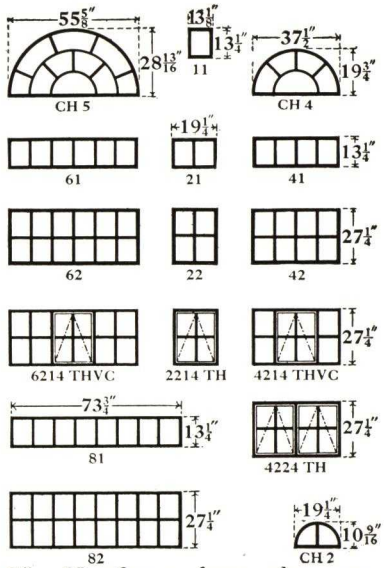
The Underwriters' Label can be attached to our "Austral," " Cotswold," "Hopkins" and Light Standard Windows, if desired.

· HOPE'S HOLFORD CASEMENTS ·

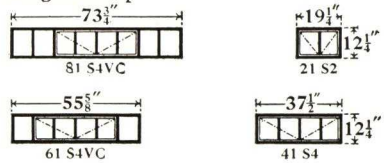
See Cat. No. 52

• METAL • WINDOW • INSTITUTE • STANDARDS •
• TYPES • AND • SIZES •



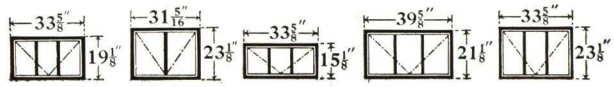


The Ventilators shown above are hinged at top



• SILL • TYPES • *for attachment to windows as sill ventilators*

All types listed on this page are available with vertical muntins omitted without charge



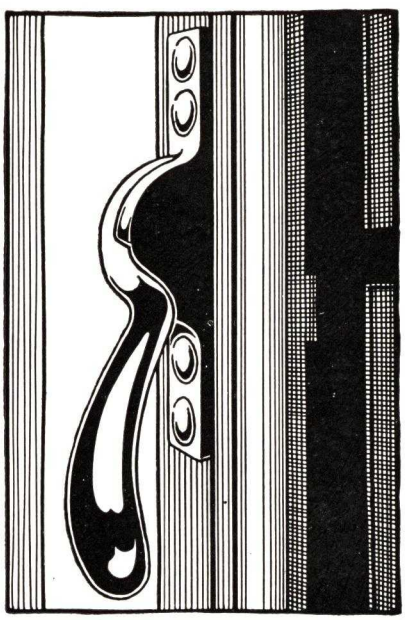
BASEMENT • TYPES

For position of dimensions see page seven

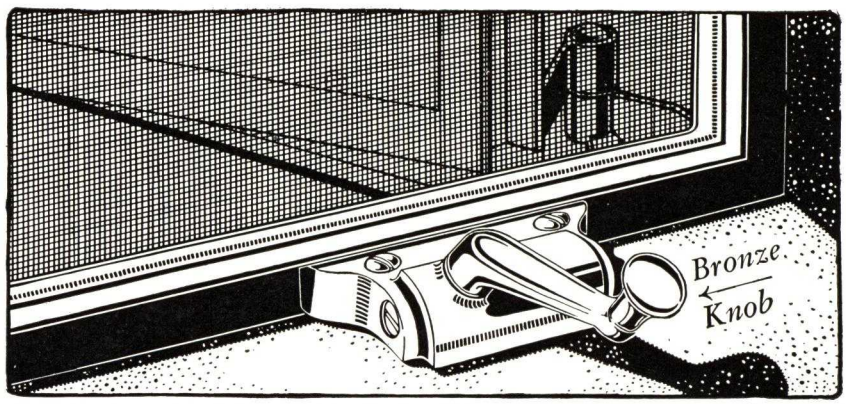
· HARDWARE ·

The hardware illustrated is for screened casements. It permits casements to be opened, closed and secured without disturbing screen.

The hardware for non-screened casements consists of die cast or solid bronze fasteners and cleaning hinges, friction type.



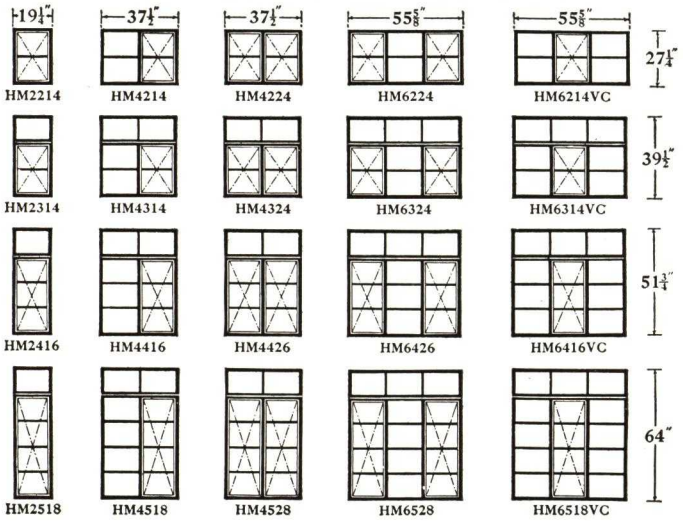
FASTENER (NO. 38-3)
TUMBLED OR STATUARY BRONZE



DIE CAST OR SOLID BRONZE ROTARY ADJUSTER NO. 20-70

HOPE'S ECONWIN CASEMENTS · *See Cat. No. 52*

NON-SCREEN H. M. TYPES ONLY



SPECIFICATION FOR HOLFORD & ECONWIN CASEMENTS

All metal windows as shown on the drawings shall be of standard Holford types and sizes as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y. Casements shall be manufactured of low carbon new billet steel, having a combined weight of ventilator and frame of not less than 2.16 lbs. per lineal foot. All corners shall be solidly welded and exposed surfaces neatly cleaned off. Sections shall provide continuous two point weathering contact around the perimeter of the ventilators. All side hinged casements shall be hung on cadmium plated mild steel hinges solidly welded to the ventilator and frame and united with bronze pintles and washers. Muntins shall be carefully coped and solidly riveted to ventilators and/or frames.

Screen type Holford casements shall be fitted with bronze fastener No. 38-3 in tumbled finish and rotary adjuster No. 20-70, the operator case and crank of which shall be die cast non-corrosive alloy in gray enamel finish and the thumb turn in polished bronze. Sill vents shall be fitted with tumbled bronze fastener No. 20-72 and steel limit side arms. Top hinged ventilators shall be fitted with bronze underscreen peg adjuster No. 20-44.

Screens shall be in "U" type steel framing, strongly reinforced and welded at corners and galvanized after cutting and abrasive operations. Screen cloth shall be of standard weight, 16 mesh Anaconda bronze wire held in place with $\frac{3}{16}$ in. round solid steel splines easily re-wireable.

Econwin casements shall be hung on adjustable friction cleaning hinges and shall be fitted with die cast, bronze plated, fastener No. 69-A. Construction otherwise as outlined in preceding paragraphs.

Econwin screens shall be hinged at the side to swing in, complete with necessary fittings (specification otherwise as outlined in third paragraph).

All steel work shall be cleaned free from rust and scale and painted one coat of special rust-resisting gray primer baked on.

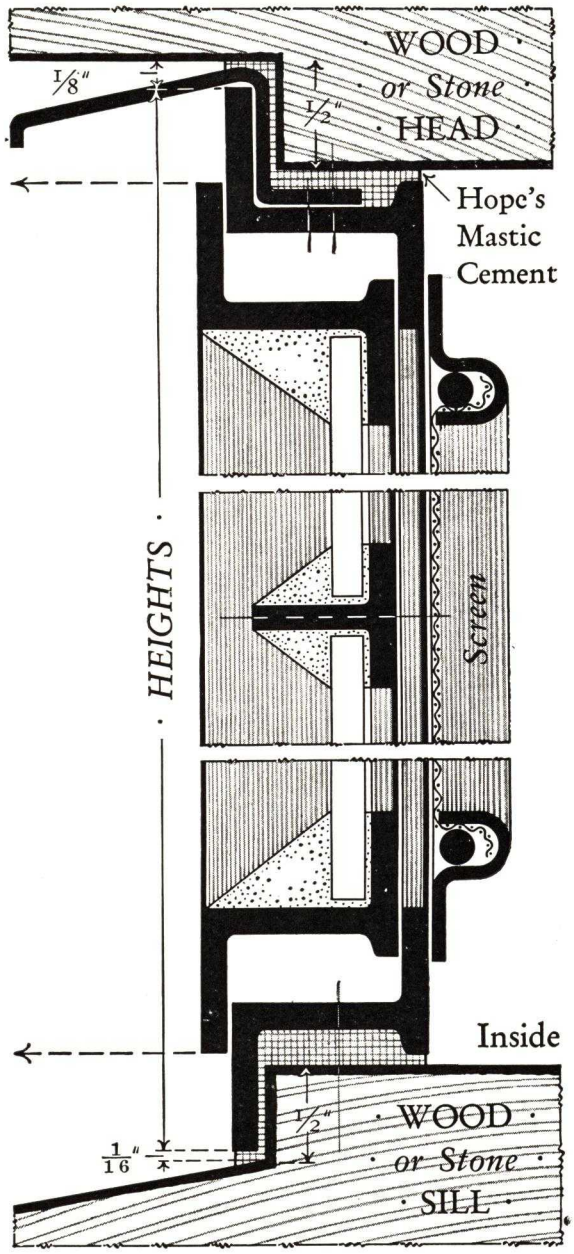
Sufficient mastic cement (one pound per 7 ft. of perimeter) shall be furnished for proper bedding and pointing.

All casements shall be drilled to receive shade bracket clips.

Note—Holford casements are available in standard muntin divisions or with vertical muntins omitted or the casements left open to receive leaded glass or for single lights of glass.

Hardware in statuary bronze finish is available at a slight increase in cost.

For setting details, refer to catalog No. 52. State if angle fins or redwood surrounds or steel casings are required.



F. S. SECTION (HOLFORD TYPES)

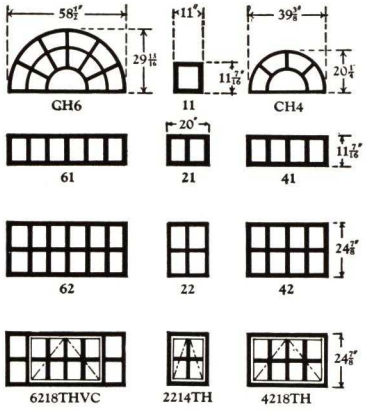
All windows are hinged to open outwards, divided into panes with steel tee muntins, but they can be supplied without muntins either for leaded lights which we stock in standard sizes or for plain sheets of glass.

Cleaning hinges are of cadmium-plated mild steel, welded solid into the frame. The great depth and strength of the bronze pintles prevent any possibility of the casement sagging.

For further details, refer to Catalog No. 52, or to any of our sales offices.

HOPE'S COTSWOLDS · *(Intermediate Sections)*

See Cat. No. 49

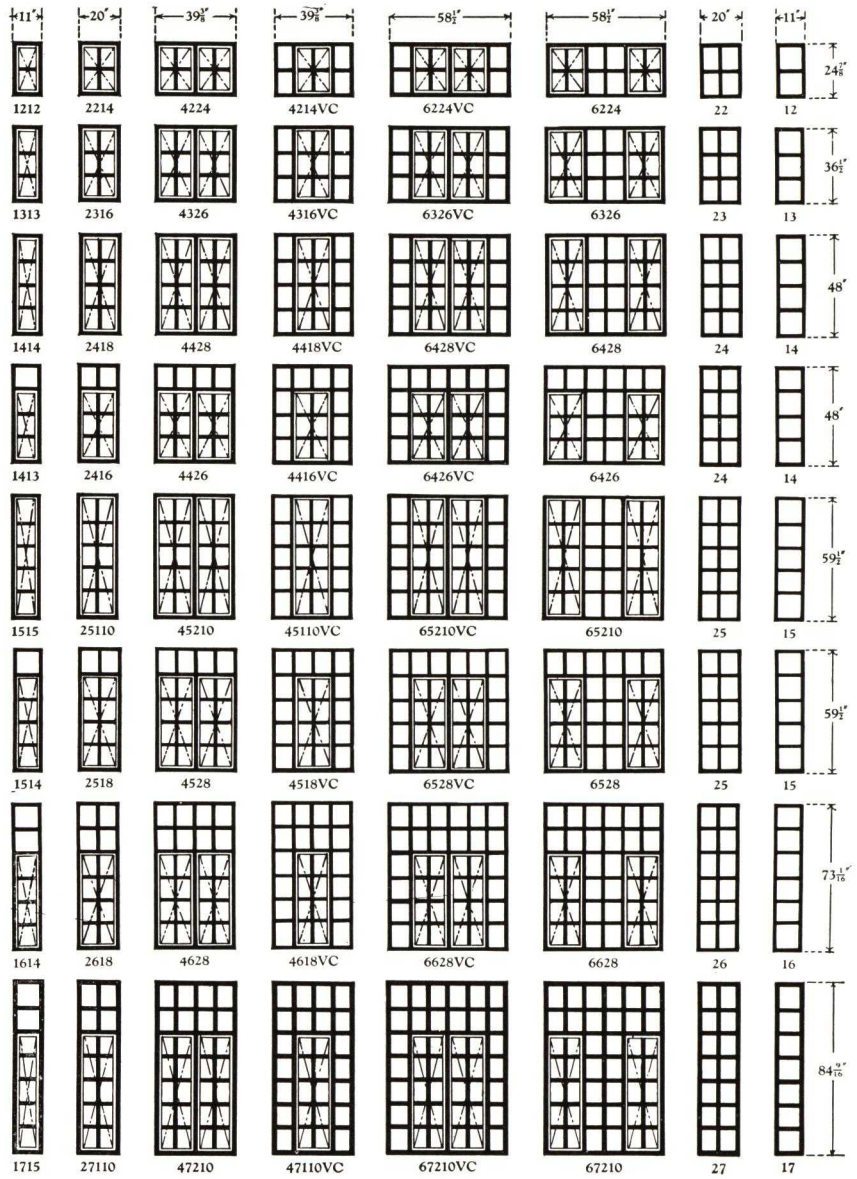


The Ventilators shown above are hinged at top.

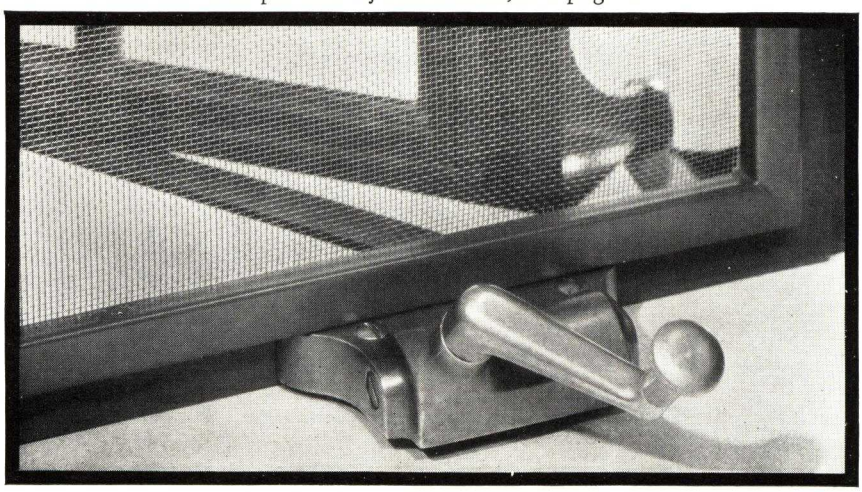
TYPES & SIZES

· ALL · HARDWARE · IS
· IN · SOLID · BRONZE
STATUARY · FINISH

· FASTENER · (NO. 20-67) ·



For position of dimensions, see page 9



· GEAR - WORM · ADJUSTER · (NO. 20-70) ·

HOPE'S COTSWOLDS · *(Intermediate Sections)* *See Cat. No. 49*

SPECIFICATIONS

All metal windows as shown on the drawings shall be standard Cotswold types and sizes as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y. Casements shall be manufactured of hot rolled low carbon new billet steel having a combined weight of not less than 3 lbs. per lineal foot of frame and ventilator sections. All corners shall be solidly welded and exposed surfaces neatly cleaned off. Sections shall provide continuous two-point weathering contacts around the perimeters of all ventilators without the aid of loose or applied linings. All side hung casements shall be hung on extension cleaning hinges, solidly welded to the ventilators and frames. Muntins shall be carefully coped and solidly riveted to the ventilators and/or frames.

Screened type Cotswold casements shall be fitted with bronze fastener No. 20-67 and bronze rotary adjuster No. 20-70. Top hung transom vents shall be fitted with bronze underscreen peg adjuster No. 20-44 all in statuary finish. Non-screened type casements shall be hung on extension friction hinges and fitted with solid bronze fasteners No. 20-67 and pull No. 20-17E. (If bronze double bar sliding adjuster No. 20-16 shown on page 12, catalog No. 49, is required, specify it here.)

All steel work shall be cleaned free from rust and scale and primed two coats of DuPont's special rust-resisting primer, each coat separately stoved on.

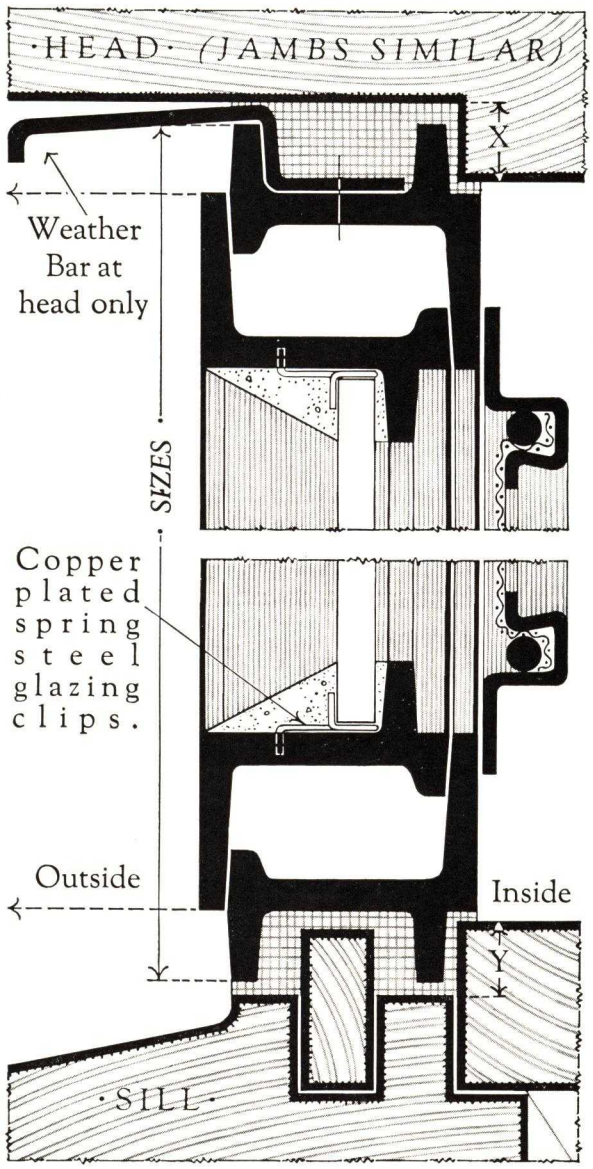
Screen frames shall be made from copper-bearing open hearth steel, "U" shaped, strongly welded and reinforced at each corner, galvanized after all cutting and abrasive operations have been completed and with prime coat of gray paint baked on. Screen frames shall be easily re-wireable and shall be filled with standard weight 16 mesh Anaconda bronze wire cloth, held in place by $\frac{3}{16}$" round solid steel splines galvanized, bent at the corners and continuous to insure further reinforcement of frame.

All casements shall be drilled to receive shade bracket clips.

Note—Cotswold casements are also available with vertical muntins omitted or the casements left open to receive leaded glass or single lights of sheet glass. Winter windows can also be supplied for all types.

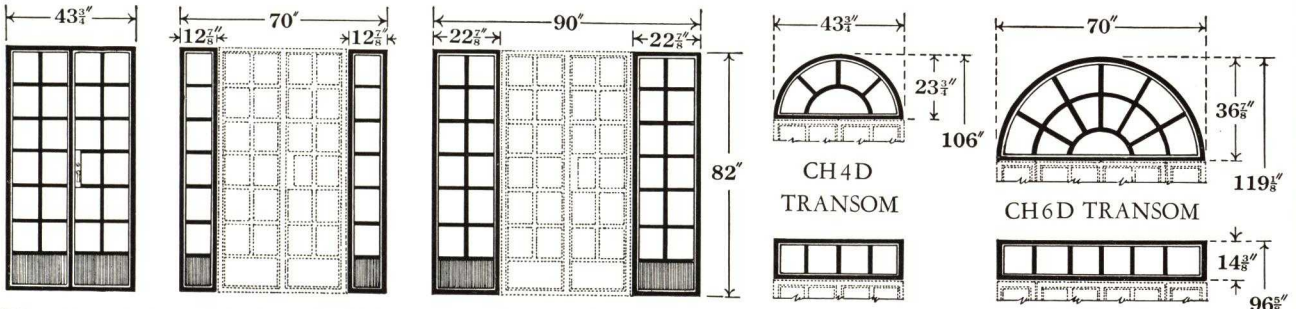
For setting details, refer to catalog No. 49. State if angle fins or redwood surrounds or steel casings are required.

Maximum rebate including trim at head and jambs (dimension "X") $\frac{5}{8}$ in.; at sill (dimension "Y") $\frac{1}{2}$ in.



FULL SIZE SECTION

DOORS · SIDELIGHTS & TRANSOMS *in Standard Sizes*

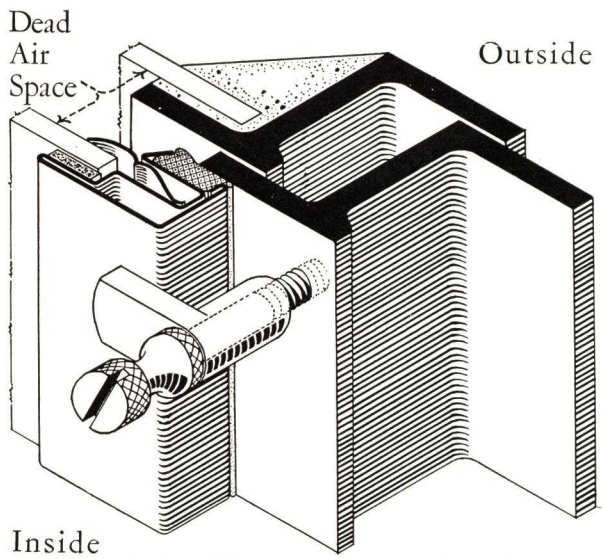


TYPE M DOOR | 17D SIDELIGHTS | 27D SIDELIGHTS | CH4D TRANSOM | 41D TRANSOM | CH6D TRANSOM | 61D TRANSOM

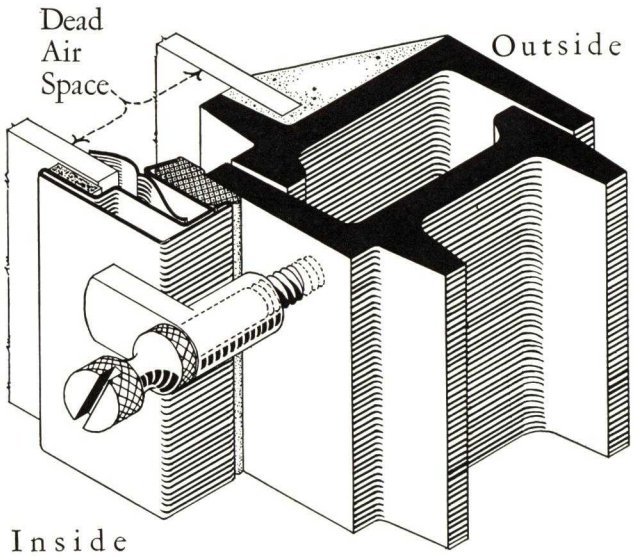
The above are our type "M" *outward opening* standard muntin type doors. We stock a similar range of doors prepared to receive leaded glass, our type "L." We also stock an inward opening muntin and leaded glass range, our types "A" and "B." For full particulars, refer to our catalog No. 49.

· HOPE'S · WINTER · WINDOWS ·

FOR ALL WINDOWS IN STANDARD OR SPECIAL SIZES



· HOPE'S STANDARD HOLFORD ·
SECTION SHOWING WINTER WINDOW ATTACHED
· *NOTE DEAD AIR SPACE* ·

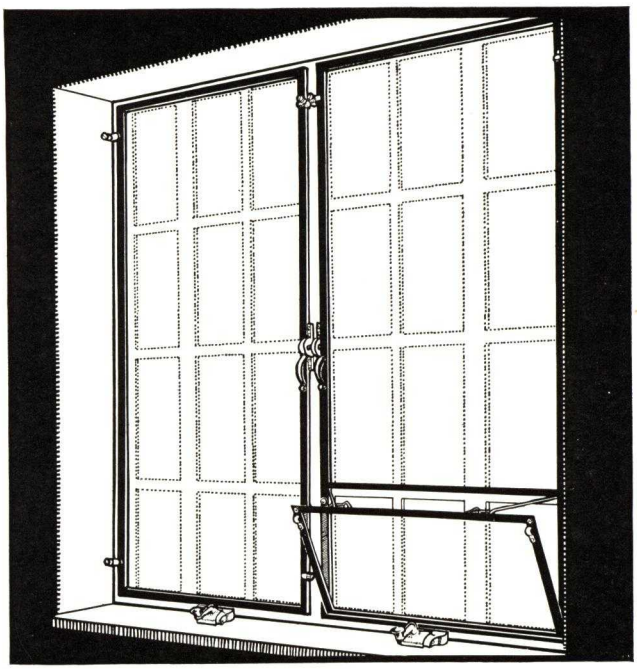


· HOPE'S STANDARD COTSWOLD ·
SECTION SHOWING WINTER WINDOW ATTACHED
· *NOTE DEAD AIR SPACE* ·

HOPE'S Winter Windows are made of copper bearing electro galvanized steel frames with corners mitered, heavily reinforced, electrically welded and ground smooth. The are an excellent investment. They virtually form a double window and the dead air space between the two glasses greatly reduces fuel bills through the reduction of heat losses, thereby liquidating the original cost of the winter windows in a comparatively short space of time. They are of especial advantage in air-conditioned homes for they reduce condensation, fogging and frosting.

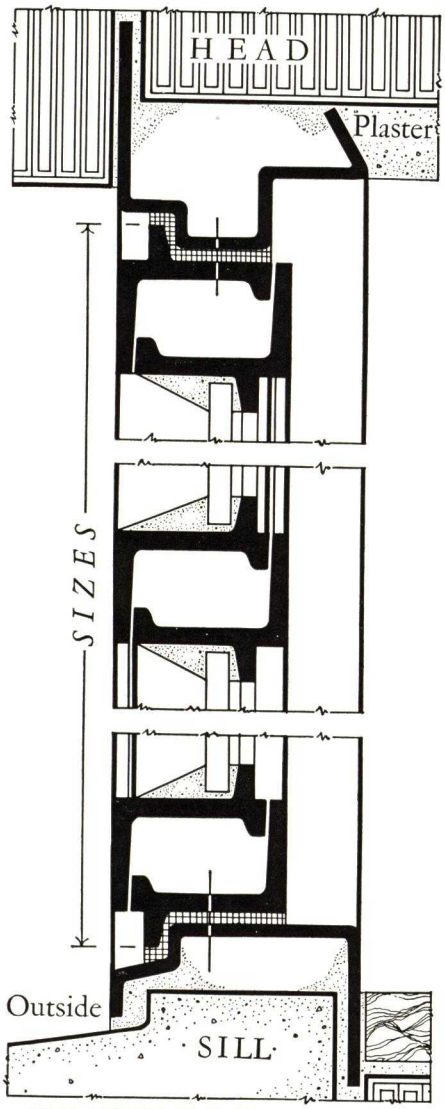
HOPE'S Winter Windows are for use only with screened type casements, that is to say, with casements, fitted with the hardware shown on pages 6 and 8.

If HOPE'S Winter Windows are ordered at the same time as the casement windows, the latter will be drilled and tapped complete, free of charge, in the factory to receive the winter windows. When winter windows are ordered as an after-thought however, certain holes must be drilled and tapped in the field at the customer's expense.

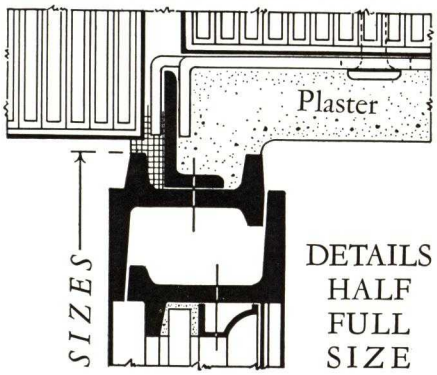


THE above is a typical HOPE winter window installation for a type 6428VC. Each unit is of convenient size for easy handling. Note particularly the sill vent of "Tiltin" type which is optional equipment and which provides slight ventilation for bedrooms or other special locations. They can be provided at slight extra cost. The number required should be specified. One per room is generally considered adequate.

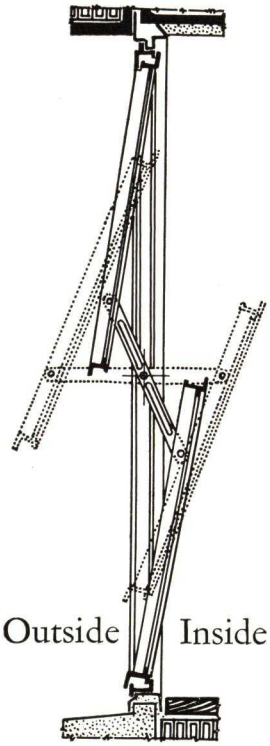
HOPE'S AUSTRALS *for* SCHOOLS, *etc.* . *See Cat. No. 32*



·SECTION·WITH·
·BILTIN·FRAME·

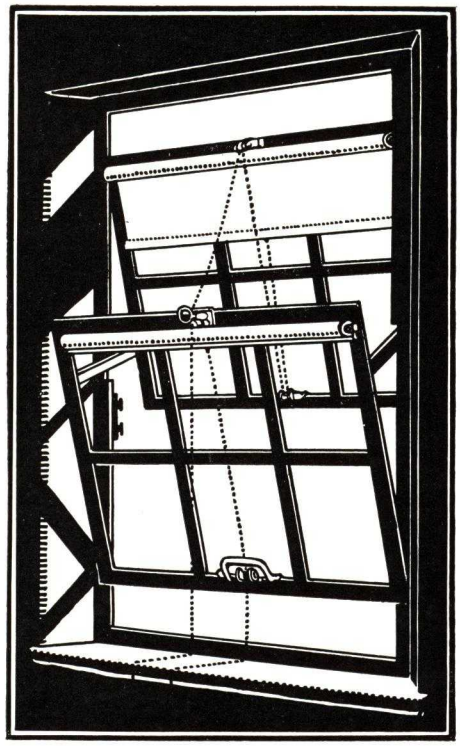


·SECTION·WITH·
·ANGLE FINS·AT·
·HEAD·&·JAMBS·



·SECTION·

Full lines show Austral open for slight ventilation. Dotted lines show Austral fully open.



·INSIDE·VIEW·

Note awning effect of shades which do not limit ventilation when drawn. Note ventilation deflected upwards.

SPECIFICATIONS

CONSTRUCTION. All windows shall be HOPE'S Austral Windows as manufactured by HOPE'S WINDOWS, INC., Jamestown, New York. They shall be made from solid rolled steel sections having flanges rolled integral at the mills and the combined weight of frame and sash sections shall be not less than 4.65 lbs. per lineal foot. All corners of frames and sashes shall be solid welded and neatly cleaned off and double weathering contacts shall be provided throughout without the aid of loose or applied linings.

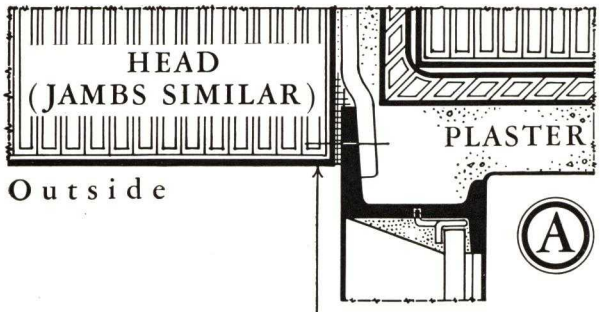
HARDWARE shall be shop applied and shall consist of drop forged steel balance arms securely riveted to upper and lower sashes and operating in hard brass pivot plates, bronze automatic cam spring catch (Patent No. 1,553,712) at the meeting rail and bronze lift handle at the sill. Shade brackets, special cord holders and cleaner's bolts shall also be provided.

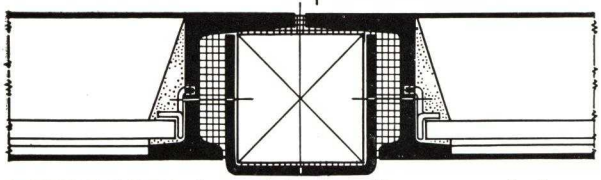
PAINTING. All steel work primed two coats DuPont's anti-corrosive paint baked on separately.

INSTALLATION. This contractor shall also install these windows in the openings. They shall be carefully bedded in HOPE'S Mastic Cement, adjusted and guaranteed weathertight.

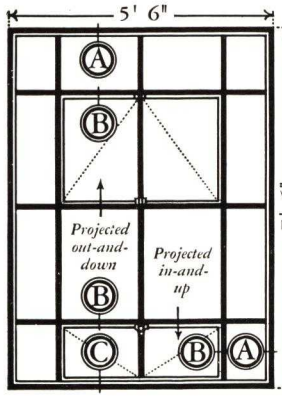
· HOPE'S · PROJECTED · WINDOW ·

See Cat. No. 32





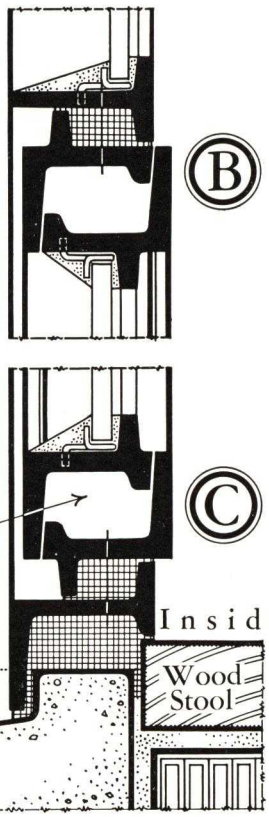
MULLION *formed by coupling two windows*



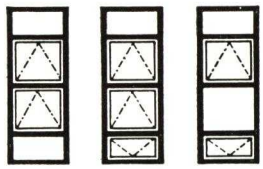
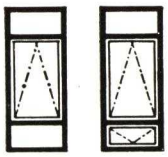
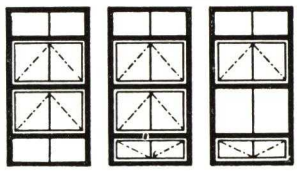
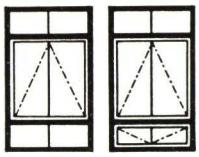
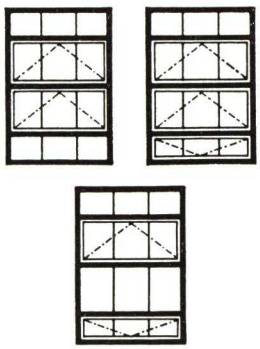
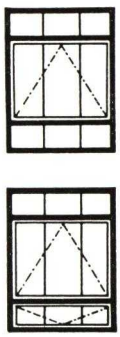
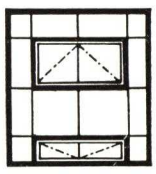
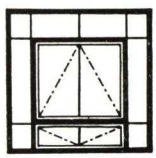
· KEY · ELEVATION ·

Solid welded sections forming two point continuous contact throughout the perimeter of each ventilator without the aid of loose or spot-welded linings.

SIZES



· HALF · FULL · SIZE · DETAILS ·

WIDTHS	· HEIGHTS ·	
	6'-6" 7'-0" 7'-6" 8'-0" 8'-6"	4'-6" 5'-0" 5'-6" 6'-0"
1'-0" 1'-6" 2'-0"		
2'-6" 3'-0"		
3'-6" 4'-0"		
4'-6"		
5'-0" 5'-6" 6'-0" 6'-6" 7'-0"		

SPECIAL SIZES ALSO SUPPLIED

SPECIFICATIONS

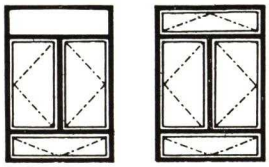
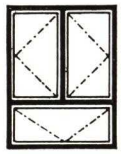
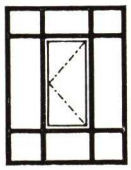
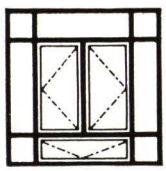
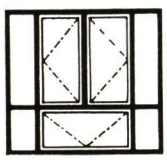
All windows shall be HOPE'S Casements Projected as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y. to the sizes and details shown on the drawings. They shall be made from solid rolled steel sections, having flanges rolled integral at the mills and free from distortions or defects of any kind. All joints shall be accurately machined, electrically welded and exposed surfaces ground smooth. All ventilators shall be solid welded units and shall provide continuous double weathering contacts without the aid of loose or applied linings. All projected ventilators shall be supported by two heavy steel side arms pivoted to the frame at the jambs. Friction shall be provided by means of two brass shoes sliding in channel of the frame section. The upper ventilators shall be fitted with automatic bronze spring catch No. 20-64 and with ring pull No. 20-21 at head; sill or "Tiltin" ventilators shall be fitted with bronze cam locking handle No. 20-63.

Specifications for painting and installation are exactly the same as in Hopkins Window Specifications on Page 13.

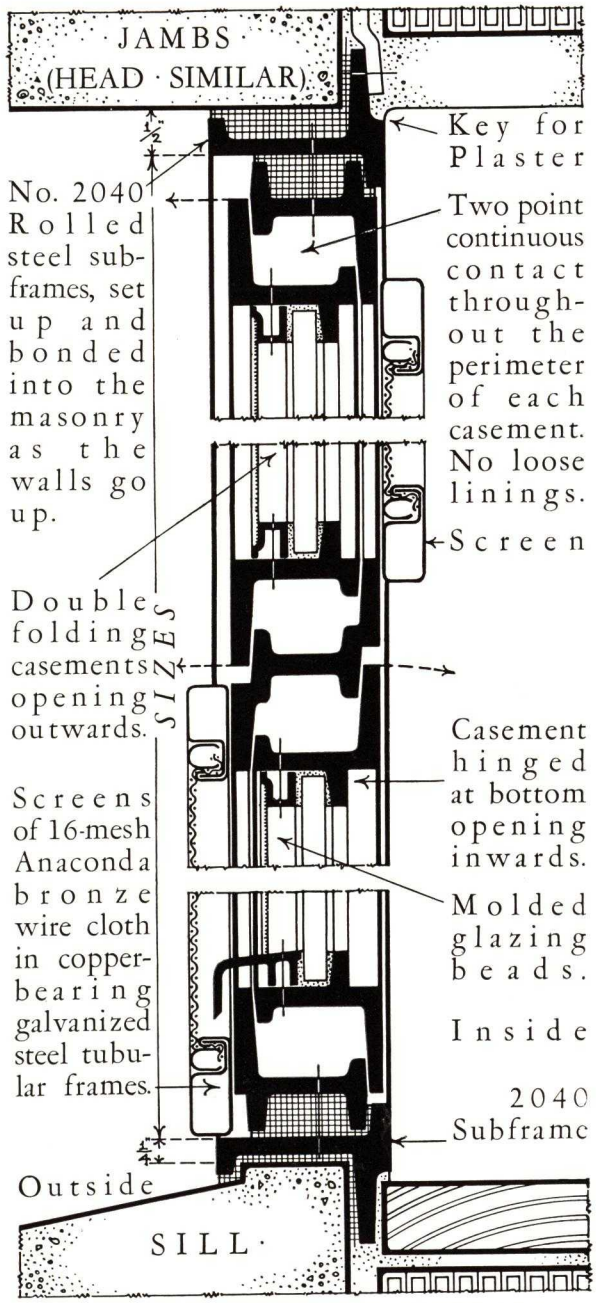
· SOLID · WELDED · WINDOWS · :· NO · LOOSE · LININGS ·

· HOPE'S "HOPKINS" WINDOW ·

See Cat. No. 32

WIDTHS	HEIGHTS	
	6'-6" 7'-0" 7'-6" 8'-0" 8'-6"	4'-6" 5'-0" 5'-6" 6'-0"
2'-6" 3'-0" 3'-6" 4'-0" 4'-6"		
2'-6" 3'-0" 3'-6" 4'-0" 4'-6" 5'-0"		
1'-6" 2'-0"		
1'-0" 1'-6" 2'-0"		
5'-0" 5'-6" 6'-0" 6'-6" 7'-0"		

SPECIAL SIZES ALSO SUPPLIED



HALF·FULL·SIZE·DETAILS

SPECIFICATIONS

All windows shall be Hope's Hopkins Windows as manufactured by Hope's Windows, Inc., Jamestown, N. Y., to the sizes and details shown on the drawings. They shall be made from solid rolled steel sections having flanges rolled integral at the mills and the combined weight of the ventilator sections shall be not less than 3.55 lbs. per lineal foot. All bars shall be free from distortions or defects of any kind. Mullion and transom bars shall be welded solidly into their outer frames and frames and casements shall be solid welded units which shall provide continuous double weathering contacts without the aid of loose or applied linings.

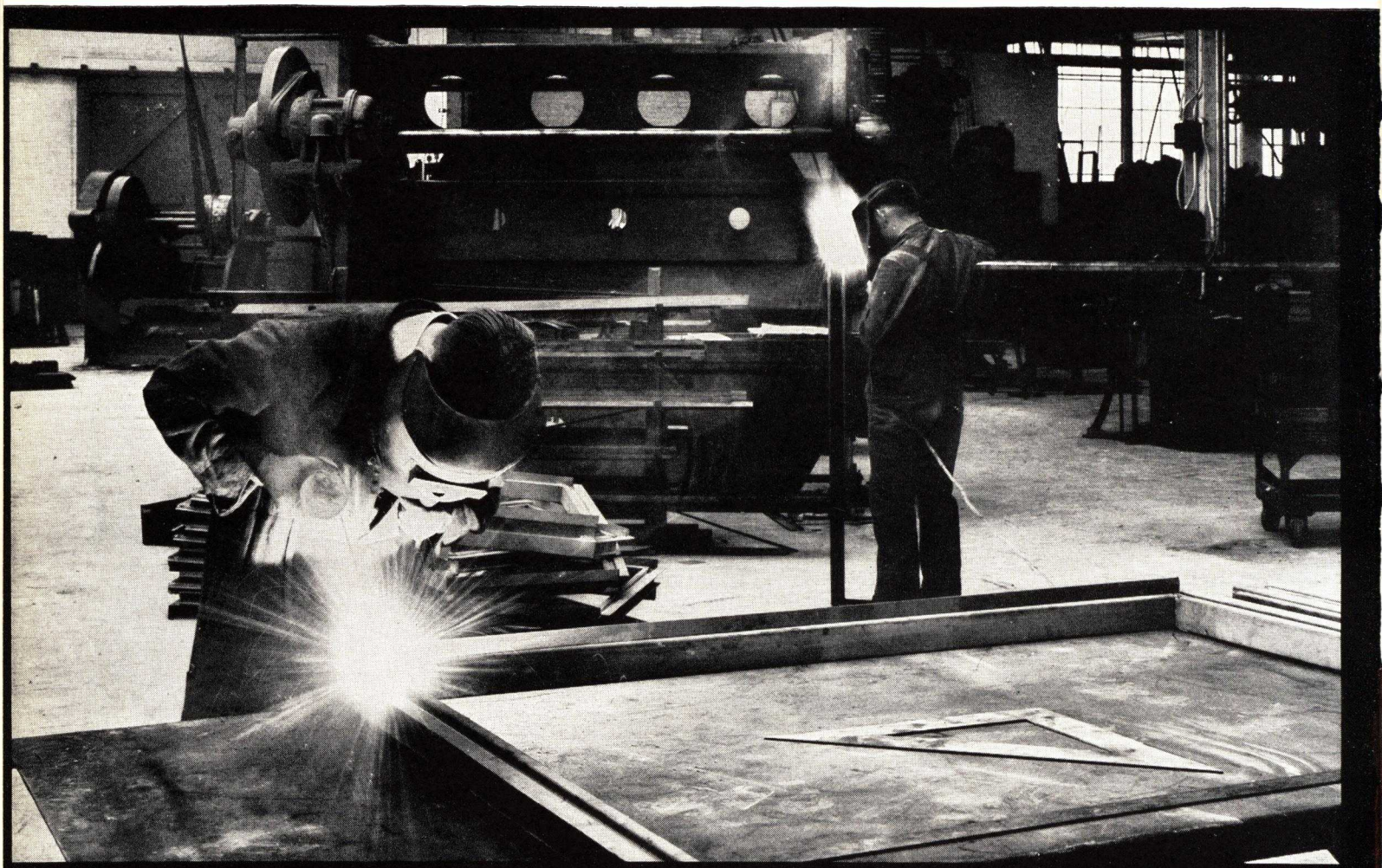
Side hung casements shall be hung on drop forged friction hinges, three knuckle type, and shall be fitted with solid bronze two-point fastener No. 20-52. Sill or "Tiltin" ventilators shall be fitted with bronze cam locking handle No. 20-63.

All steel work shall be cleaned free from rust and scale and shall be primed two coats of DuPont's anti-corrosive paint, each coat separately stoved on.

All windows shall be installed by this contractor and shall be carefully bedded and pointed in Hope's Mastic Cement, adjusted and guaranteed weathertight.

·SOLID·WELDED·WINDOWS·:·NO·LOOSE·LININGS·

"The Name HOPE'S Guarantees"



SOLID WELDED · NO LOOSE LININGS

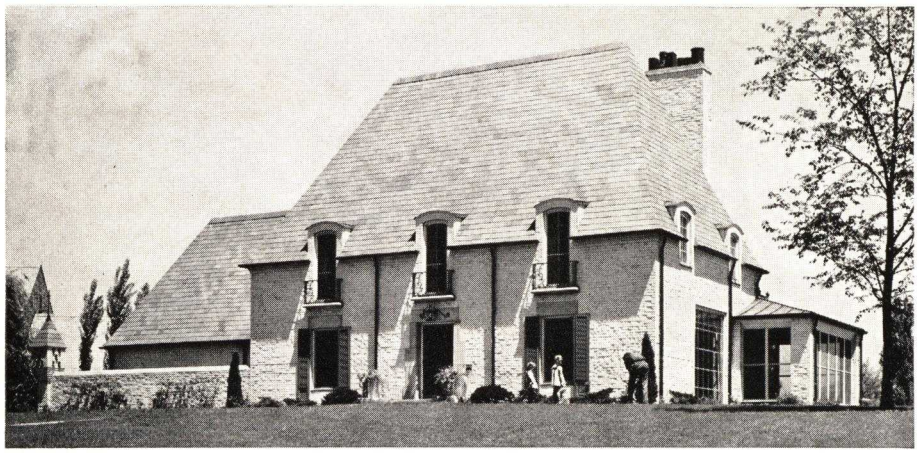
1818 WINDOWS 1938

· HOPE'S · WINDOWS · INC · JAMESTOWN · NEW · YORK ·

Kawneer

WINDOWS · DOORS
ARCHITECTURAL
METAL WORK

Light Sealair Window, Type E, in Colonial Home



Sealair Casements, Weight-Hung Windows and Doors in G. E. Model Home

Kawneer SEALAIR WINDOWS

BETTER WINDOWS OF SOLID ALUMINUM OR BRONZE

Kawneer Sealair Windows are fabricated in several standard types which can be adapted to special requirements by architect and Kawneer engineers. They have been widely used for many years in public and monumental buildings, large residences, and projects of all kinds. The development of the Light Sealair Window a few years ago, made it possible to use fine rustless metal windows even in homes of moderate cost, and established a new type of window which is gaining greater importance every year.

Kawneer's wide experience in fabricating all types of rustless metal windows—including windows for busses, automobiles, and modern trains—enables Kawneer to give dependable service on any window problem. Write for further data, or cooperation in adapting Sealair construction to your requirements.

LIGHT SEALAIR WEIGHT-HUNG WINDOWS for wide residential use in stock and standard sizes for openings up to 34″ in width . . pages 2-5

MEDIUM SEALAIR WEIGHT-HUNG WINDOWS, commercial windows fabricated to order for openings up to 45″ in width . . . . . pages 6-7

HEAVY SEALAIR WEIGHT-HUNG WINDOWS, fabricated to order for openings up to 66″ in width . . . . . pages 6 and 8

SEALAIR CASEMENT WINDOWS, fabricated to order for any requirements . . . . pages 6 and 9-10

RUSTLESS METAL DOORS for use in store fronts, buildings and residences of all types . pages 10-12

ARCHITECTURAL METAL WORK . . pages 13-14

IMPORTANT FACTS

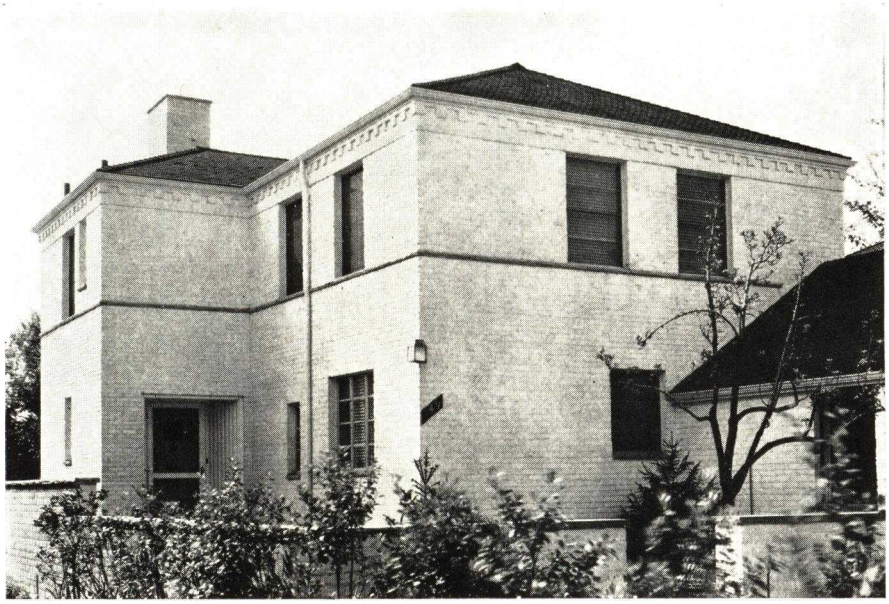
In brief, the advantages of using Kawneer Sealair Windows are:

From the aesthetic point of view, they offer the most modern and beautiful fenestration obtainable—with soft, appealing gloss and color, simple lines, compact construction, and truly fine craftsmanship.

From the practical point of view, they offer a splendid combination of dependably easy operation and extreme weathertightness, sturdy fabrication without bulk, and easy installation. Of vital importance is the almost complete elimination of upkeep expense due to the well-known fact that the aluminum and bronze alloys used will not rust, decay or rot out—never require painting.

TYPICAL INSTALLATIONS • LIGHT SEALAIR WEIGHT-HUNG WINDOWS

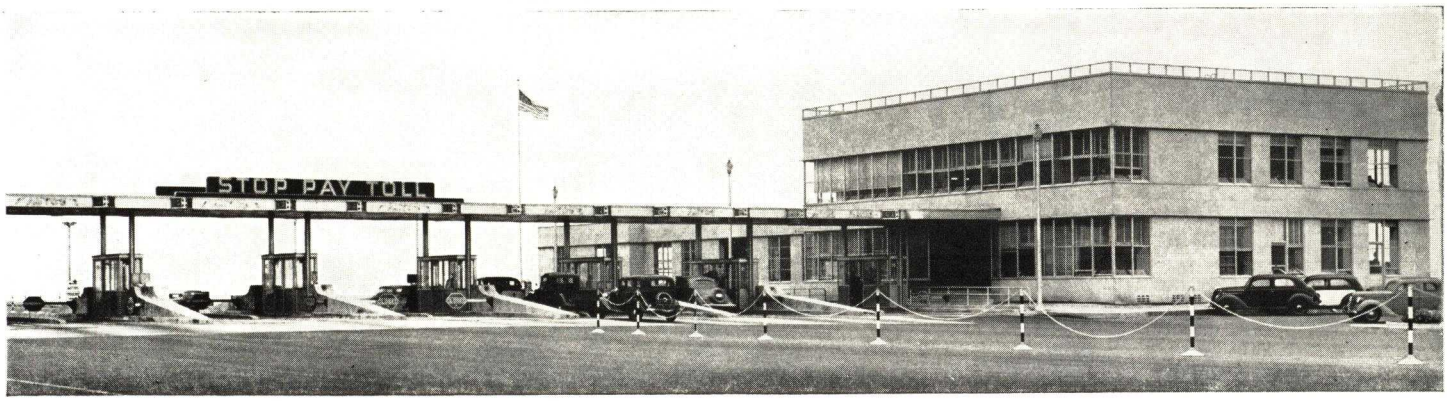
Residence at St. Louis, Missouri



Residence at Cleveland, Ohio

Residence at Grosse Pointe, Michigan

Toll Gate Building, San Francisco-Oakland Bay Bridge



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LIGHT SEALAIR WEIGHT-HUNG WINDOWS

Kawneer Light Sealair Windows, the first aluminum or bronze windows furnished in stock and standard sizes for wide residential use, offer many advantages:

COMPLETE UNITS—assembled at the factory, shipped ready for quick installation.

MODERN BEAUTY. Simple, straight-forward design, soft appealing gloss and color, compact construction, and fine craftsmanship make these windows suitable for every type of up-to-date home. They are specified by many architects for their decorative beauty alone.

SIMPLE CONSTRUCTION. Time-tested double-hung construction with new compactness and precision.

EASY OPERATION—ALWAYS. Properly installed, Light Sealair Windows offer easy, dependable operation at all times, in all weather, and without complications due to painting. Sash are fitted to produce a happy combination of unusual ease of action, and extremely low infiltration.

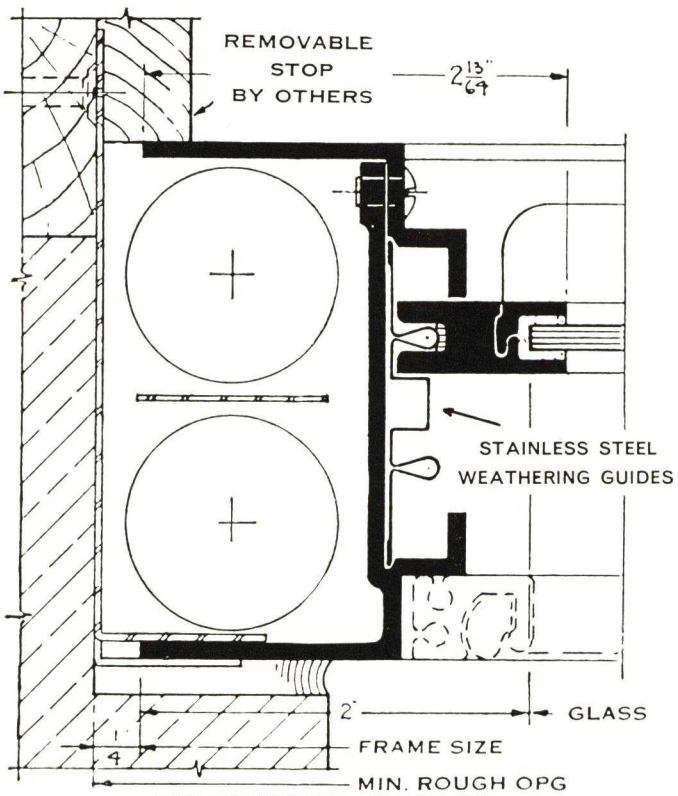
EXTREMELY WEATHERTIGHT. An infiltration figure of .238 (cubic feet of air per minute per lineal feet of sash perimeter at a wind velocity of 25 miles per hour) means effective protection against dust, wind, and weather. Dependable protection, too—no rusting, swelling, shrinking, or rotting out.

MINIMUM MAINTENANCE COST. Upkeep and repair expense, reputtying and refitting are practically eliminated. Painting is never required.

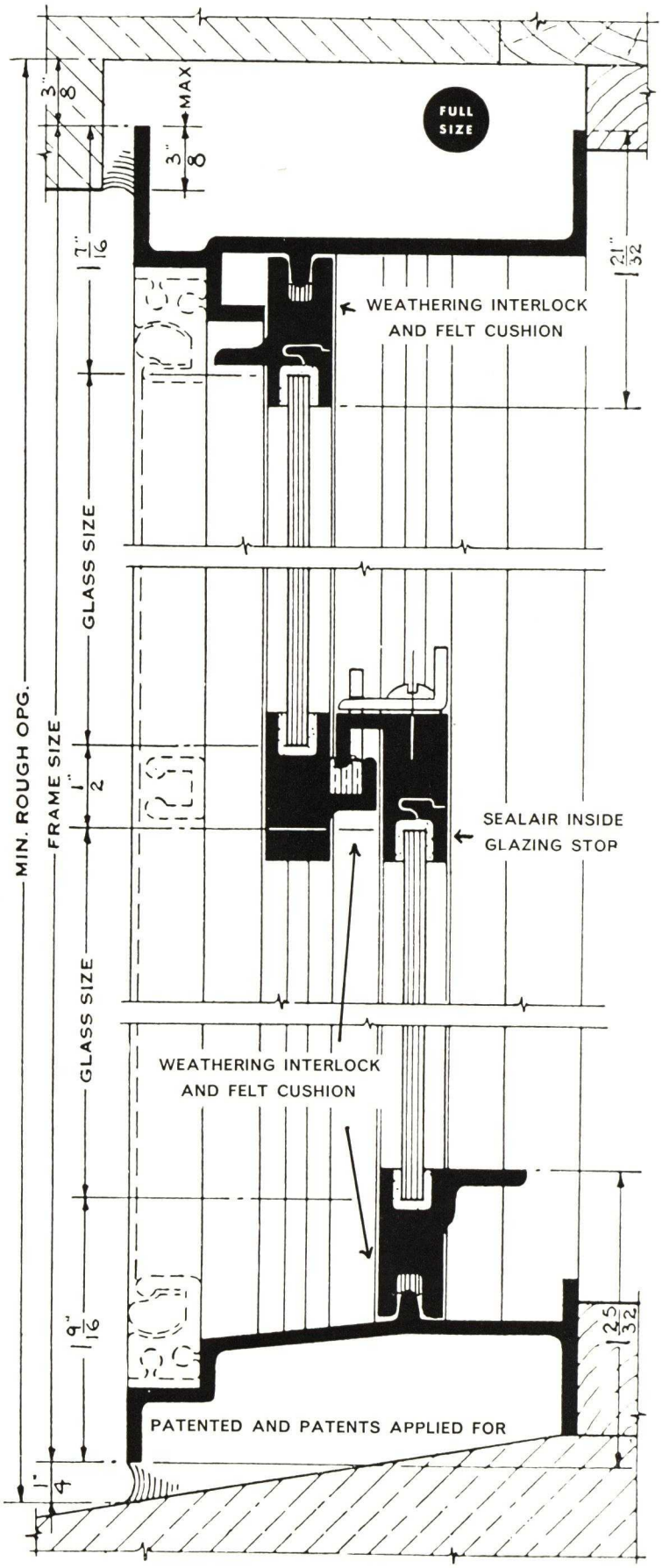
ADMIT MORE DAYLIGHT. Sealair compactness admits approximately 15% more daylight in a given opening than conventional wood construction.

DURABLE—STURDILY BUILT. Great strength is achieved by sturdy fabrication and the use of modern alloys. Many installations from coast to coast prove Sealair dependability.

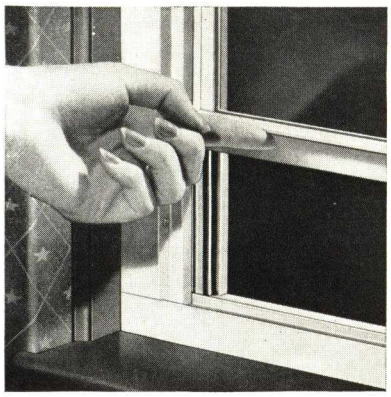
A SUPERIOR SPRING SASH BALANCE CONSTRUCTION IS OPTIONAL.



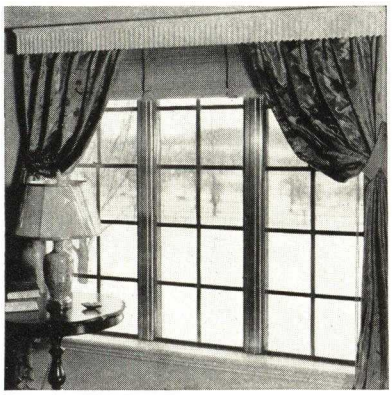
HORIZONTAL SECTION



VERTICAL SECTION



Finger-tip sash control.



Mullions reduced from 10″ to 4-13/16″.

DATA

Light Sealair Weight-Hung Windows are complete double-hung windows, assembled at the factory, with hardware applied and sash glazed and installed in the frame on weatherstrip guides. (Windows can be delivered open, and glazed on the job, from the inside.) Pulleys are placed, and sash cord attached, but weights, weight separators, and continuous anchors are shipped separately.

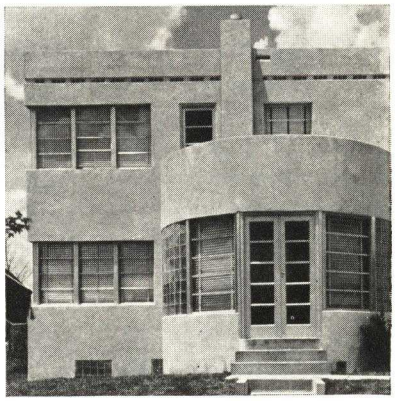
MATERIALS. Extruded Shapes of aluminum or bronze are formed of the best standard commercial alloys for the purpose intended. Weatherstrip Guides are specially formed stainless steel of 18-8 alloy. Felt Weathering Cushions are all-wool felt, treated to give maximum resiliency and to prevent deterioration due to vermin, moisture, or exposure. Meeting Rail Lock is made of white bronze, finished to match the window. Continuous Lifts are integral with the sash. Rubber Bumpers are provided at head. Pulleys are ballbearing. Sash Cord is steel cable core launch cord with cotton covering —tested for a lifetime of service. Weight Separators and Continuous Angle Anchors are steel, galvanized. A superior spring sash balance construction is optional in place of weights and pulleys.

CONSTRUCTION. Sections forming the frames and sash are accurately coped and joined at corners and abutting intersections. Sash are removable, and pulleys, weights, and sash cord accessible. Sash cord is concealed. Sealair Inside Glazing Stops protect and hold putty in place and provide a neat, finished appearance. WEATHERING. Sash interlock with each other at meeting rail, with frame at head and sill, and with weatherstrip guides at side jambs. Felt cushions are provided at all these points of contact. GLAZING. Windows are glazed by Kawneer with double strength A quality window glass. FINISHES. All frames and sash have a fine satin finish. The Alumilite Finish on aluminum or other special finishes can be secured. SIZES. For openings up to 34″ in width. See table on page 5.

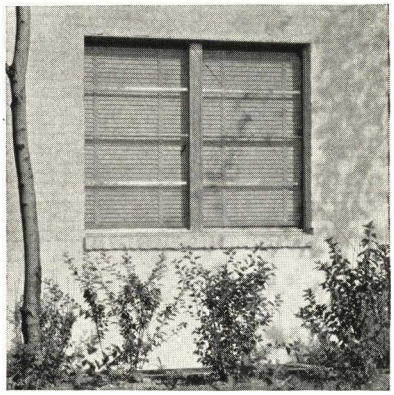
INSTALLATION. Window is installed in prepared opening immediately after plastering is completed. (See page 5.) Weights and Weight Separators are attached, Continuous Anchors slipped on, the complete unit placed in the opening, and anchors screwed to framing or grounds at sides and head. Caulking is then done and protective coating removed.

GROUPED WINDOWS. Twin, triple, or larger groups, as well as corner windows, are shipped in separate units, ready for installation with Kawneer Mullion or Corner Casing. SCREENS AND STORM SASH are furnished in standard sizes with hangers to fit Light Sealair frames. Full screens have 16 mesh wire, of same metal as window, with wire brush finish. Interchangeable Storm Sash are made with or without ventilators.

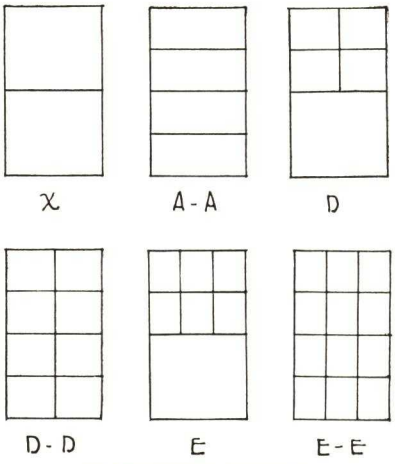
(Details, specifications and sizes subject to change without notice.)



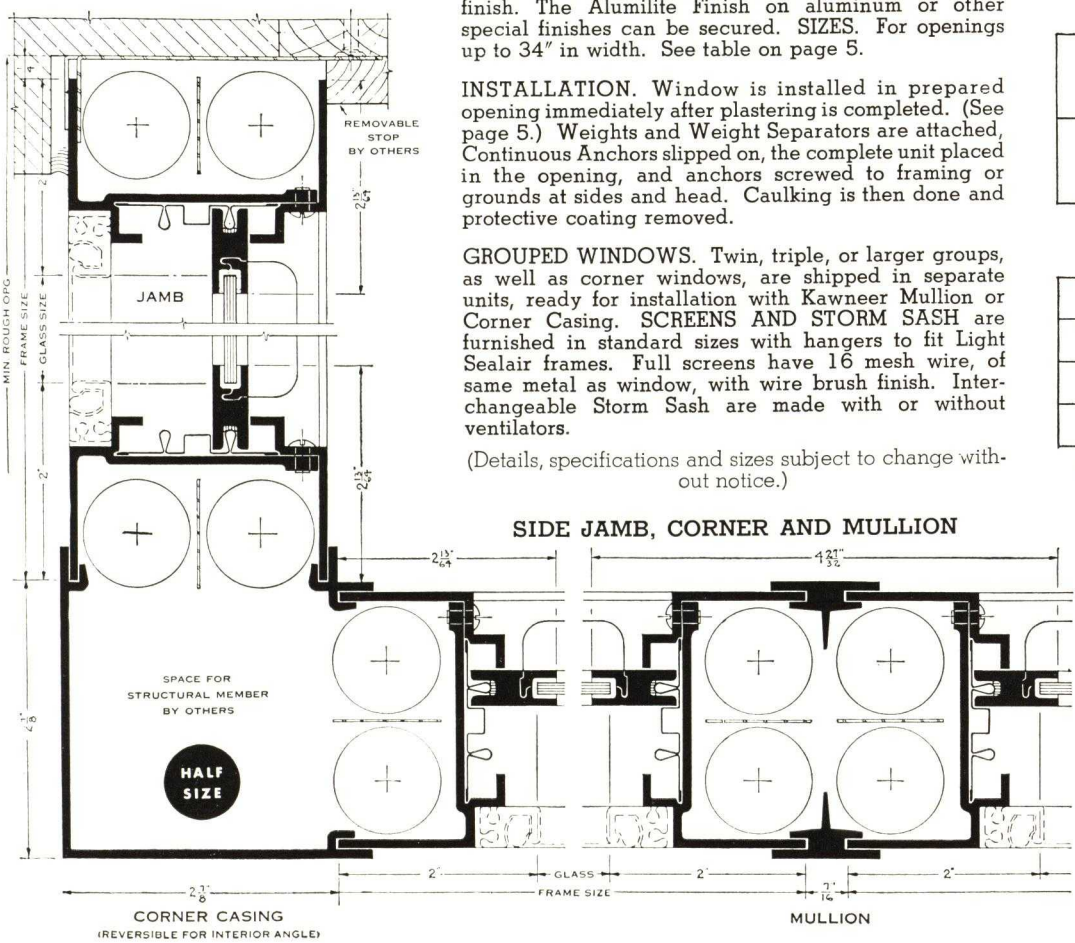
Note corner windows and Kawneer Doors.



Twin window, Type A-A.



STANDARD TYPES

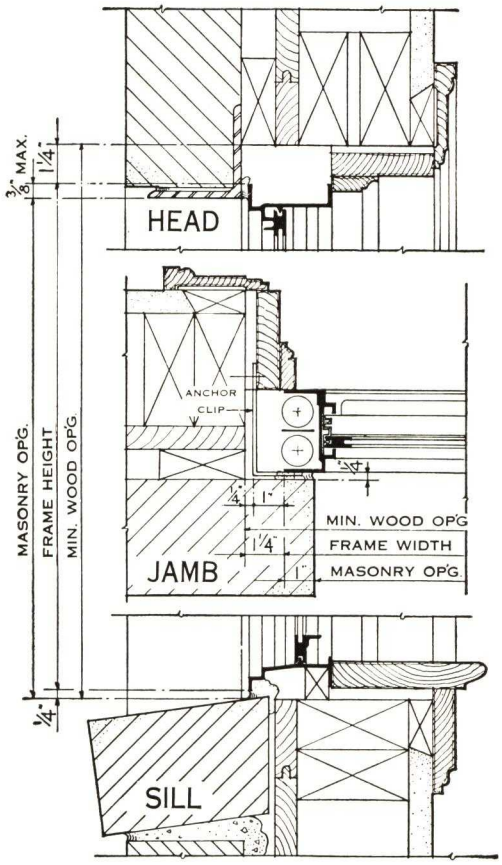


SIDE JAMB, CORNER AND MULLION

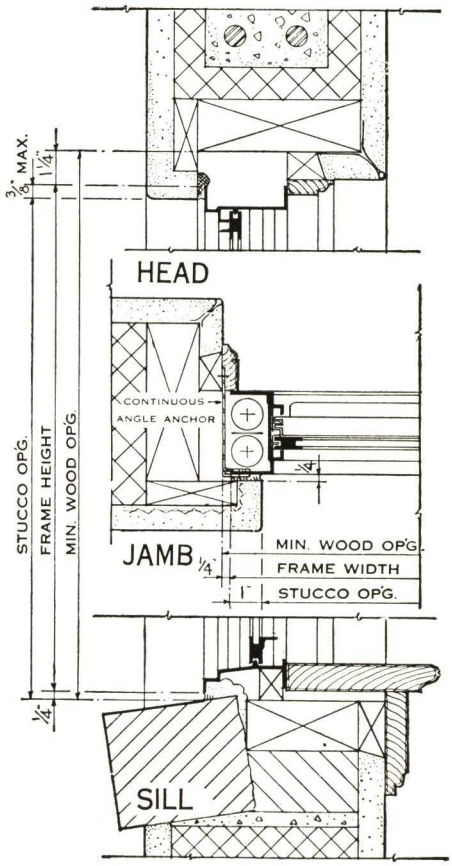
F. S. MUNTIN

Note self-locking, angular Sealair Inside Glazing Stops, which hold and protect putty. These are used also at sides and tops of one-light sash.

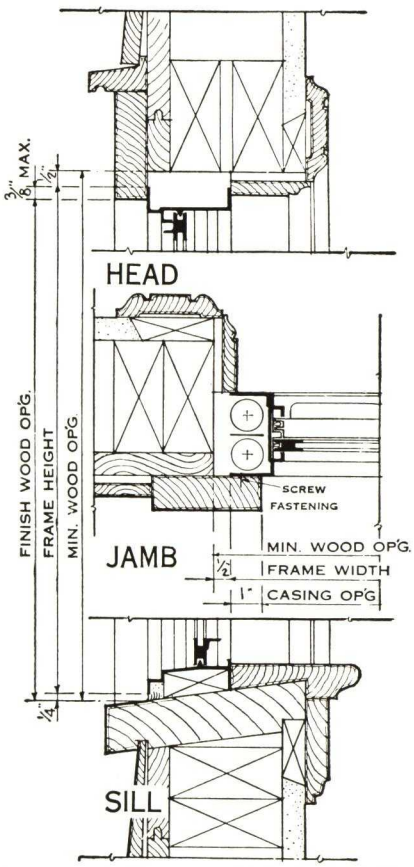
INSTALLATION AND SIZES • LIGHT SEALAIR WEIGHT-HUNG WINDOWS



BRICK VENEER CONSTRUCTION



TILE & STUCCO CONSTRUCTION



FR. & SIDING CONSTRUCTION

Carried in Stock in the Following Sizes:

NUMBER	TYPE	FRAME SIZE
18-18		22" x 39½"
18-24		22" x 51½"
18-30		22" x 63½"

NUMBER	TYPE	FRAME SIZE
24-18		28" x 39½"
24-24		28" x 51½"
24-30		28" x 63½"

NUMBER	TYPE	FRAME SIZE
30-18		34" x 39½"
30-24		34" x 51½"
30-30		34" x 63½"

Standard Sizes Not Carried in Stock:

NUMBER	TYPE	FRAME SIZE
18-16		22" x 35½"
18-20		22" x 43½"
18-26		22" x 55½"
18-28		22" x 59½"
20-16	See details pages 3 and 4	24" x 35½"
20-18		24" x 39½"
20-20		24" x 43½"
20-24		24" x 51½"
20-26		24" x 55½"
20-28		24" x 59½"
20-30		24" x 63½"
24-16		28 "x 35½"
24-20		28" x 43½"

NUMBER	TYPE	FRAME SIZE
24-26		28" x 55½"
24-28		28" x 59½"
26-16		30" x 35½"
26-18		30" x 39½"
26-20	See details pages 3 and 4	30" x 43½"
26-24		30" x 51½"
26-26		30" x 55½"
26-28		30" x 59½"
26-30		30" x 63½"
28-16		32" x 35½"
28-18		32" x 39½"
28-20		32" x 43½"
28-24		32" x 51½"

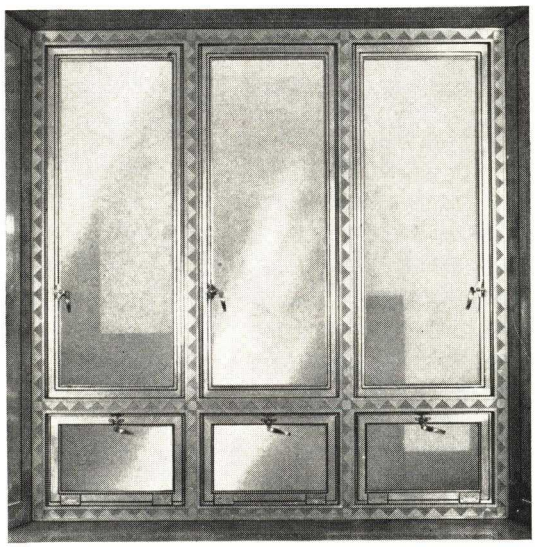
NUMBER	TYPE	FRAME SIZE
28-26		32" x 55½"
28-28		32" x 59½"
28-30		32" x 63½"
30-16		34" x 35½"
30-20	See details pages 3 and 4	34" x 43½"
30-26		34" x 55½"
30-28		34" x 59½"
32-20		36" x 43½"
32-24		36" x 51½"
32-26		36" x 55½"
32-28		36" x 59½"
32-30		36" x 63½"

Masonry or casing opening is usually 2" narrower and 1/8" shorter than frame size.

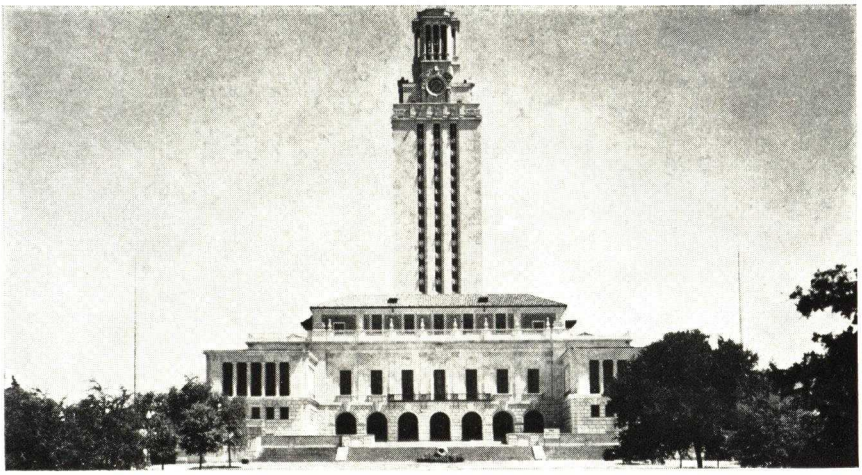
MEDIUM AND HEAVY SEALAIR WEIGHT-HUNG WINDOWS • CASEMENTS

These fine aluminum or bronze windows are fabricated in standard types, easily adapted to special conditions. They have been used in a wide variety of public, commercial, and monumental buildings, large residences and important projects. They are especially notable for appealing beauty, extremely effective weathering, sturdy fabrication, and minimum maintenance expense. A few recent installations are illustrated.

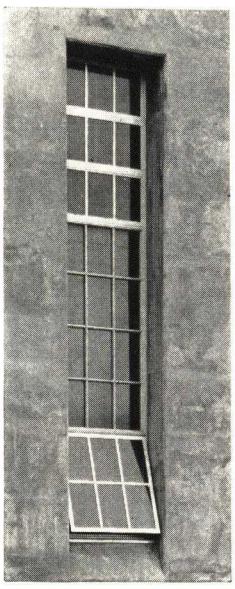
Medium Sealair Weight-Hung Windows for City of Chicago

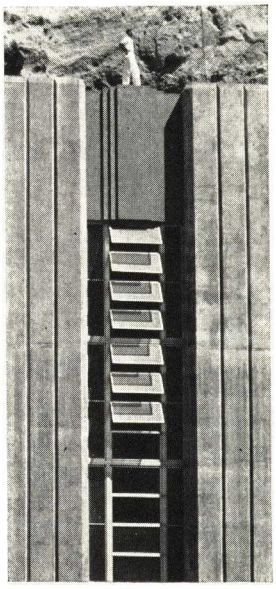


Ornamented Casements for Norfolk, Va. Post Office



Sealair Casements for University of Texas

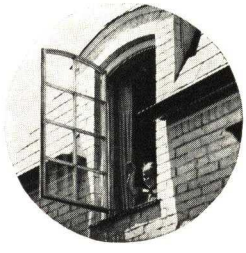




Sealair Casements for Mellon Securities Corp. Pittsburgh

Above: Special Windows for Triborough Bridge, N.Y.C. and Boulder Dam

Right: Sealair Casements in a G. E. Model Home



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MEDIUM SEALAIR WEIGHT-HUNG WINDOWS

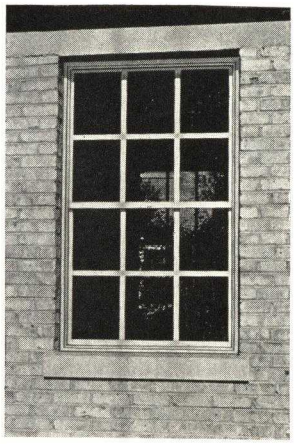
Medium Sealair Weight-Hung Windows are fabricated to order for openings up to 45" in width. Approximately 30% heavier than Light Sealair construction they are suitable for a wide range of commercial uses, as well as for residential openings.

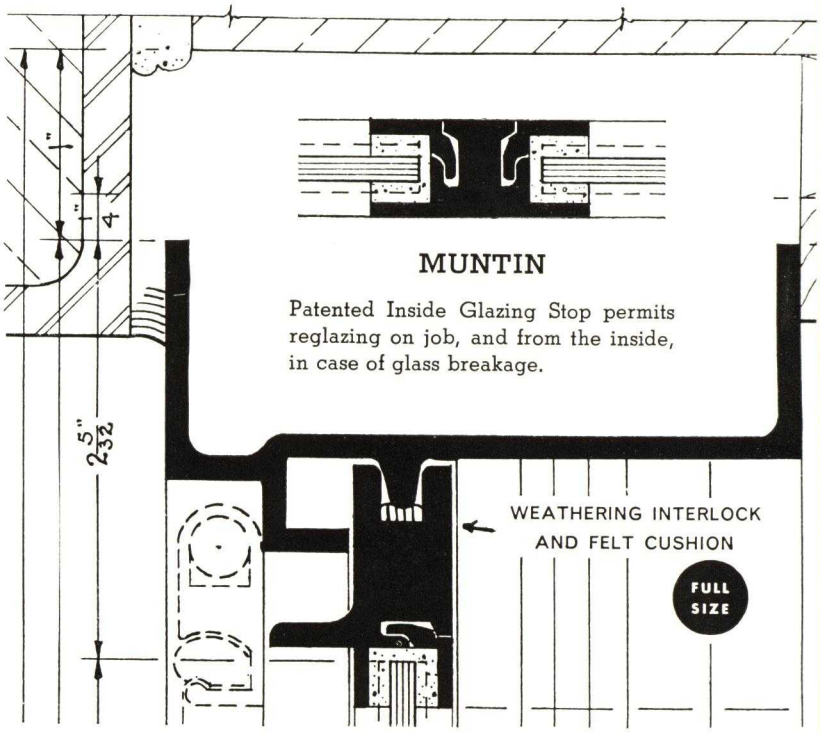
The use of these modern windows is a very logical specification for commercial buildings of all types, since they approximate the low upkeep cost of brick, stone or concrete. From the decorative standpoint they offer soft, appealing gloss and color which add interest to the window openings and life to the building facade. Their low infiltration figure (less than .250 cubic feet of air per lineal feet of sash perimeter at a wind velocity of 25 miles per hour) means comfort and fuel savings. Other advantages are similar to those listed on page 3.

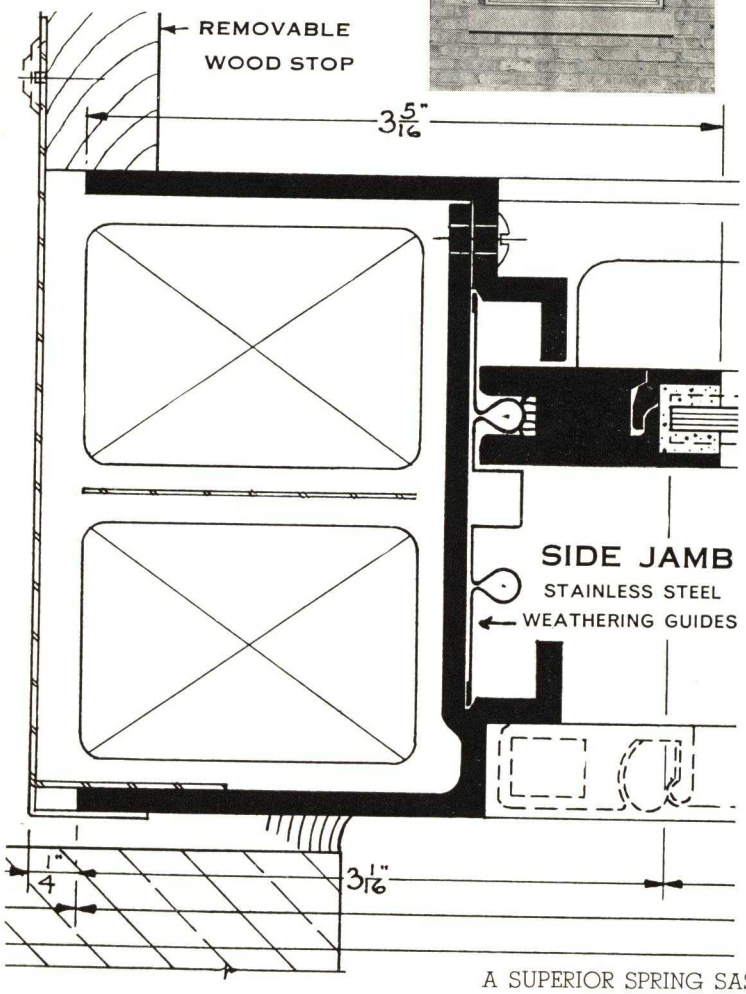
Data on page 4 also applies as do Standard Types of Muntin Arrangement shown on that page. Mullion and Corner Casings are heavier than Light Sealair construction.

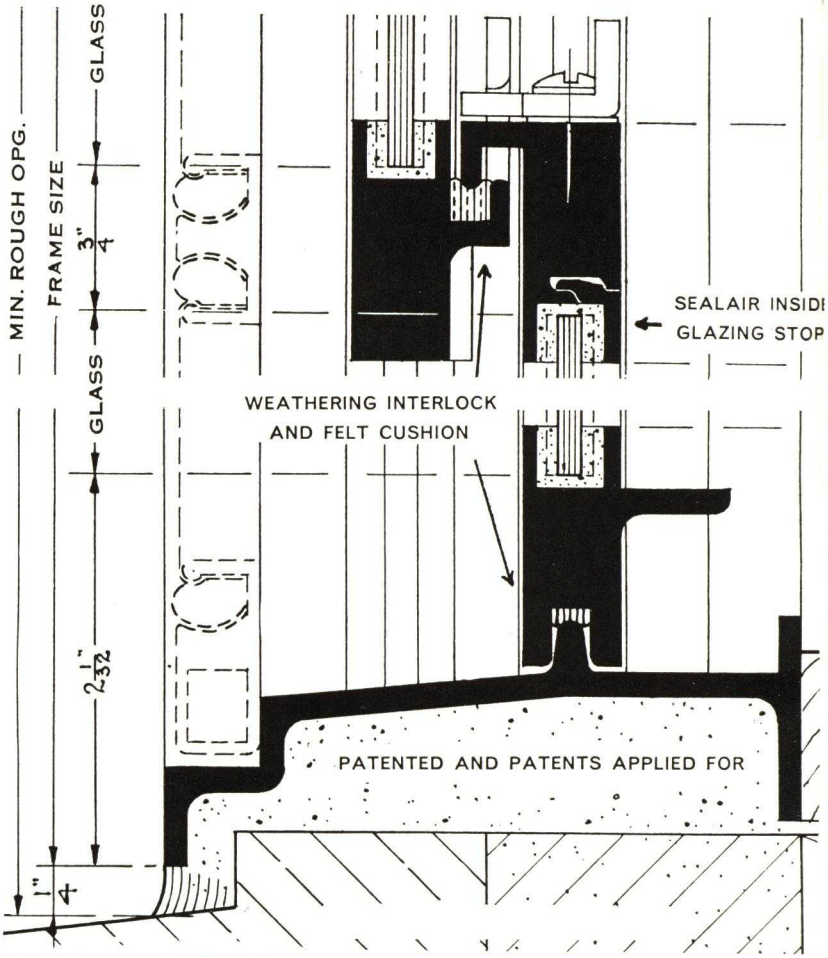
(Details, specifications and sizes, subject to change without notice)

COMPLETE DETAILS AND DATA ON SEALAIR WINDOWS ARE AVAILABLE IN SEPARATE DETAIL FOLDERS COVERING LIGHT, MEDIUM, HEAVY, AND CASEMENT TYPES.







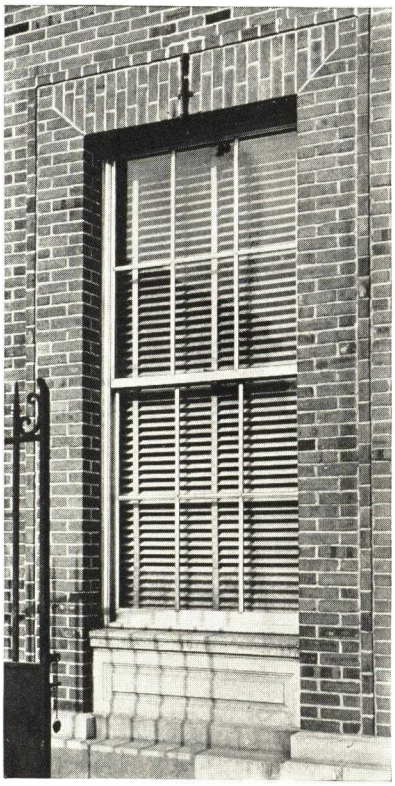


A SUPERIOR SPRING SASH BALANCE IS OPTIONAL

HORIZONTAL SECTION

VERTICAL SECTION

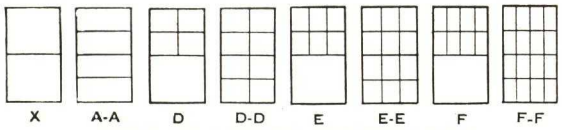
HEAVY SEALAIR WEIGHT-HUNG WINDOWS



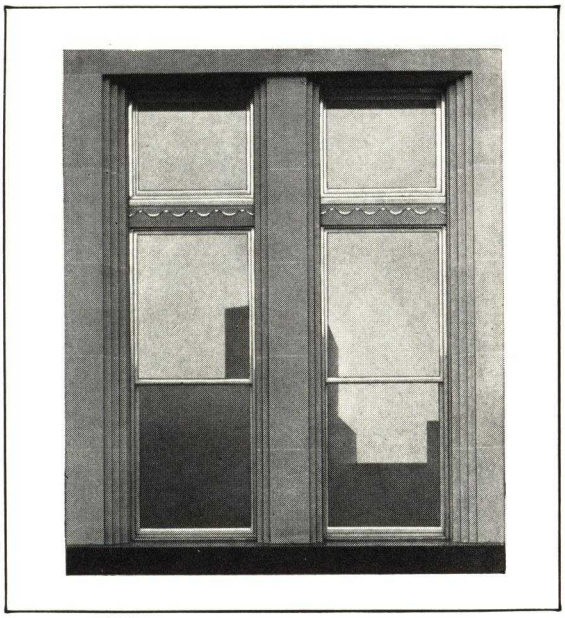
Heavy Sealair Weight-Hung Windows are fabricated to order for special requirements, especially for larger openings in commercial, public and monumental buildings. Like other Sealair Windows these aluminum or bronze window units are sturdily fabricated and offer appealing beauty, dependably easy operation, effective weathering, and minimum upkeep cost for the life of the building.

MATERIALS. Extruded shapes are Architectural Bronze or Aluminum, 1/8" or more in thickness. Concealed members are zinc coated steel. CONSTRUCTION. Sections forming frames are accurately coped or mitered at corners and abutting intersections: joints are either welded solid along the entire line of contact on inside—or milled to a hair line joint, tenoned and riveted, and welded on unexposed side. Sash corner joints are accurately mitered, or coped and welded solid along entire line of contact. These and other specifications result in great strength and a neat, finished appearance.

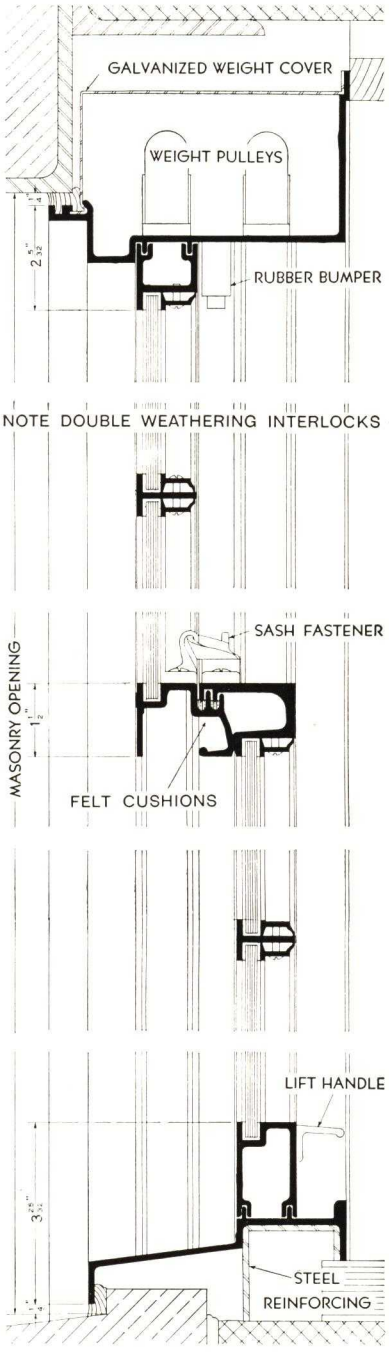
(Details, Specifications and Sizes subject to change without notice.)



TYPES OF MUNTIN ARRANGEMENT



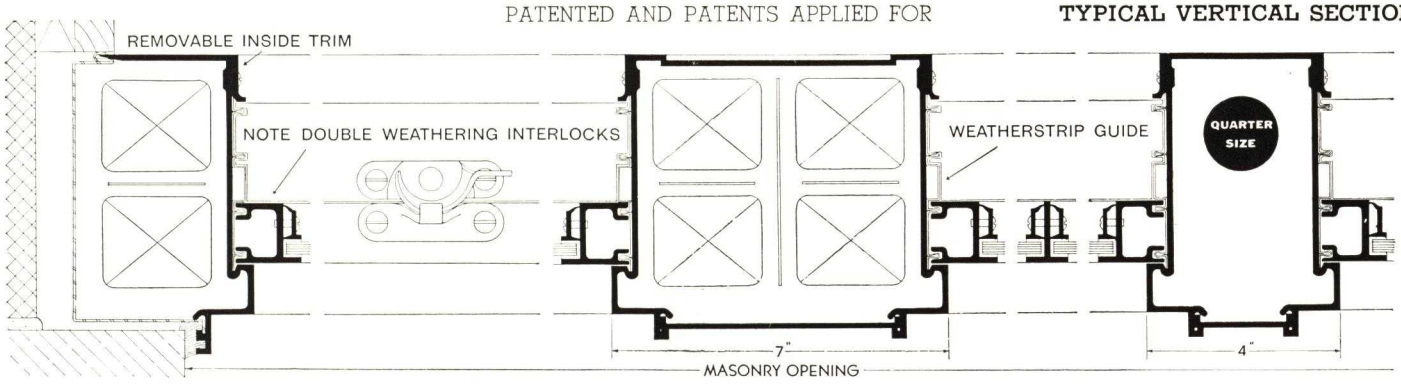
PATENTED AND PATENTS APPLIED FOR



TYPICAL VERTICAL SECTION

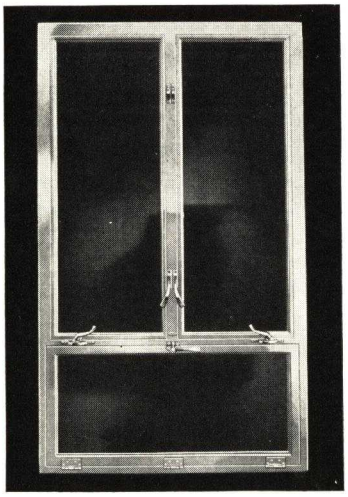
WEATHERING. Note that sash rails interlock with frame at two contact points, and slide on double weatherstrip guides of stainless steel—a very effective construction. FINISH. Satin is standard but Alumilited Aluminum or any other practical finish can be secured. HARDWARE. Sash are counterbalanced with cast iron weights: pulley housings and wheels are malleable gray cast iron with axles of hard steel—removable as a unit. Zinc coated steel chains have a tensile strength of at least 425 lbs. Other hardware includes two lifts, a cam action fastener, a pole ring, and a rubber bumper. GLAZING. Sash are designed to allow glazing by Glazing Contractor from inside. Glazing mouldings and machine screws are furnished. INSTALLATION. Windows are installed by Kawneer or by Erection Contractor in accordance with instructions. SCREENS are available.

WRITE FOR DETAIL AND SPECIFICATION FOLDER

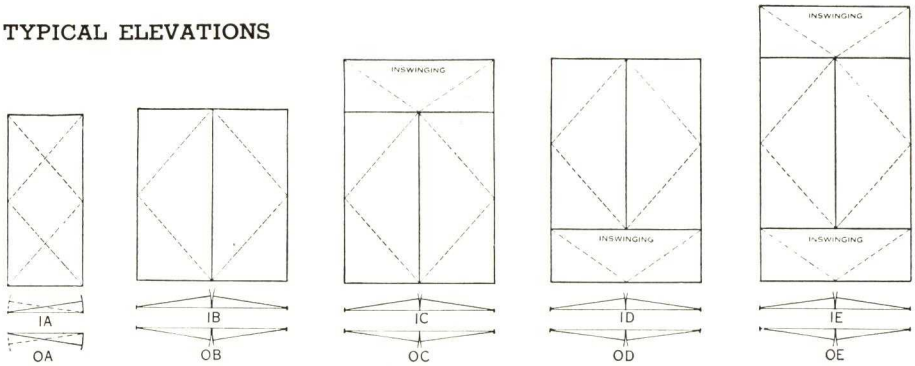


SIDE JAMB DOUBLE MULLION WEIGHTLESS MULLION

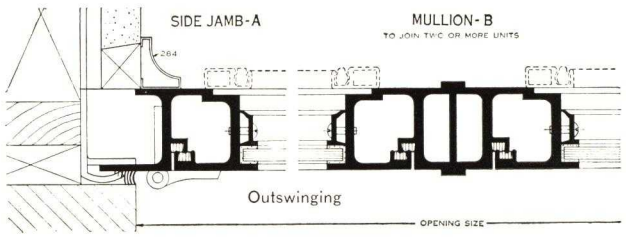
SEALAIR CASEMENT WINDOWS

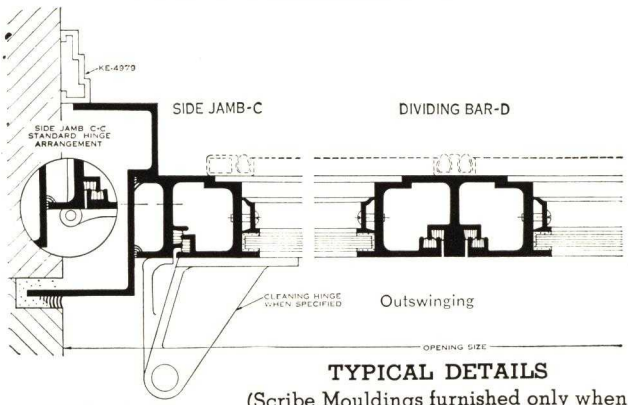


TYPICAL ELEVATIONS



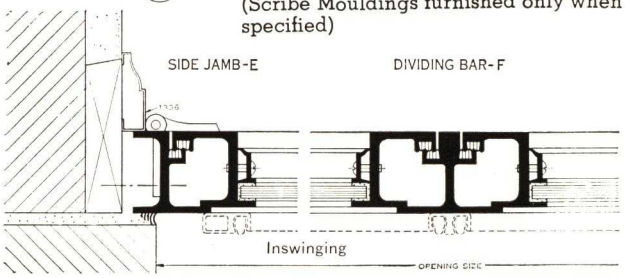
TYPICAL SEALAIR CASEMENT

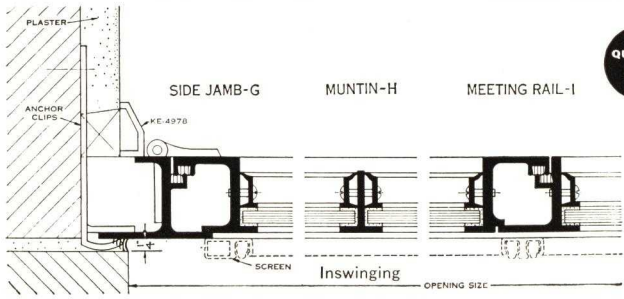




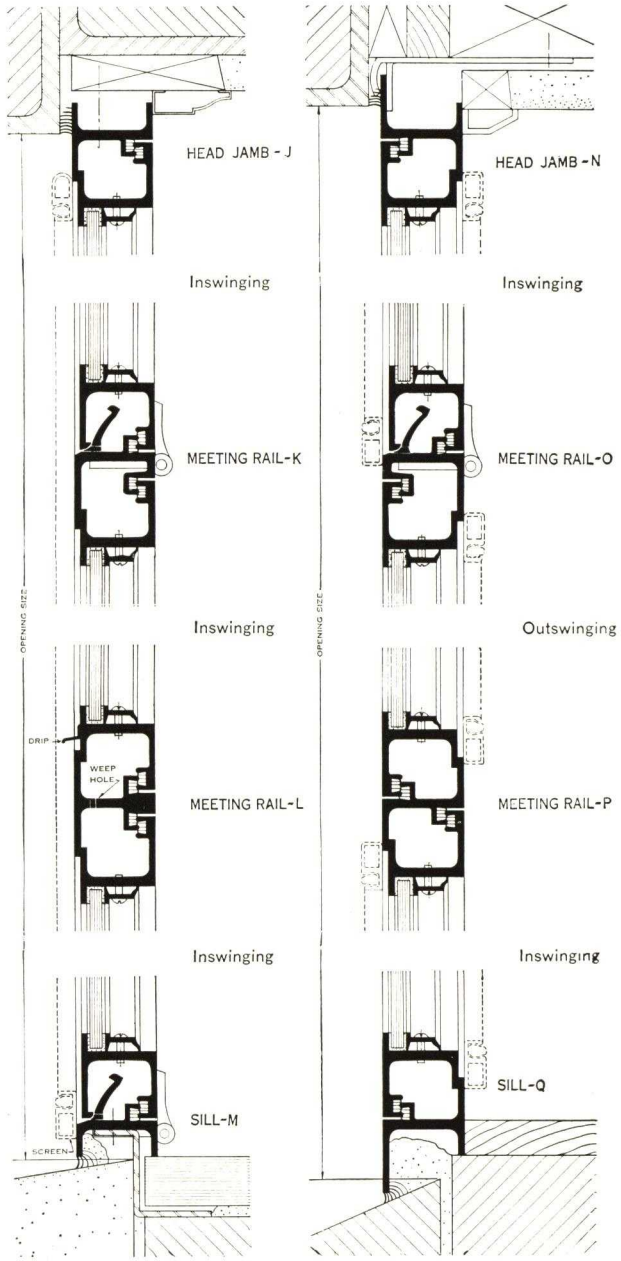
TYPICAL DETAILS

(Scribe Mouldings furnished only when specified)





QUARTER SIZE



PATENTED AND PATENTS APPLIED FOR

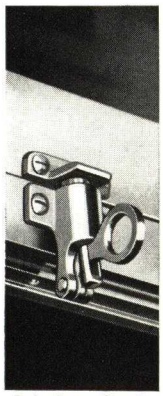
CASEMENTS

Sealair Casement Windows are fabricated to order for a wide variety of requirements—in any combination of inswinging, outswinging, hinged, pivoted, or projected sash. Installations in many outstanding public, commercial, and monumental buildings show minimum upkeep and maintenance cost, extremely low infiltration, dependable operation, and appealing beauty.

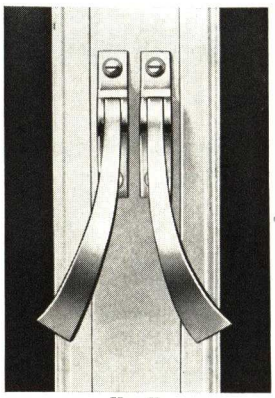
MATERIALS. Extruded shapes of Architectural Bronze or Aluminum are not less than 1/8" in thickness. CONSTRUCTION. Frames are accurately coped or mitered at corners and abutting intersections; and joints either welded solid along entire line of contact on inside or milled to a hair line joint, tenoned, riveted, and welded on unexposed side. Corner joints of ventilating sash are accurately mitered along entire line of contact, and welded solid on inside. Sturdy, careful fabrication throughout assures great strength and neat, finished appearance. FINISH. Satin finish is standard, but Alumilited Aluminum or other practical finishes are available. GLAZING. Sash are designed to allow glazing by Glazing Contractor from inside. Glazing mouldings and machine screws are furnished. INSTALLATION. Windows are installed by Kawneer or by Erection Contractor in accordance with instructions. Subframes of same metal as windows can be secured, or windows installed direct in masonry. SCREENS are available.

HARDWARE. Suitable hardware is applied at factory and finished to match window. Either half surface or extension hinges are available. Typical hardware applications are illustrated.

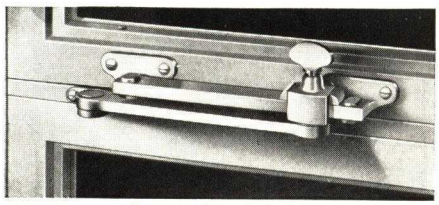
(Details, specifications and sizes subject to change without notice.)



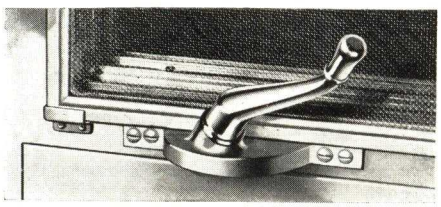
Pole Ring Catch



Handles

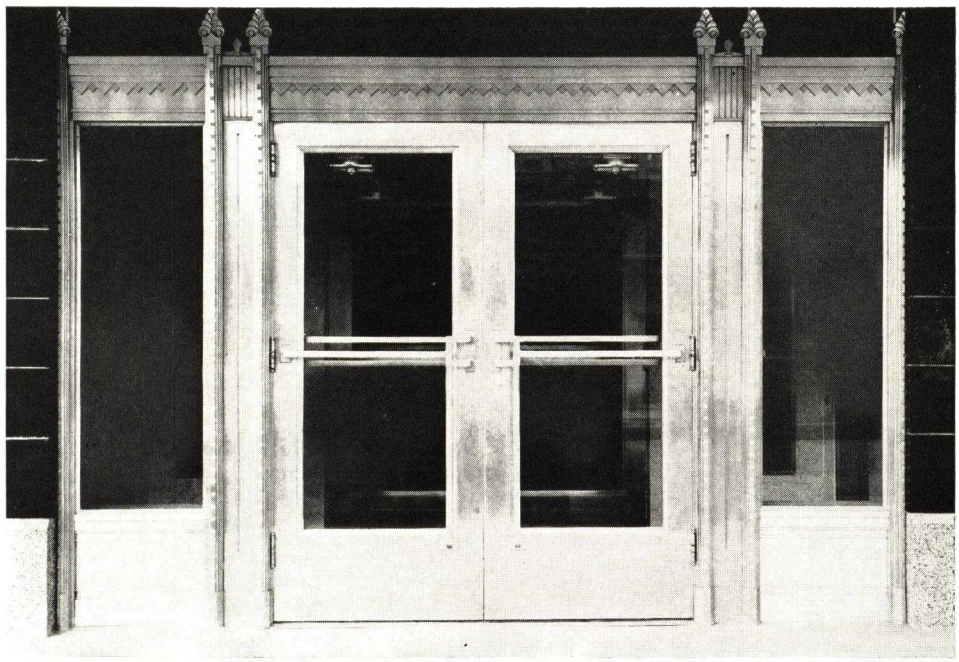


Positive Stay Adjuster

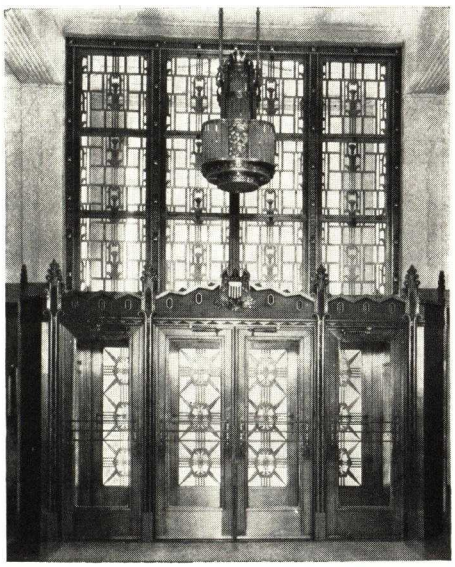


Crank for outswinging type

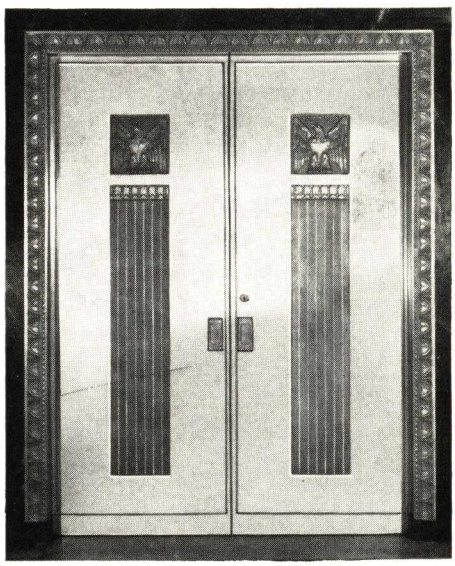
RUSTLESS METAL DOORS



Welded Tubular type Kawneer Doors in Nickel Silver for Insurance Exchange Building, Sioux City, Iowa.



Bronze Doors and Entrance Work, Cincinnati Post Office.



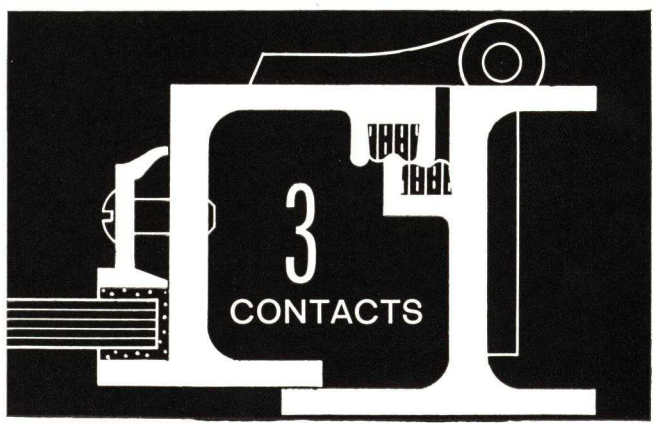
Aluminum Elevator Doors, Norfolk Post Office.

SEE PAGES 11-12

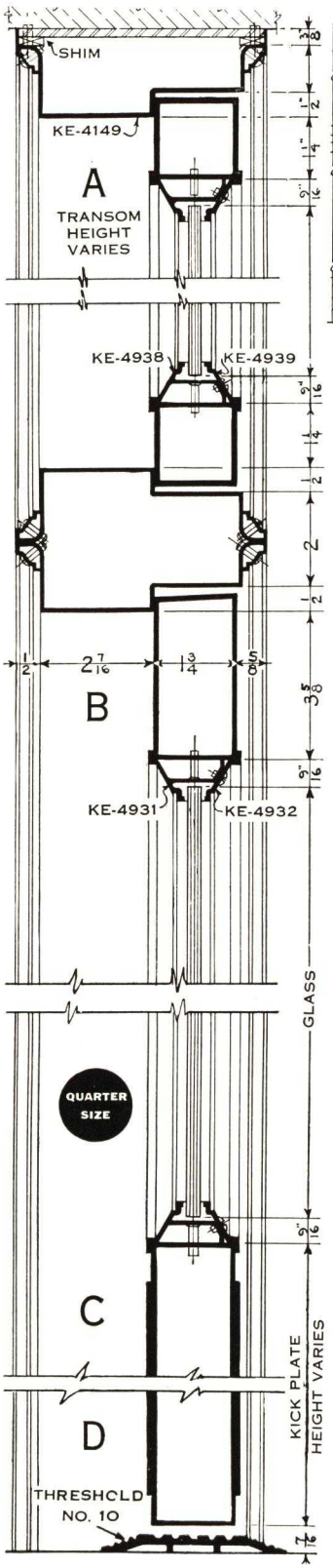
WEATHERING

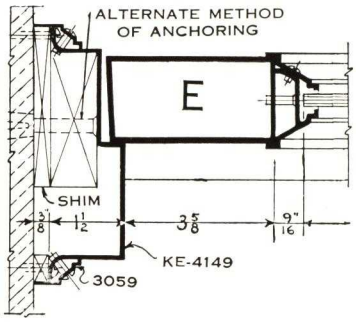
Continuous 3-point contact all around ventilating sash makes these windows weatherproof, dustproof, and rattleproof. Two metal-to-felt and one metal-to-metal contact produce an infiltration figure of only .124 cubic feet of air per minute per lineal foot—an extremely low figure, shown in tests made by the Rob't W. Hunt Company, Chicago Engineers. Felt is all-wool, long fiber, treated for resiliency and against deterioration.

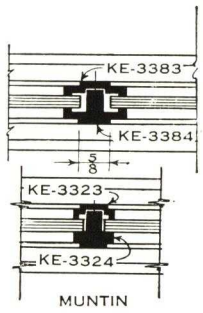
WRITE FOR DETAIL AND SPEC. FOLDER

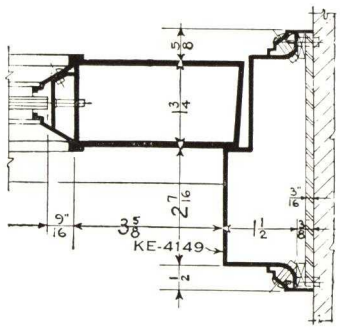


RUSTLESS METAL DOORS





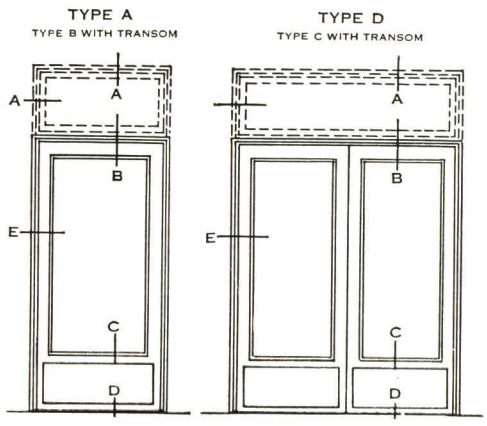




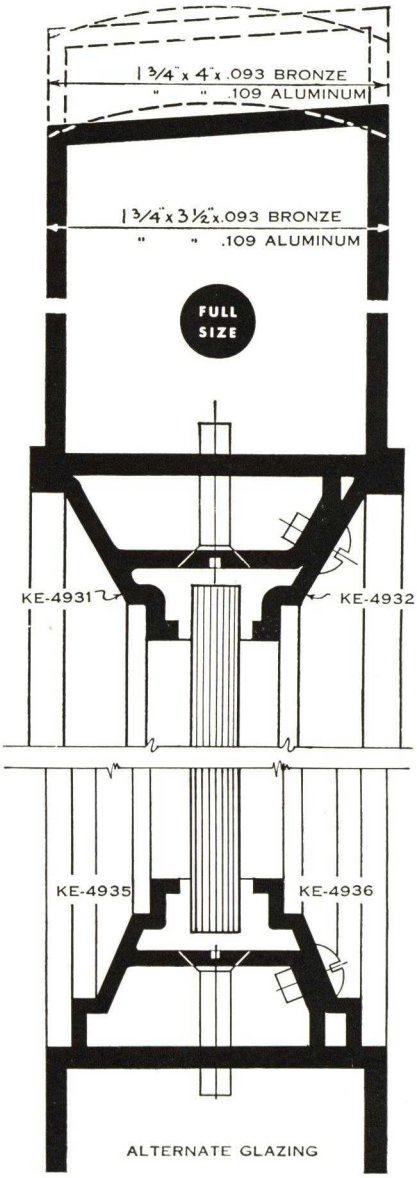
KAWNEER WELDED TUBULAR DOORS are custom-built, single or double acting—fabricated from seamless tubes of solid bronze or aluminum alloy—suitable for wide use with store fronts and in commercial buildings. Various tube sizes are used as detailed. Corners are welded to provide maximum strength and rigidity. Glazing mouldings are extruded in two types, in harmony with the lines of the door and jambs. . . . Transom designs can be varied as desired. Jambs are furnished in single rabbet, double rabbet and double-acting types. . . . Kick Plates may be mounted on the surface or recessed to form panel. Kick Plates, Push Plates, Push Bars, Grilles, Louvers and other accessories are cast or fabricated in careful accordance with the architect's designs. . . . Doors are fitted and hung to frame, hardware applied and the complete unit furnished ready to install.

TUBULAR AND CASEMENT DOORS are also furnished for residential use. Write for details.

ADDITIONAL THRESHOLDS AND DOOR JAMBS SHOWN IN SEPARATE SWEET'S CATALOG ON KAWNEER STORE FRONTS • PAGES 4, 11, AND 17. F. S. DETAILS OF OTHER DOOR JAMBS AVAILABLE.

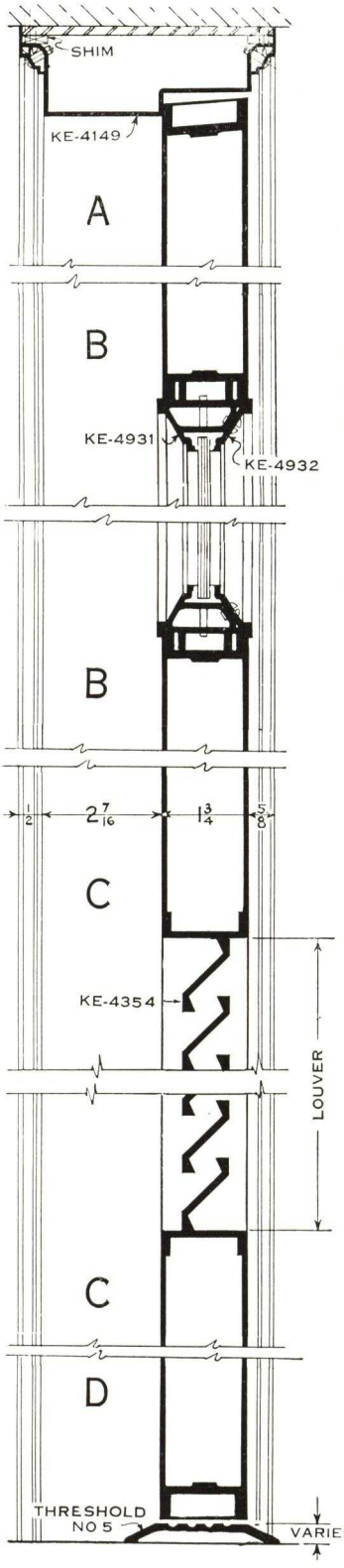


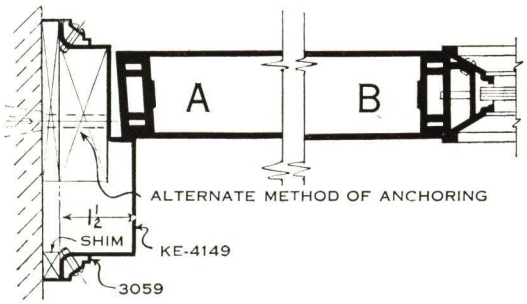
PATENTED AND PATENTS PENDING



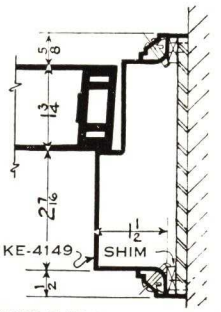
TYPICAL DETAILS • WELDED TUBULAR TYPE

RUSTLESS METAL DOORS





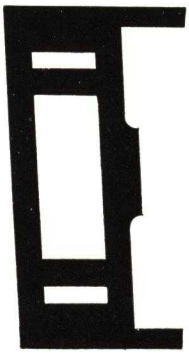
QUARTER SIZE



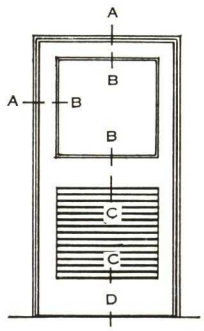
SINGLE RABBETED BUCK

KAWNEER FLUSH TYPE DOORS are also custom-built, single or double acting—fabricated from special shapes according to specific requirements—suitable for use in buildings of all types. Surfaces may be entirely flush or with panels, grilles or louvers . . . Transom designs can be varied as desired and either Tubular or Flush-Type construction may be used, depending upon the design. Push Plates, Push Bars, Grilles, Louvers, and other accessories are cast or fabricated in careful accordance with the architect's designs. . . . Doors are fitted and hung to frame, hardware applied and the complete unit furnished ready to install.

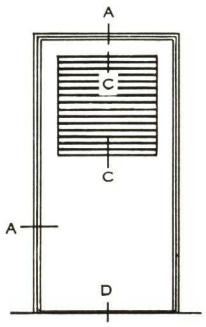
SHOWER STALL DOORS ARE DETAILED IN SPECIAL FOLDER—SENT ON REQUEST.



BEVEL EDGE



TYPE F1

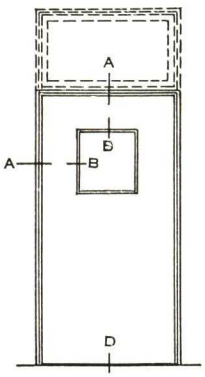


TYPE F2

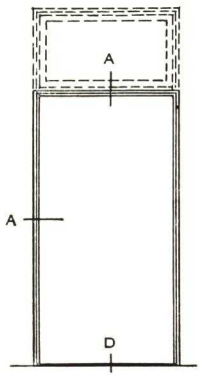
PATENTED AND PATENTS PENDING

FULL SIZE

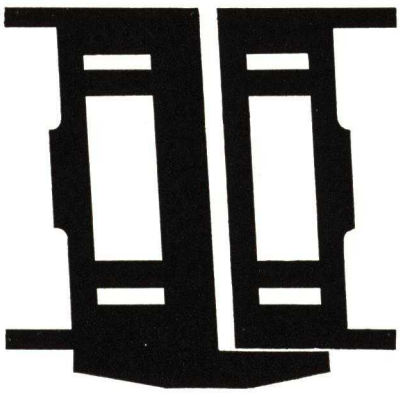
ROUND EDGE



TYPE F3



TYPE F4

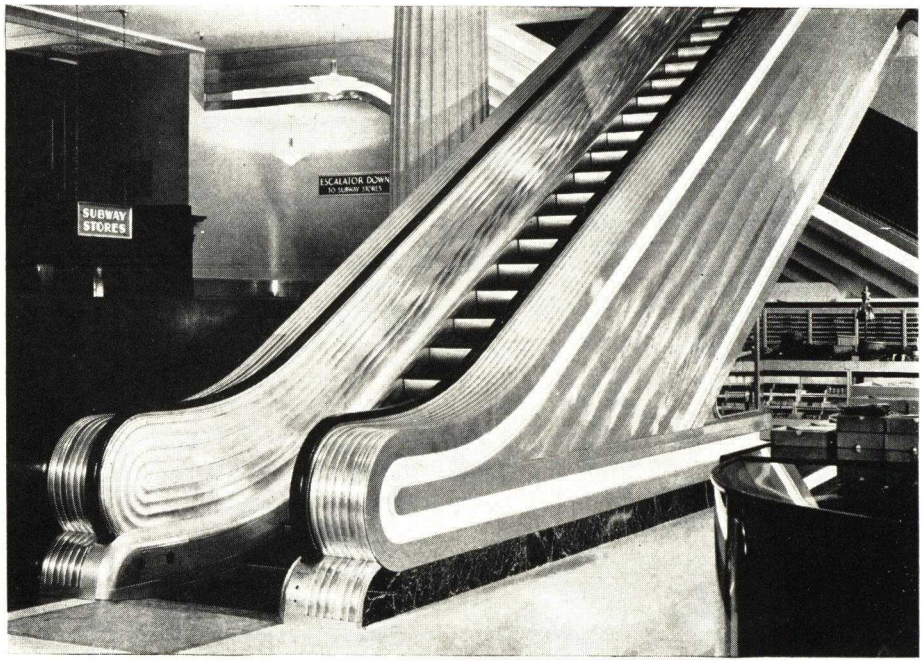


ASTRAGAL KE-4120

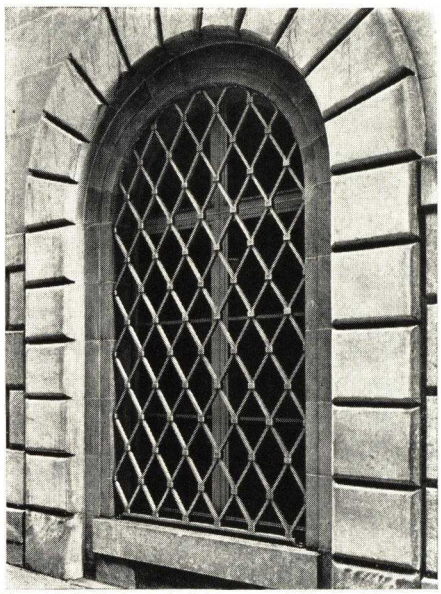
TYPICAL DETAILS • FLUSH TYPE

15
15

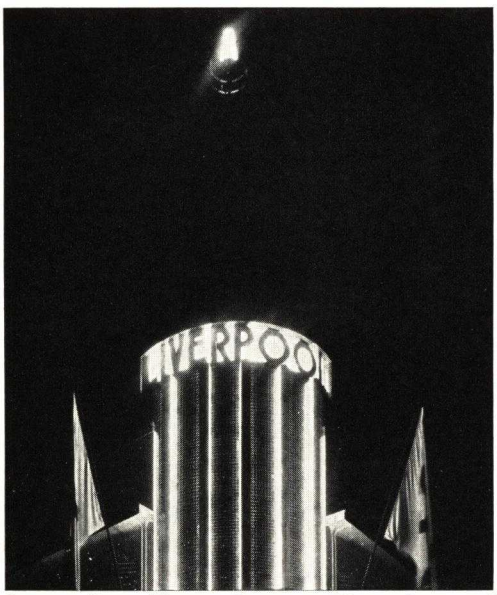
ARCHITECTURAL METAL WORK



Alumilited Aluminum Escalator Covers furnished by Kawneer.

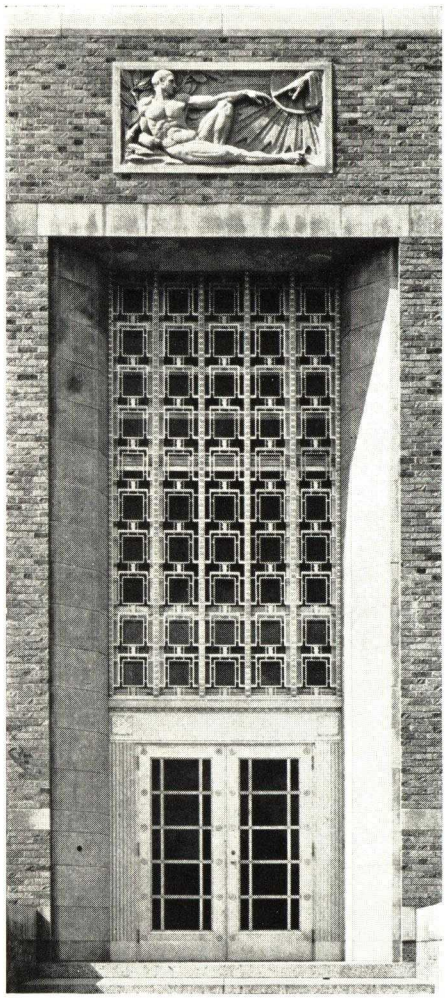


Typical Grille furnished for use with Sealair Windows.



Entrance Doors, Marquis, Decorative Pilaster Strips, and Metal Sign Letters in Alumilited Aluminum for Liverpool Store, Mexico City. Enrique de la Mora, Architect.

Typical Bronze Tablet by Kawneer.



Aluminum Doors, Windows and Grille for entrance. Biology Hall, Notre Dame University. Maginnis and Walsh, Arch.

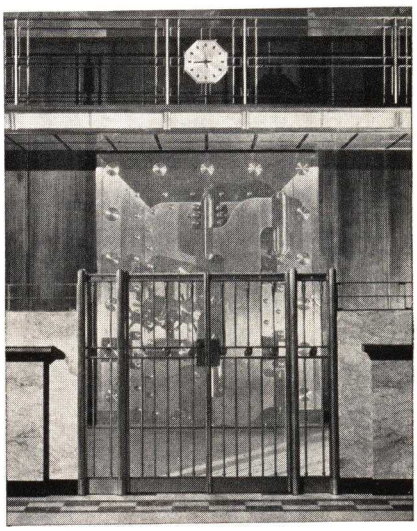
ARCHITECTURAL METAL WORK

Kawneer has had wide experience in furnishing architectural and ornamental metal work of all types—including extruded, wrought, cast, hollow metal—in aluminum, bronze, stainless steel, nickel silver and other metals.

Originally founded by a practicing architect, Kawneer understands the problems of architect and designer—is well-known as a dependable source of architectural metal for many important projects.

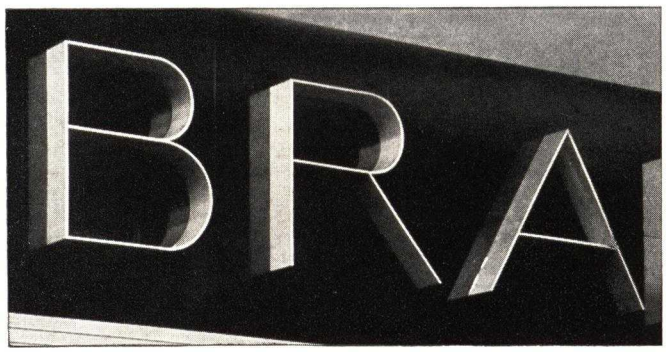
The combined facilities of the Kawneer Company's plant at Niles, Michigan, and of the Coleman Bronze Division at 336 West 37th St., Chicago, are at your disposal. Kawneer is well equipped with a large, modern foundry, bronze fitting shop, and ample facilities for alumiliting aluminum and producing other finishes.

The increasing use of fine rustless metals for their interesting luster, upkeep economy, and dependable service makes Kawneer's ability to fabricate architectural metal especially valuable to the architect.

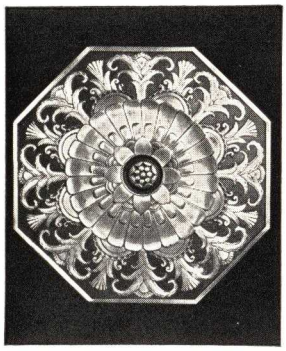


Vault Gate and Rail for Battle Creek Bank.
Holabird & Root, Architects.

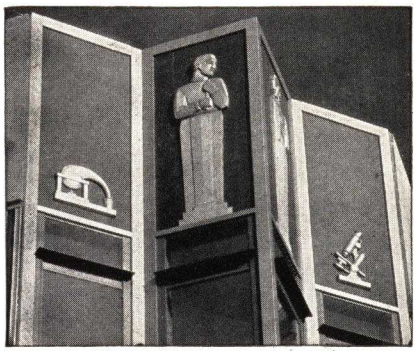
SEE SEPARATE STORE FRONT CATALOG. WRITE FOR ADDITIONAL DATA.



Typical Architectural Sign Letters.



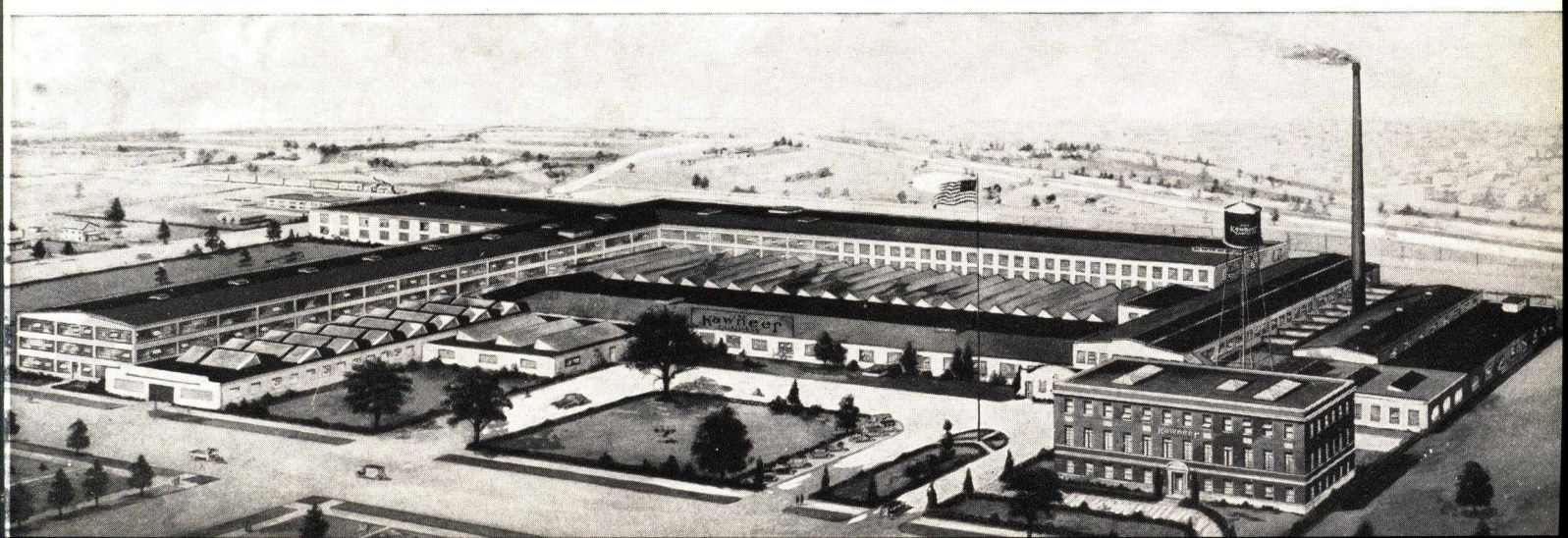
Aluminum Casting.



Typical Ornamental Work.

THE
MAIN PLANT **Kawneer COMPANY** NILES, MICHIGAN

BRANCHES: NEW YORK CITY, CHICAGO, ILLINOIS, BERKELEY, CALIFORNIA. • DEALERS IN PRINCIPAL CITIES



Kawneer

WINDOWS · DOORS
ARCHITECTURAL
METAL WORK

LUNDELL-ECKBERG MANUFACTURING CO., INC.

Manufacturers of High Grade Standard and Custom Built Steel Casements and Solid Bronze Casement Hardware

JAMESTOWN, N. Y.

Lemco casements incorporate every worthwhile feature of design and operation. They are made in a wide range of standard sizes for prompt shipment.

Exceptional care is used throughout in manufacture and assembly to insure the maximum benefit from the double weathering section used. The corner of frames and ventilator sections are mitred, electrically welded and welds ground to a perfectly smooth finish.

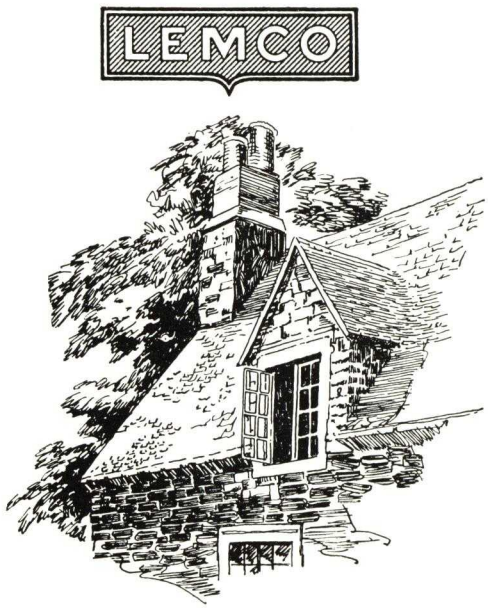
Hardware

Hardware is supplied according to individual specifications. Standard hardware is of high grade bronze finish, while solid bronze hardware in any of our regular standard designs can be supplied as required.

Sill or Transom Units—Hardware for sill or transom units is supplied in design to match that of the main window unit.

Catalog

A complete catalog of Lemco products gladly sent on request.



Other Features

All windows are drilled to receive shade brackets.

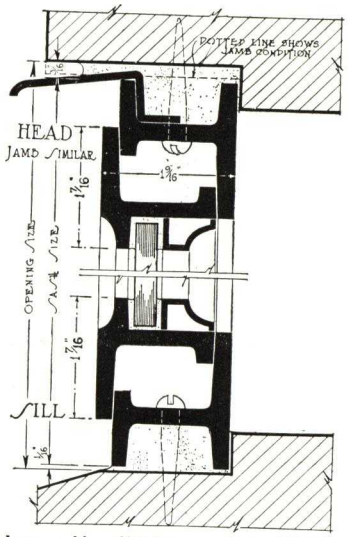
Necessary mastic for bedding as well as glazing clips and other erection accessories are supplied with each order.

A large stock of surrounds made from genuine California redwood is maintained for prompt factory shipment.

Lemco high grade gray enamel is furnished as a standard finish on all shipments.

Erection

Erection is handled under the supervision of our own force when required.



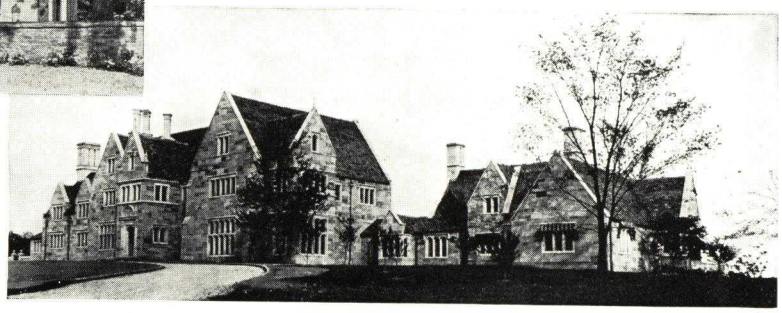
Lemco No. 600 Intermediate Weight Sections

Photo by John Wallace Gillies, Inc.

Gilbert Browning Residence, Greenwich, Conn.
FRANK J. FOSTER and R. A. GALLAMORE, Architects

Right:

J. W. Lawrence Residence, Pittsburgh, Pa.
ALFRED HOPKINS, Architect



S. H. POMEROY CO., INC.

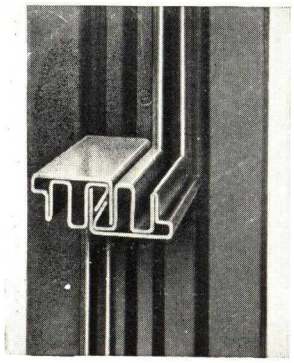
Pioneers Since 1897 in the Manufacture of Double-Hung Windows
Steel—Bronze—Aluminum

280-294 East 134th Street, NEW YORK, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

POMEROY "SUPERIOR TYPE" WINDOWS
Models—(H) Heavy (I) Intermediate (L) Light

The Pomeroy "Superior Type" window is the solution of the architect's problem to find a suitable window of extremely narrow lines to harmonize with modern architectural trends. The heavy tubular sections of sash, having slender lines, and flush welded at corners, present a slenderness and refinement of finish not previously attainable and still maintain the rigidity of construction and integral weathering for which Pomeroy Windows have always been distinguished.

The formation of the heavy tubular sections of sash for "Superior Type," as shown, is made possible by the use of the most modern rolling machines which, being calibrated to the exactness of 1/100 inch, assure the accuracy essential in integral weathering and easy operation.

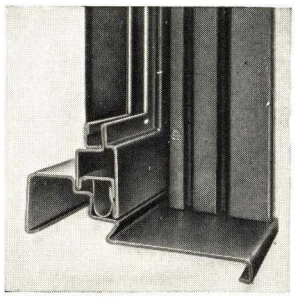


Meeting Rails

Permanent weathertightness of meeting rail is assured by the embodiment of Pomeroy's patented seven-way weather retardants.

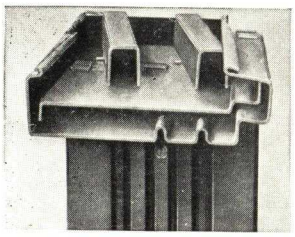
Air leakage at meeting rail ends is effectively checked by a specially designed wedge block. No applied weatherstripping is necessary. Special attention is called to the narrowness of the Pomeroy Meeting Rail. Its over-all dimension from top to bottom is only 1⅛ in., a very important advantage, as when used with our narrow muntin it blends itself into either horizontal or vertical muntin arrangement. Particular attention is called to the flush top design of the meeting rail, a sanitary feature which eliminates pockets for the lodgment of dust and dirt—highly desirable for institutional and residential installations.

Bottom Rail



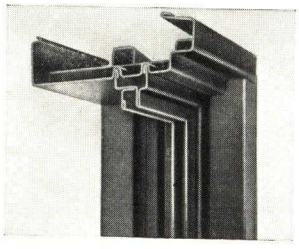
The bottom rail of lower sash engages steps of sill, and spring bronze weatherstrip is incorporated—the only applied weatherstripping in the entire window. The sill design is such that a three-point contact can be effected when window is fully closed. The weatherstrip permits contact between sash and sill, with meeting rail slightly open for ventilation.

Note particularly, the undercut below the outside flange of the bottom rail. The effect of this undercut is to dissipate the force of driving rain and wind and to prevent water from lodging under the bottom rail, which would be possible if the sash rested directly at the sill level.

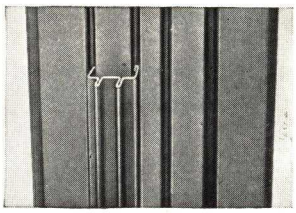


Pulley Assembly

The pulley assembly, consisting of a heavy steel base and housings holding the pulley wheels, interlocks with head and jamb, tying them strongly together. Jambs and sills are similarly united. Pulley wheels are solid machined steel, with self-lubricating bronze bushings and hardened steel axles. Grooving of wheels is of special design to receive the sash chain and keep it in a true line of travel.



Stiles



Inside and outside flanges of stile of tubular sash engaging and operating in deep weathering grooves of pulley stile of jamb.

Note how the metal of the weathering flange is returned upon itself to provide a smooth, rounded traveling surface and also how the two flanges form the Pomeroy Double-Weathering feature, which does not require applied weatherstrippings.

Head

Showing head of frame with inside and outside integral weathering flanges of upper rail of top sash engaging in corresponding grooves in soffit of head of frame. No applied weatherstripping is required.

THE POMEROY "STANDARD TYPE" WINDOWS
Model (M) Hollow Metal

The Standard Type Window embodies those basic essentials of window construction distinctive of Pomeroy Windows and the design of its moulded sash members closely resembles, in appearance, the lines of a moulded wood sash. This type lends itself to buildings where this architectural effect is desired.

The rails and stiles of sash are constructed of one piece of metal, forming tubular moulded sections, which are rigidly assembled by a specially devised lapping and interlocking procedure supplemented by a welding process. The members of the frame, exclusive of parting and closure strips, likewise are formed of one piece of metal and assembled in the same manner.

In designing the members of frame and sash and the method of assembling, careful thought was given to the Pomeroy features of integral weathering and ease of operation.

GENERAL WINDOW INFORMATION

Materials and Construction—Pomeroy Double Hung "Metal" windows are made throughout of hot dipped galvanized copper-bearing steel and are given a shop coat of specially prepared metallic primer.

Note: Committee A-5 of the American Society for Testing Materials states: "We have now reached a point where we may definitely conclude that copper-bearing metal shows marked superiority in rust-resisting properties as compared to non-copper-bearing metal of substantially the same general composition—under atmospheric conditions.

"If it is desired to construct windows of bronze, or aluminum, specifications and details will be furnished on request."

Codes, Underwriters' Requirements, etc.—Pomeroy Double Hung "Metal" windows meet usual municipal code requirements; and the specification requirements of the Federal Specifications Board. With malleable iron sash locks and 1¾ in. muntins they meet all requirements of the Underwriters' Laboratories, Inc., and may be labeled.

Mullions and Grouping—Windows may be used singly or grouped with mullions between. The standard width mullion is 7¾ in. The exterior face is recessed, the interior face plain, matching the interior face of the jamb. Where specially required, 5 in. wide and 2½ in. wide mullions with special pulley arrangements can be furnished.

Lights and Muntins—The sash may be single light or be subdivided by muntins (1 in. in width except where labeled windows are required. The muntins for labeled windows are 1¾ in. wide.) If subdivided the number of lights and arrangement of the muntins will be as indicated by the architect on his drawings.

Transoms—Stationary or vented transoms may be furnished where required.

Special Heads—Circular or curved head windows when required to meet architect's design can be furnished in standard sections.

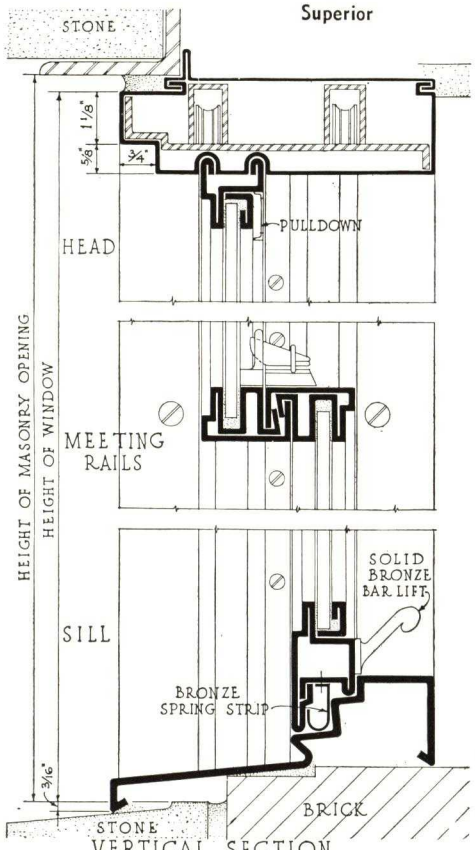
Glazing—The sash are furnished open, ready for glazing at the job. Stiles and rails are supplied with inside glazing beads. Interior caps of muntins are removable and held in place by oval head screws.

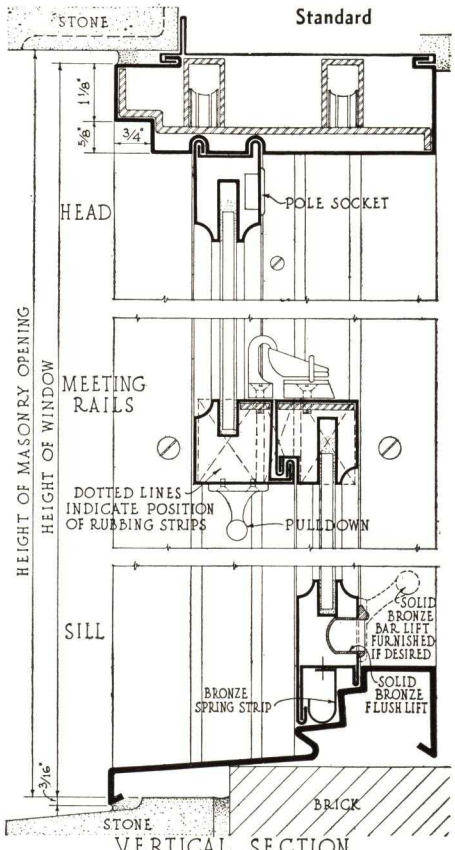
Air Infiltration Data—Copies of tests performed by Pittsburgh Testing Laboratory, indicating a maximum permanent weathertightness, will be furnished on request.

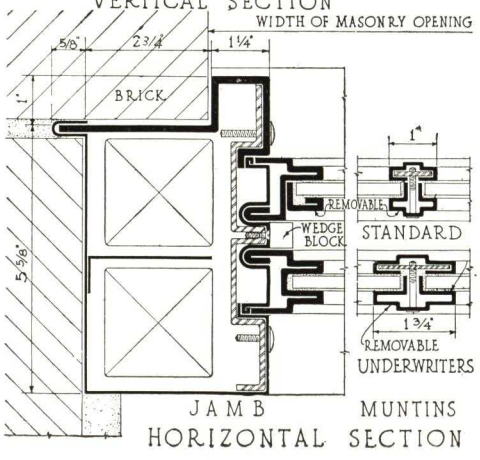
Gauges—The table below designates four classifications predicated on gauges of metal. The "Superior Type," Models "H," "I" and "L" conform respectively to the Heavy Steel, Intermediate Steel and Light Steel groups and the "Standard Type," Model "M" conforms to the Hollow Metal group.

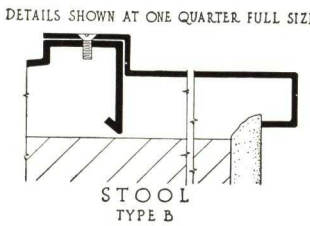
CLASSIFICATION DESIGNATION

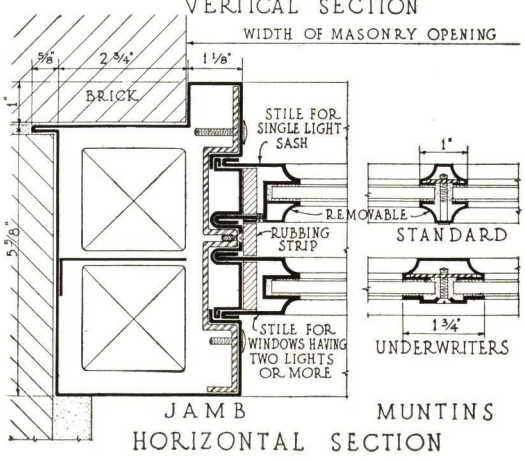
Component part of window	Heavy steel	Intermediate steel	Light steel	Hollow metal
Head.....	16 ga.	16 ga.	18 ga.	18 ga.
Sill.....	12 ga.	14 ga.	14 ga.	14 ga.
Hanging stile..	12 ga.	12 ga.	18 ga.	20 ga.
Weight box...	16 ga.	20 ga.	18 ga.	20 ga.
Cross rails....	14 ga.	14 ga.	16 ga.	20 ga.
Side rails.....	14 ga.	14 ga.	16 ga.	18 ga.



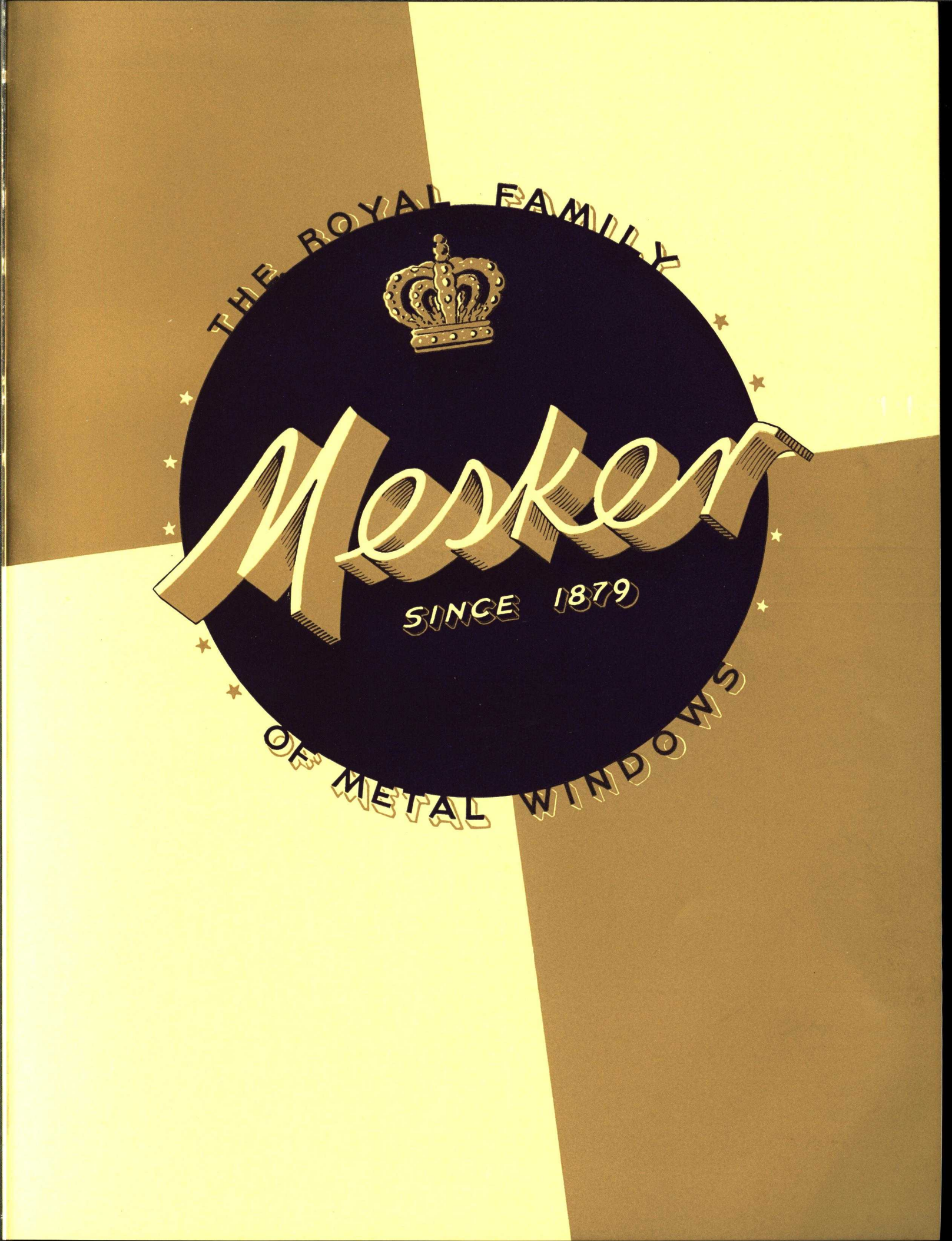


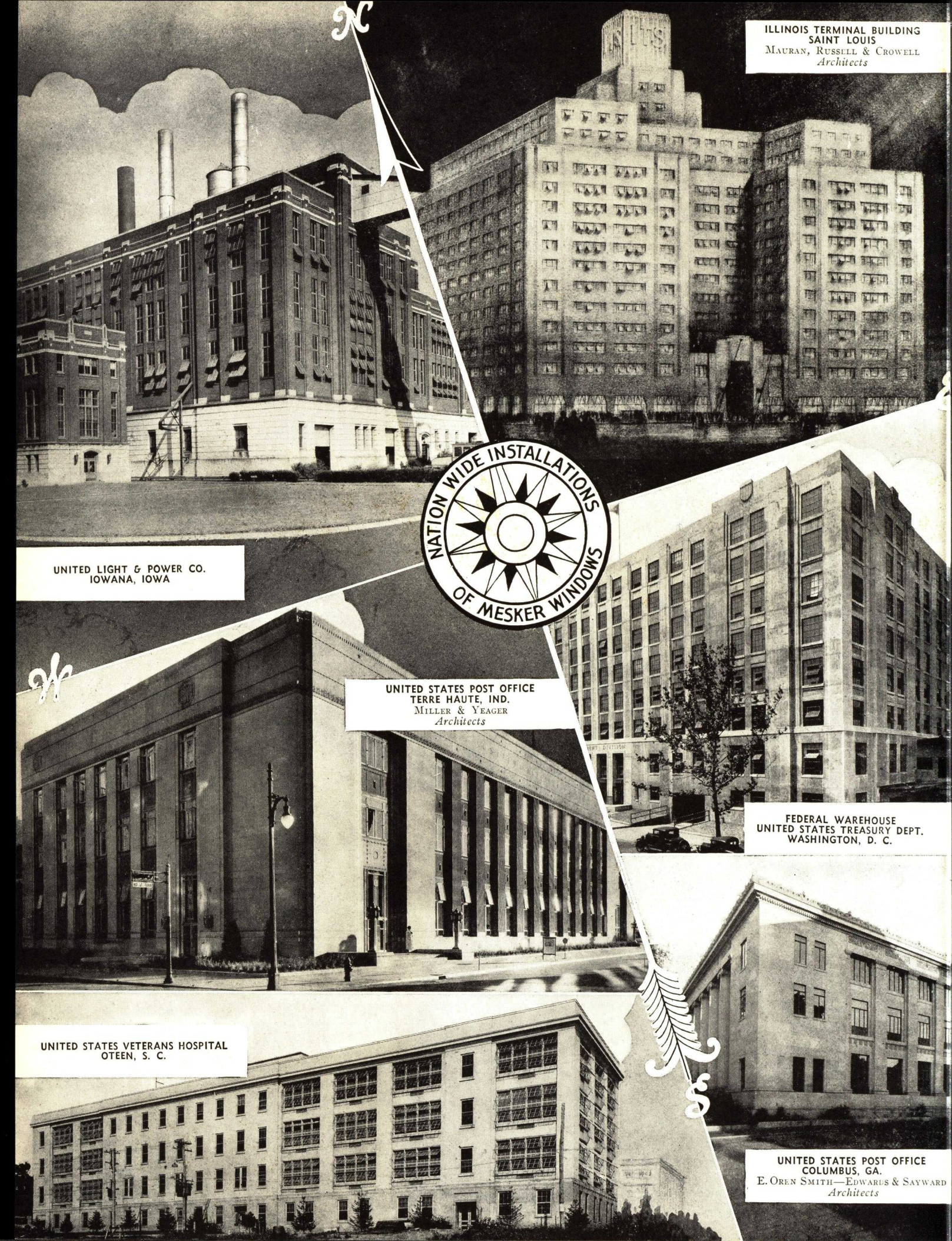






MEMORANDA


THE ROYAL FAMILY
Hesker
SINCE 1879
OF METAL WINDOWS



ILLINOIS TERMINAL BUILDING
SAINT LOUIS
MAURAN, RUSSELL & CROWELL
Architects

UNITED LIGHT & POWER CO.
IOWANA, IOWA

UNITED STATES POST OFFICE
TERRE HAUTE, IND.
MILLER & YEAGER
Architects

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UNITED STATES TREASURY DEPT.
WASHINGTON, D. C.

UNITED STATES VETERANS HOSPITAL
OTEEN, S. C.

UNITED STATES POST OFFICE
COLUMBUS, GA.
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Architects

Mesker

Mesker Brothers, Saint Louis, Missouri

District Sales Offices: Chicago, Ill., and Washington, D. C.
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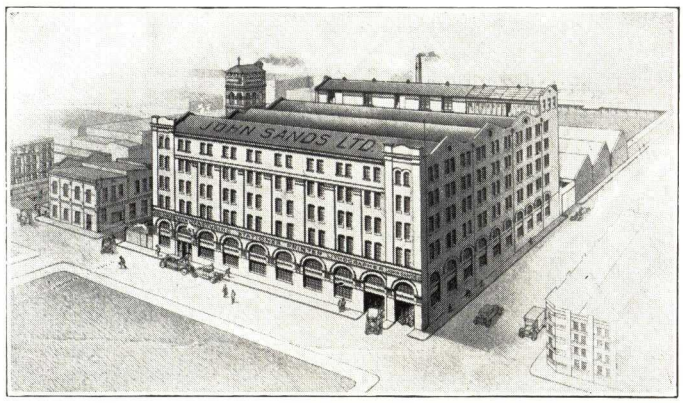
MESKER BROTHERS was established in 1879 and has served the construction industry continuously for over 58 years. Mesker has been making metal windows for the past 36 years. Today Mesker Metal Windows are recognized for their high standard of quality in material and workmanship. Mesker service to customers bears the same fine reputation. Large modern plant and warehouse, directed by a limited highly efficient home office force, assures incoming orders of individual speedy attention.

Consult your classified telephone directory for your nearest Mesker Sales Engineer.

WROUGHT IRON SASH

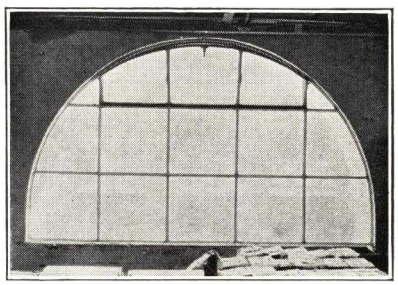
Genuine Wrought Iron as a metal contains inherently certain chemical and physical properties that make it extremely resistant to corrosion. Many users of metal windows have experienced considerable trouble with the "rusting out" of steel sash, requiring repairs or replacements that in the end cost many times the original cost of the windows. Wrought Iron Sash have solved that problem in many instances.

Why does Wrought Iron resist rust? Even prominent metallurgists differ in their opinions as to the reason . . . but the fact remains, regardless of opinions as to "the reason why," that Genuine Wrought Iron in actual service has stood up long after other ferrous metals have failed. These conclusions are not based on accelerated laboratory tests, but on actual records of old Wrought Iron Gates, Wrought Iron Pipe, Wrought Iron Nails, Wrought Iron Ship Hulls, Wrought Iron Smoke Stacks . . . a thousand different Wrought Iron products of which there are thousands of written records to prove its remarkable resistance to all kinds of atmospheric conditions.



These Genuine Wrought Iron Windows in the John Sands Printing Works were installed over 31 years ago. They have never been repainted and are still in the same state of preservation as the day they were put in.

The Wrought Iron used by Mesker is made today by the same identical process that was used to make the old Wrought Iron that has proved its merit. The new Mesker Wrought Iron is the same as the old in chemical property . . . exactly the same. It is the same in all physical properties too. That is why it is guaranteed to react in the same way to the same conditions as did the old Wrought Iron. There is no difference.



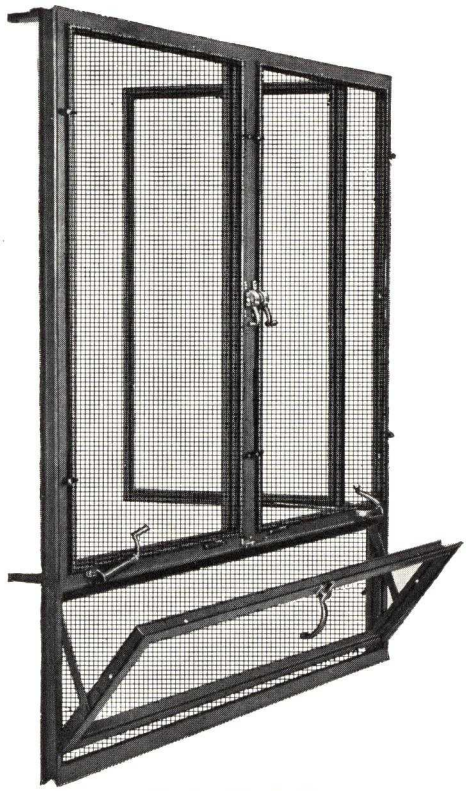
First floor circle head sash of the John Sands Plant showing windows still in good condition even after 31 years.

To obtain Wrought Iron Sash . . . to actually save your client money by raising the initial cost a fraction and lowering the upkeep substantially, specify a Wrought Iron to meet ASTM Specifications, A-84-33 Grade B-1. That avoids substitution and assures you the best quality of material.

SOME NATIONALLY KNOWN USERS OF MESKER WROUGHT IRON SASH

Swift & Co.	John Morrell & Co.	Morgan Packing Co.
Hormel Co.	Cudahy Packing Co.	Montgomery Ward
Big Four R. R.	Pennsylvania R. R.	Monsanto Chemical
Grand Trunk	Boston & Maine R. R.	U. S. Treasury Dept.
Frisco Lines	Rath Packing Co.	U. S. Navy Dept.
Bordens	C. M. & St. P. R. R.	Premier Pabst Corp.
Armour & Co.	Kraft Phenix Cheese	International Harvester
Missouri Pacific	Pittsburgh Plate Glass	Brown Williamson Tobacco Co.
Reading Iron Co.	Matheson Alkali	

METROPOLITAN CASEMENTS



Series M Style

For Office Buildings

—

Monumental Buildings

—

Hospitals

—

School Buildings

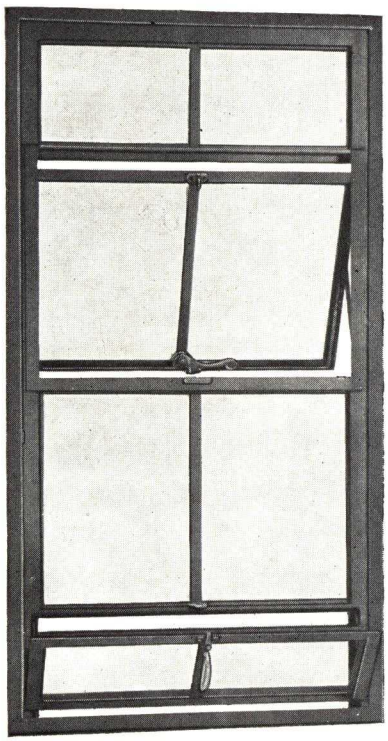
—

Auditoriums

—

Libraries

Screens also furnished for Series P Style



Series P Style

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications Mesker Metropolitan Casements or equal approved by the Architect.

Materials—Sections shall be hot rolled new billet steel (or Genuine Wrought Iron) not less than 1⅝ in. in depth or ⅛ in. thick . . . and shall be process straightened with heavy fillets in re-entrant angles.

Construction—All joints shall be coped or mitred and solidly welded . . . all exposed welds shall be dressed down smooth . . . hinges shall be extension cleaning type of $\frac{3}{16}$ in. steel plate with bronze pins and washers . . . adjustable friction device shall be supplied on hinges for non-screen casements . . . windows shall be designed for outside glazing (if inside glazing or glazing beads are required specify here) . . . ventilators shall have double contact at least $\frac{5}{16}$ in. wide without the use of built up weathering . . . sight lines shall be maintained throughout . . . projected ventilators shall be supported by two heavy extension arms and attached to bronze shoes sliding in a channel slide . . . barrel type friction device shall be supplied on all bronze shoes.

Hardware—Hardware shall be solid bronze statuary finish of plain heavy pattern . . . it shall be shipped separately in safely packed cartons . . . furnish locking handle and gear operator for side hinged screen type vents . . . furnish cam type locking handle for side hinged non-screen vents . . . furnish cam handle for project in vents and non-screen project out vents . . . furnish underscreen transom adjuster for screen type project out vents . . . all hardware shall be designed to operate without moving the screens . . . (specify other hardware such as friction stays, cremorne bolts, transom stays, double locking device, spring latches, butt hinges, etc., if required).

Painting—Windows shall receive one priming coat of metallic paint baked on in the factory.

Screens—Furnish where shown and called for Mesker Metal Screens and prepare windows for same . . . frames shall be solid section ⅜x⅝ in. with removable aluminum spline . . . cloth shall be antique finish copper 16 mesh size . . . corner joints shall be mitred and welded . . . one coat of enamel baked on shall be applied in the factory . . . furnish necessary screen clips and fittings . . . screens shall be boxed for shipment.

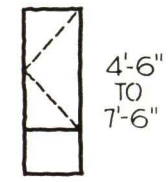
Erection—Casements shall be set plumb and square and carefully caulked and grouted in place . . . vents shall be adjusted before glazing . . . manufacturer shall furnish sufficient caulking compound.

Glazing—Manufacturer shall furnish sufficient glazing clips . . . (include in glazing specifications that glass shall be clear DSA quality, well back puttied . . . using special steel sash putty).

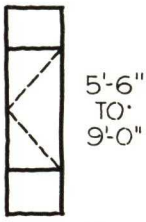
STANDARD SIZES

VERTICAL AND HORIZONTAL MUNTINS MAY BE ADDED TO UNITS SHOWN TO GAIN ANY ARCHITECTURAL EFFECT - SIZES LISTED SHOULD NOT BE EXCEEDED - ALL UNITS CAN BE EASILY SCREENED - HOPPER VENTS PROVIDE EXCELLENT DEFLECTED VENTILATION - TRANSOM VENTS MAY BE USED IN ADDITION TO SILL VENTILATORS

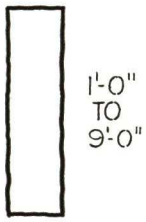
SERIES M



TYPE B-M

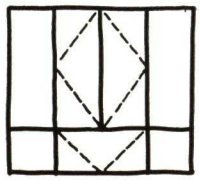


TYPE C-M



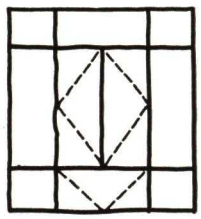
TYPE A

TYPE D-M



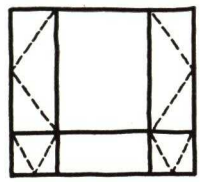
TYPE H-M

TYPE E-M



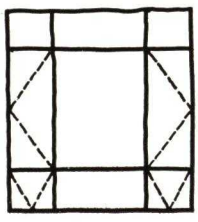
TYPE J-M

TYPE F-M



TYPE K-M

TYPE G-M



TYPE L-M

SERIES P

TYPE B-P

TYPE C-P

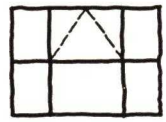
TYPE D-P

TYPE E-P

TYPE F-P

TYPE G-P

TYPE H-P



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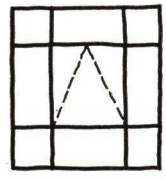

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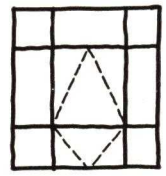

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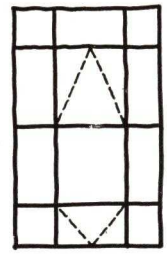
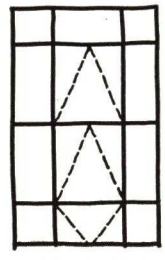
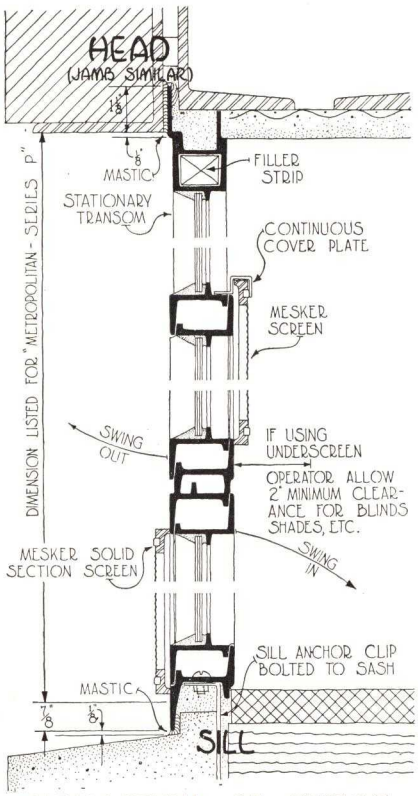


TYPE M-P

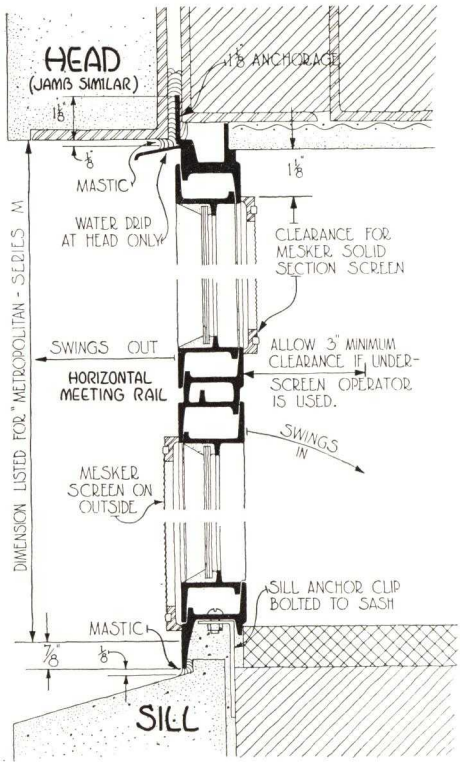


TYPE N-P

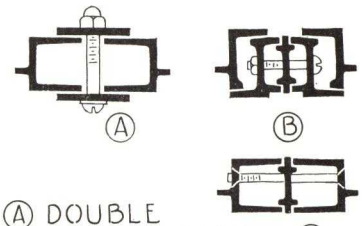
INSTALLATION •• SHADE BRACKETS •• MULLIONS
SOLID BRONZE HARDWARE



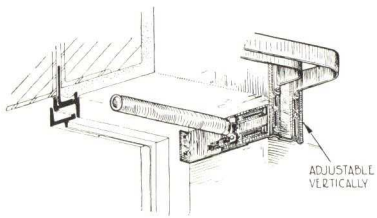
INSTALLATION OF TYPICAL SERIES P WINDOW SHOWING SCREEN ATTACHMENT



SERIES M CASEMENT IN TYPICAL STONE VENEER TREATMENT - SCREEN DETAILS

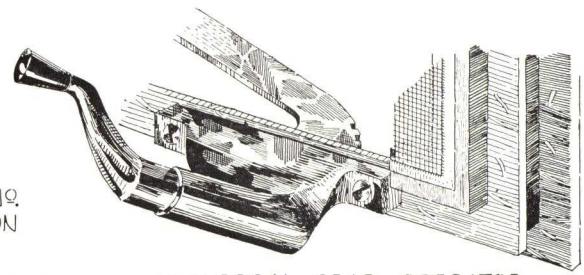


Ⓐ DOUBLE PLATE MULLION Ⓒ FOR UNITS WITH FIXED SIDE LIGHTS — ⒷⒸ LUG BAR MULLIONS FOR VENTILATED OR FIXED UNITS



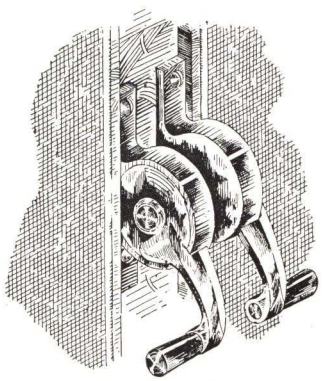
SHADE BRACKET ADJUSTABLE HORIZONTALLY - DRAPERY BRACKET ADJUSTABLE VERTICALLY

ALL HARDWARE IS SOLID BRONZE STATUARY FINISH, CAST AND FINISHED BY MESKER FOR CASEMENTS EXCLUSIVELY.



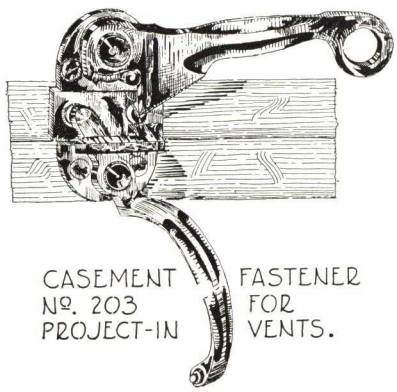
UNIVERSAL GEAR OPERATOR Nº. 240 FOR OPEN-OUT VENTS WITH SCREENS.

PATENT PENDING

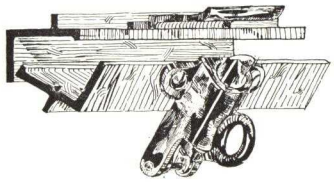


CASEMENT FASTENERS Nº. 204 A FOR SIDE HINGED OPEN-OUT VENTS WITH SCREENS.

CASEMENT FASTENER Nº. 230 FOR PROJECT-OUT NON SCREEN VENTS.

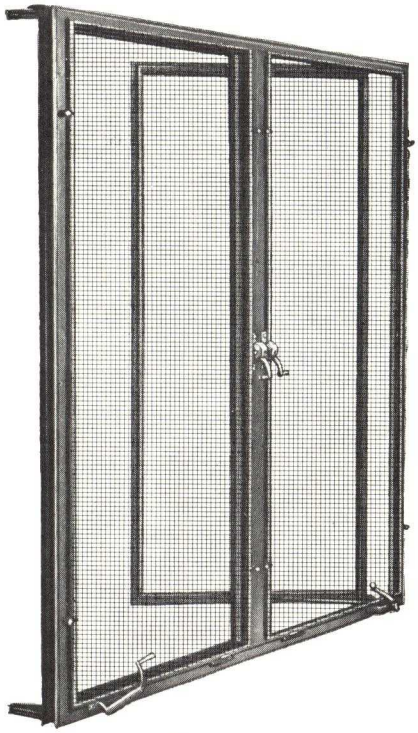


CASEMENT FASTENER Nº. 203 PROJECT-IN FOR VENTS.



SPRING LOCK Nº. 235 FOR PROJECTED VENTS.

MASTER CASEMENTS



For residences, offices and apartment buildings where quality and workmanship are essentials. Sturdier, heavier and longer lasting. (Hardware shown on page 8 is also used on Master Casements).

Master Casements are made from the same sections as used in Metropolitan Casements shown on Pages 6, 7 and 8. The construction is practically the same for both Master and Metropolitan, the main difference being the design and position of ventilators and the size of glass panes. The Master Casement is for residential work. Specifications shown on Page 6 therefore apply to Master Casements with the few exceptions noted below.

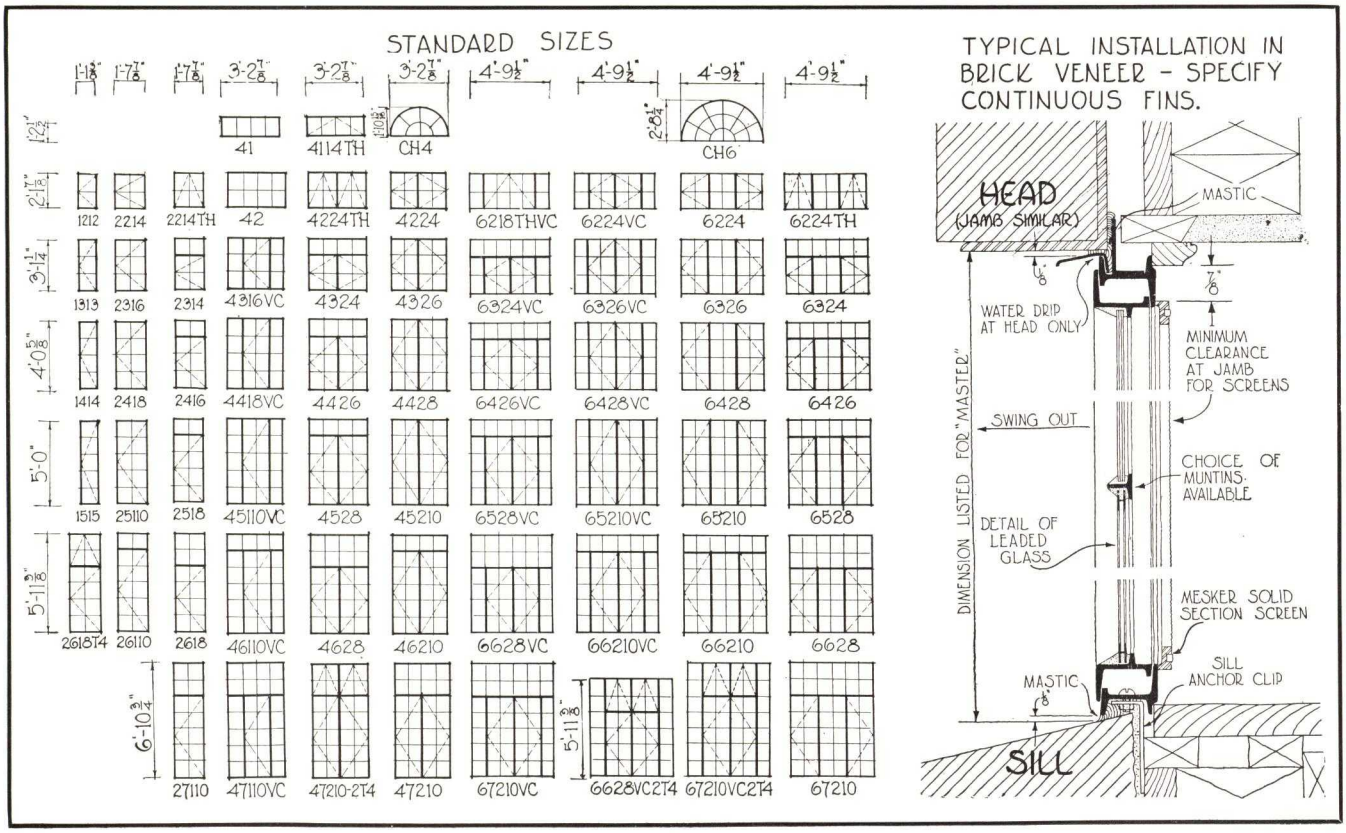
SPECIFICATIONS

General—Furnish where shown on plans and according to specifications Mesker Master Casements or equal approved by the Architect.

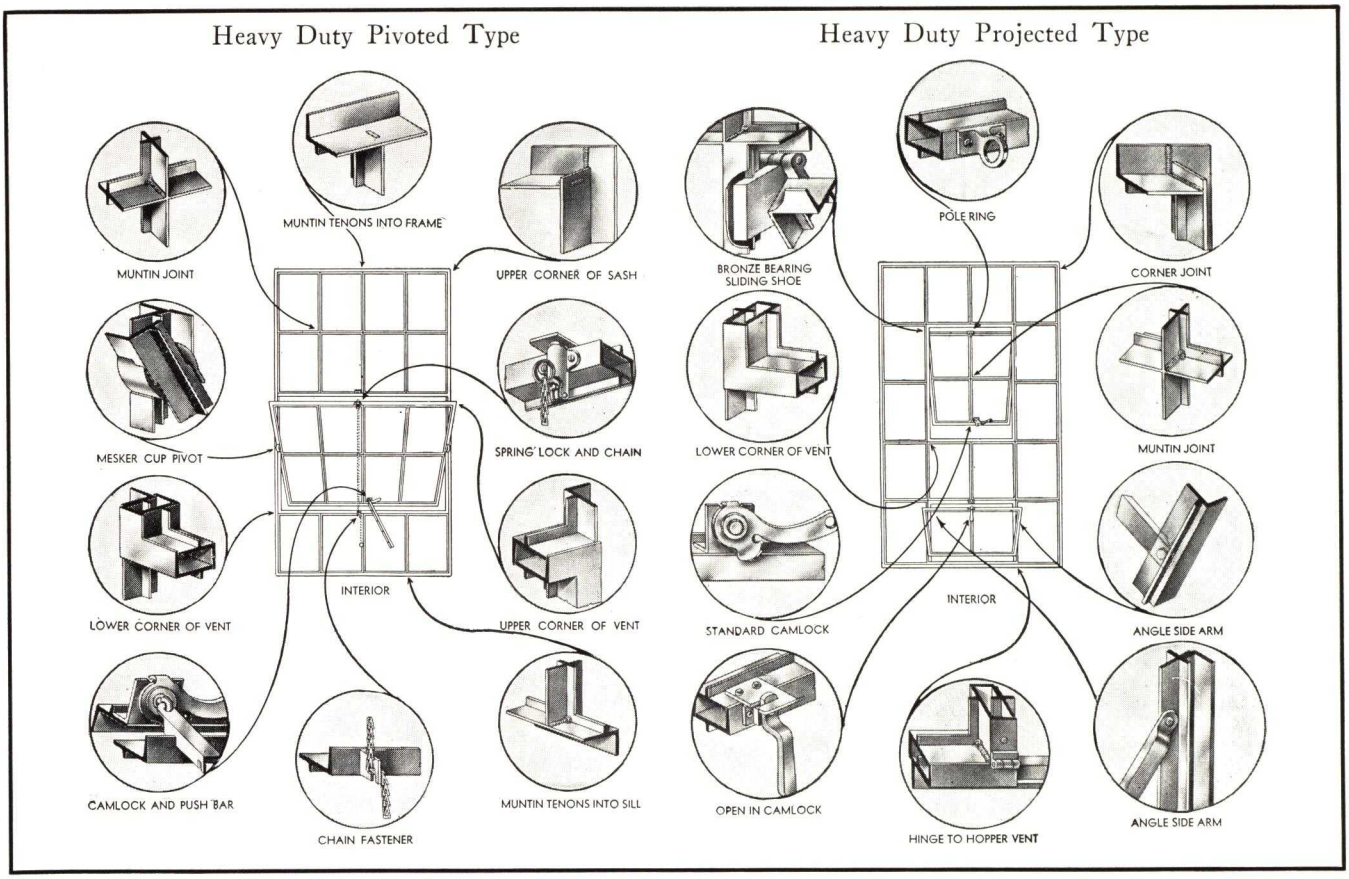
Materials—(Specifications under this paragraph on Page 3 for Metropolitan Casements also applies here without exception).

Construction—(Specifications under this paragraph on Page 6 for Metropolitan Casements also applies here with exception that sight lines are not standard . . . specify that only sight lines around perimeter of window are to be maintained . . . add the following under this paragraph): All muntins shall be in perfect alignment . . . glass size shall be approximately 8x11 in. . . . casements set into masonry shall be provided with continuous fins at head and jambs . . . casements set into wood bucks or subframes shall be supplied with wood screws or lag screws for setting into stone.

Hardware, Painting, Screens, Erection and Glazing—(Specify according to information given in these paragraphs on Page 6 for Metropolitan Casements).



PIVOTED AND PROJECTED SASH



For factories, foundries, schools, warehouses, sewage plants, garages, stores, and all types of industrial buildings.

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications (Mesker Heavy Duty Pivoted Sash) (Mesker Heavy Duty Projected Sash) or equal approved by the Architect.

Materials—Sections shall be hot rolled new billet steel (or Genuine Wrought Iron) not less than 1½ in. deep and ⅛ in. thick.

Construction—Corner joints shall be mortised and tenoned and in addition welded . . . muntin joints shall be interlocked and welded . . . muntins shall run continuous from jamb to jamb and head to sill . . . pivots on pivoted sash shall be malleable iron cups and bronze discs of standard cup pivot design . . . weathering members shall be ⅛ in. hot rolled angles around entire perimeter of vents . . . projected vents shall be supported by angle side arms . . . frictionless bronze shoes attached to butt hinges shall allow projected vents to slide vertically . . . friction nuts shall be furnished at point where side arms are attached to frames . . . sash shall be putty glazed on the inside . . . (specify outside putty glazing if required . . . slight extra cost) . . . furnish T mullions for all multiple openings . . . furnish necessary anchors and erection fittings.

Hardware—Hardware for sash shall be malleable iron . . . furnish cam lock and push bar for pivoted vents within reach . . . furnish cam lock for projected vents within reach . . . furnish chain controlled cam locks or spring latches for vents out of reach.

Painting—All sash and fittings shall receive one coat of metallic primer paint in the factory.

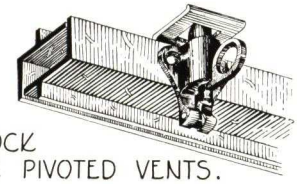
Screens—All sash where shown shall be prepared to receive screens . . . screens shall have ⅜x⅝ in. solid steel frames with rewireable aluminum spline . . . cloth shall be statuary bronze finish copper of 16 mesh size . . . corner joints shall be mitre cut and welded . . . one coat of enamel baked on shall be applied to frames in the factory . . . furnish necessary screen clips and erection fittings . . . screens shall be boxed for shipment.

Erection—All sash shall be erected in prepared openings . . . set plumb and square and carefully grouted . . . adjust all vents before glazing.

Glazing—(See Page 6 for typical specifications under this paragraph).

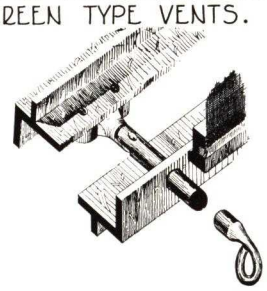
HARDWARE - STANDARD SIZES

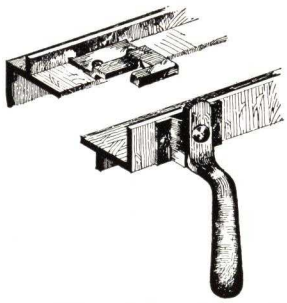
CAM LOCK AND PUSH BAR ASSEMBLY
Nº. 1 FOR PIVOTED NON-SCREEN VENTS
(CAM LOCK ONLY ON PROJECT-OUT VENTS).



SPRING LOCK
Nº. 7 FOR PIVOTED VENTS.

UNDERSCREEN OPERATOR
Nº. 25 FOR PROJECT-OUT
SCREEN TYPE VENTS.





CAM LOCK Nº. 11
FOR OPEN IN
PROJECTED VENTS.

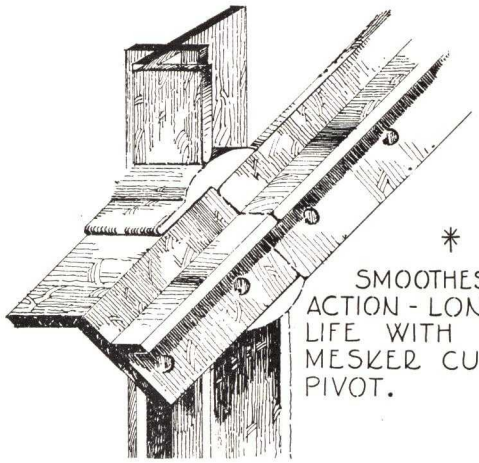
PIVOTED WINDOW SIZES

	2 LTS.	3 LTS. WIDE				4 LIGHTS WIDE							5 LTS. WIDE				6 LTS. WIDE			
12"×18" / 2'-1⅝"	22	31	31130			41			41140				51	51130						
14"×20" / 2'-5⅝"	22140	32	32160			42	42140		42180				52	52160			62	62180		
1'-7¼" / 3'-2"	23141	33	33161			43	43141		43181				53	53161			63	63181		
1'-9¼" / 3'-8"	24141	34	34161	34162	342602	44	44141		44181	44182		442802	54	54161	54162	542602	64	64181	64182	642802
3'-1⅝" / 4'-2⅜"	25141	35	35162 35161	35163	352603	45	45141	45142	45182 45181	45183		452803	55	55162 55161	55163	552603	65	65181	65183 65182	652803
3'-5⅝" / 4'-10⅜"		36	36161	36163	362614	46	46141	46143	46181	46183	462414	462814	56	56161	56163	562614	66	66181	66183	662814
4'-8" / 5'-2"		37	37161	37164	372614	47			47181	47184	472414	472814	57	57161	57164	572614				
5'-2" / 6'-3⅛"																				
6'-2⅜" / 7'-3⅛"																				
6'-10⅜" / 7'-11⅛"																				
7'-8¾" / 8'-6¾"																				
9'-3⅜" / 10'-3⅛"																				
9'-9½" / 10'-9½"																				
10'-3⅛" / 11'-1½"																				

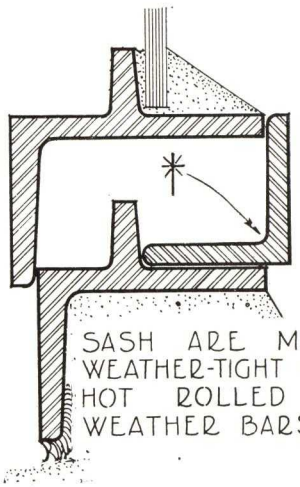
DO NOT CONFUSE 12 X 18 & 14 X 20 SIZES

WINDOWS IN SHADED AREA ARE SPECIAL AND ENTAIL SLIGHT ADDITIONAL COST.

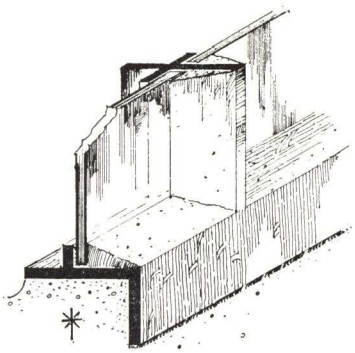
*EXCLUSIVE FEATURES - STANDARD SIZES



* SMOOTHEST ACTION - LONG LIFE WITH MESKER CUP PIVOT.



SASH ARE MORE WEATHER-TIGHT WITH HOT ROLLED 1/8" WEATHER BARS.



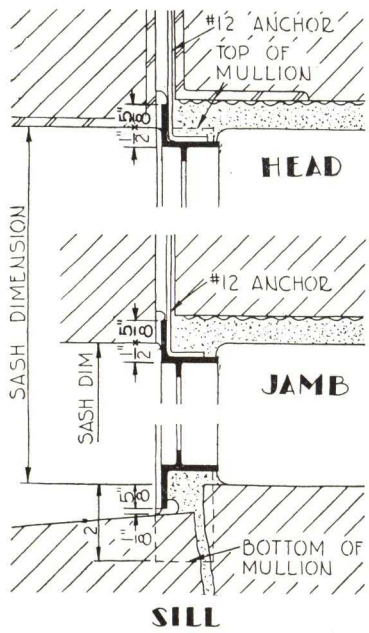
* OUTSIDE GLAZING PROTECTS 88% OF EXPOSED METAL. (FURNISHED ON SPECIAL ORDER ONLY-SLIGHT EXTRA COST).

PROJECTED WINDOW SIZES

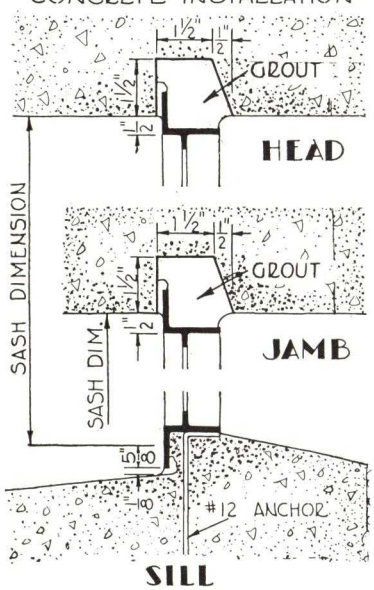
12"×18" / 14"×20"	2 LTS.	3 LIGHTS WIDE					4 LIGHTS WIDE				5 LIGHTS WIDE				
	2'-1⅝"	3'-2"					4'-2⅜"				5'-2¾"				
	2'-5⅝"	3'-8"					4'-10⅜"				6'-0¾"				
3'-1⅝" / 3'-5⅝"	22140	32160					42140	DO NOT CONFUSE 12 X 18 & 14 X 20 SIZES			52160				
4'-8" / 5'-2"	23141	33161					43141				53161				
6'-2⅜" / 6'-10⅜"	24141	34161	34162	3423602			44141		4422402		54161	54162	5423602		
7'-8¾" / 8'-6¾"	25141	35162 35161	35163	3523602	3523603	352603	45141	45142	4522402		55162 55161	55163	5523602	5523603	552603
9'-3½" / 10'-3½"		36161	36163	3623603		362614	46141	46143	4622403	462414	56161	56163	5623603		562614
10'-9½" / 11'-11½"		37161	37164	3723604		372614	WINDOWS IN SHADED AREA ARE SPECIAL AND ENTAIL SLIGHT ADDITIONAL COST			472414	57161	57164	5723604		572614

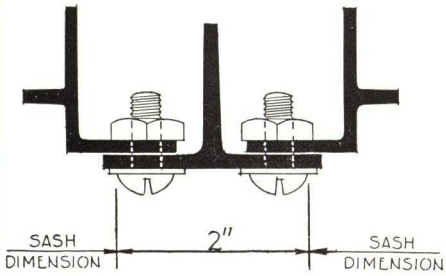
INSTALLATION - MULTIPLE OPENING WIDTHS - MULLIONS

BRICK INSTALLATION



CONCRETE INSTALLATION





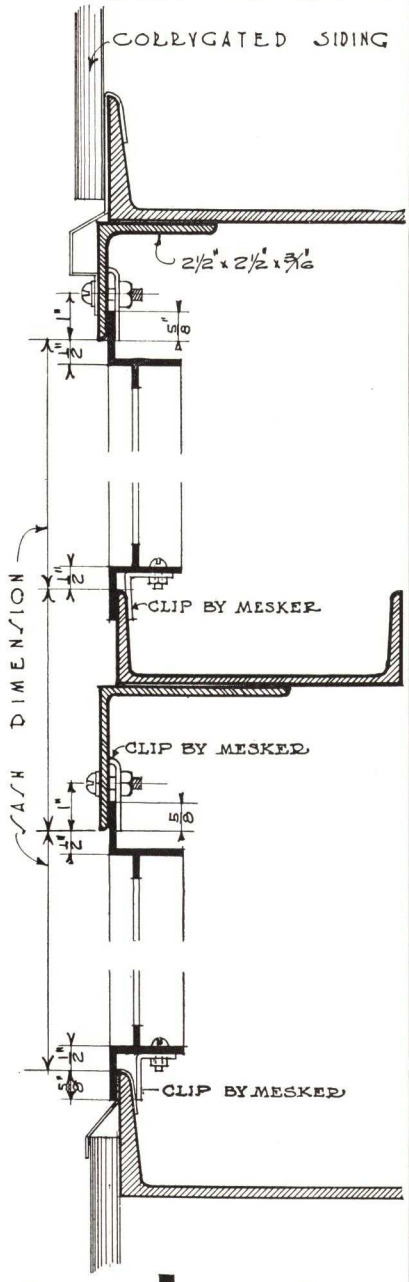
STANDARD WIDTHS.

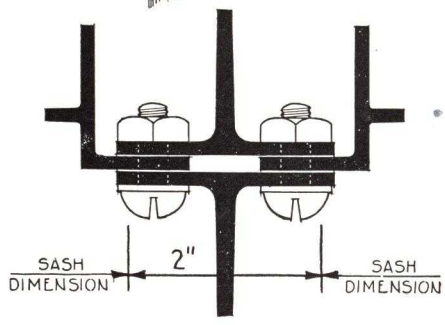
OPENING DIMENSION 12 x 18 GLASS	TOTAL LTS.	LIGHTS WIDE IN EACH UNIT.						OPENING DIMENSION 14 x 20 GLASS
2-1 5/8	2			2				2-5 5/8
3-2	3			3				3-8
4-2 3/8	4			4				4-10 3/8
4-5 1/4	4		2		2			5-1 1/4
5-2 3/4	5			5				6-0 3/4
6-3 1/8	6			6				7-3 1/8
6-6	6		3		3			7-6
7-6 3/8	7		4		3			8-8 3/8
8-6 3/4	8		4		4			9-10 3/4
9-10	9		3	3	3			11-4
10-7 1/2	10		5		5			12-3 1/2
10-10 3/8	10		3	4	3			12-6 3/8
11-10 3/4	11		3	5	3			13-8 3/4
11-10 3/4	11		4	3	4			13-8 3/4
12-8 1/4	12		6		6			14-8 1/4
12-11 1/8	12		4	4	4			14-11 1/8
13-2	12		3	3	3	3		15-2
13-11 1/2	13		4	5	4			16-1 1/2
13-11 1/2	13		5	3	5			16-1 1/2
14-11 1/8	14		4	6	4			17-3 1/8
14-11 1/8	14		5	4	5			17-3 1/8
15-2 3/4	14		3	4	4	3		17-6 3/4
16-0 1/4	15		5	5	5			18-6 1/4
16-0 1/4	15		6	3	6			18-6 1/4
16-6	15		3	3	3	3	3	19-0
17-0 5/8	16		5	6	5			19-8 5/8
17-0 5/8	16		6	4	6			19-8 5/8
17-3 1/2	16		4	4	4	4		19-11 1/2
17-3 1/2	16		3	3	5	3		19-11 1/2
17-6 3/8	16		3	3	4	3	3	20-2 3/8
18-1	17		6	5	6			20-11
18-6 3/4	17		3	4	3	4	3	21-4 3/4
19-1 3/8	18		6	6	6			22-1 3/8
19-4 1/4	18		3	6	6	3		22-4 1/4
19-4 1/4	18		4	5	5	4		22-4 1/4
19-7 1/8	18		3	4	4	4	3	22-7 1/8
20-7 1/2	19		3	5	3	5	3	23-9 1/2
21-5	20		5	5	5	5		24-9
21-5	20		4	6	6	4		24-9
21-7 7/8	20		4	4	4	4	4	24-11 7/8
21-10 3/4	20	3	3	4	4	3	3	25-2 3/4

MULLIONS

Mesker T mullions are used to join two or more units together . . . for extremely high sash a double mullion is furnished as shown on the right . . . slotted holes in sash and mullions permit maximum adjustment . . . add 2 in. to opening width for each mullion used.

STRUCTURAL STEEL INSTALLATION





ARCHITECTURAL PROJECTED WINDOWS

For schools, monumental buildings, small offices where large glass lights with modern arrangement are required to match the architectural treatment . . . a window less expensive than the Metropolitan Casement (Page 6) yet designed along the same lines.

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications Mesker Architectural Projected Windows or equal approved by the Architect.

Materials—Sections shall be of hot rolled new billet steel (or Genuine Wrought Iron) not less than 1½ in. in depth and ⅛ in. thick . . . glass rebates shall be not more than ⅞ in. deep front to back to avoid excessive putty.

Construction—All joints shall be riveted and welded . . . vents shall be balanced on angle side arms and slide on frictionless bronze shoes attached to butt hinges . . . friction shall be maintained by friction nut where side arm meets frame . . . applied weathering shall be ⅛ in. hot rolled angles throughout . . . glass shall be applied from the outside with putty (if desired specify inside glazing with glazing moulding attached with bronze screws . . . slight extra cost) . . . furnish mullions and covers for multiple openings.

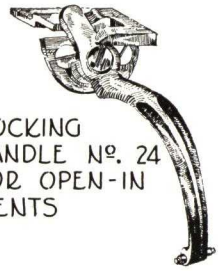
Hardware—Hardware shall be solid bronze statuary finish . . . cam handles for project in or out vents . . . underscreen stay bar for screen type project out vents . . . all hardware shall be shipped separately and securely packed.

Painting—Windows shall receive a prime coat of metallic paint applied in the factory.

Screens—Where shown and required prepare windows to receive screens. (See Page 6 under Screen Paragraph for typical specification and insert here.)

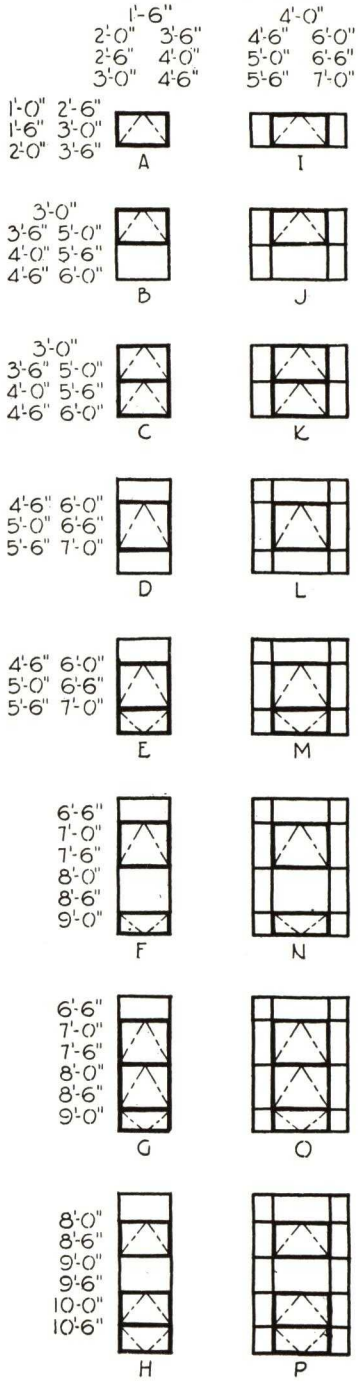
SOLID BRONZE HARDWARE

LOCKING HANDLE Nº. 10 FOR OPEN-OUT VENTS

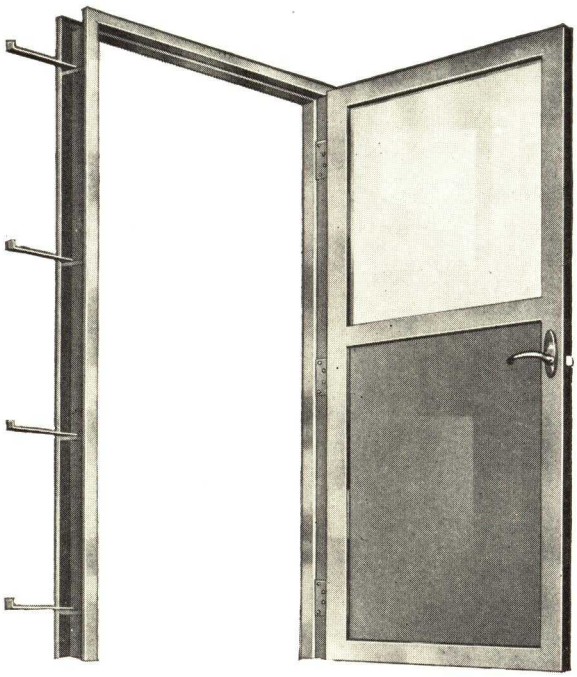


LOCKING HANDLE Nº. 24 FOR OPEN-IN VENTS

STANDARD SIZES



SERIES 14 DOORS AND VULCAN DOORS



Vulcan Doors are for interior use in offices, apartments, store buildings, etc., where neat appearance and fire resistance is required. Series 14 Doors are for exterior use in warehouses, garages, factories, etc.

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications (Mesker Vulcan Doors) (Mesker Series 14 Doors) or equal approved by the Architect.

Materials (Vulcan)—Stiles, rails, frames and panels shall be of No. 16 gauge blue annealed sheet steel.

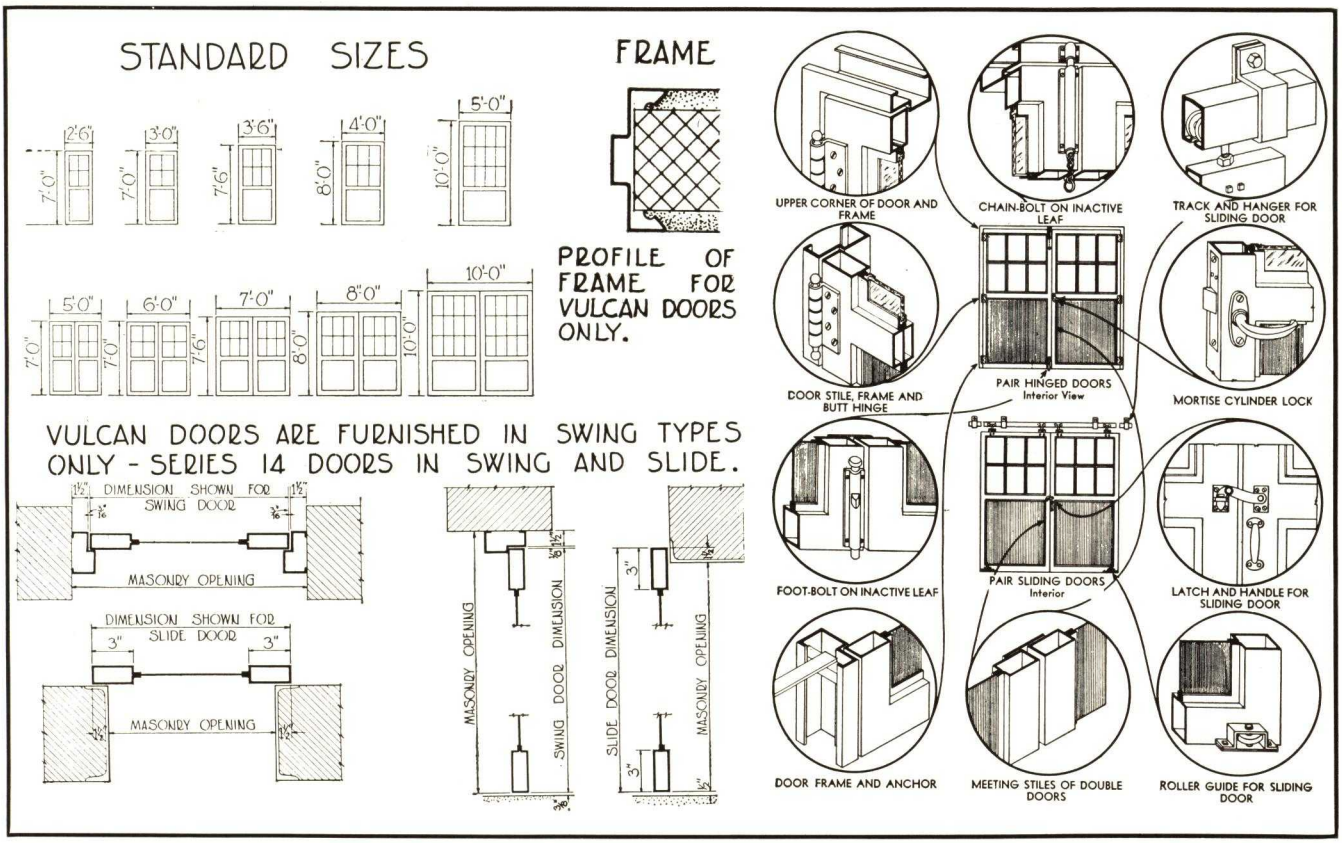
Materials (Series 14)—Stiles, rails, frames and panels shall be of No. 14 gauge blue annealed sheet steel.

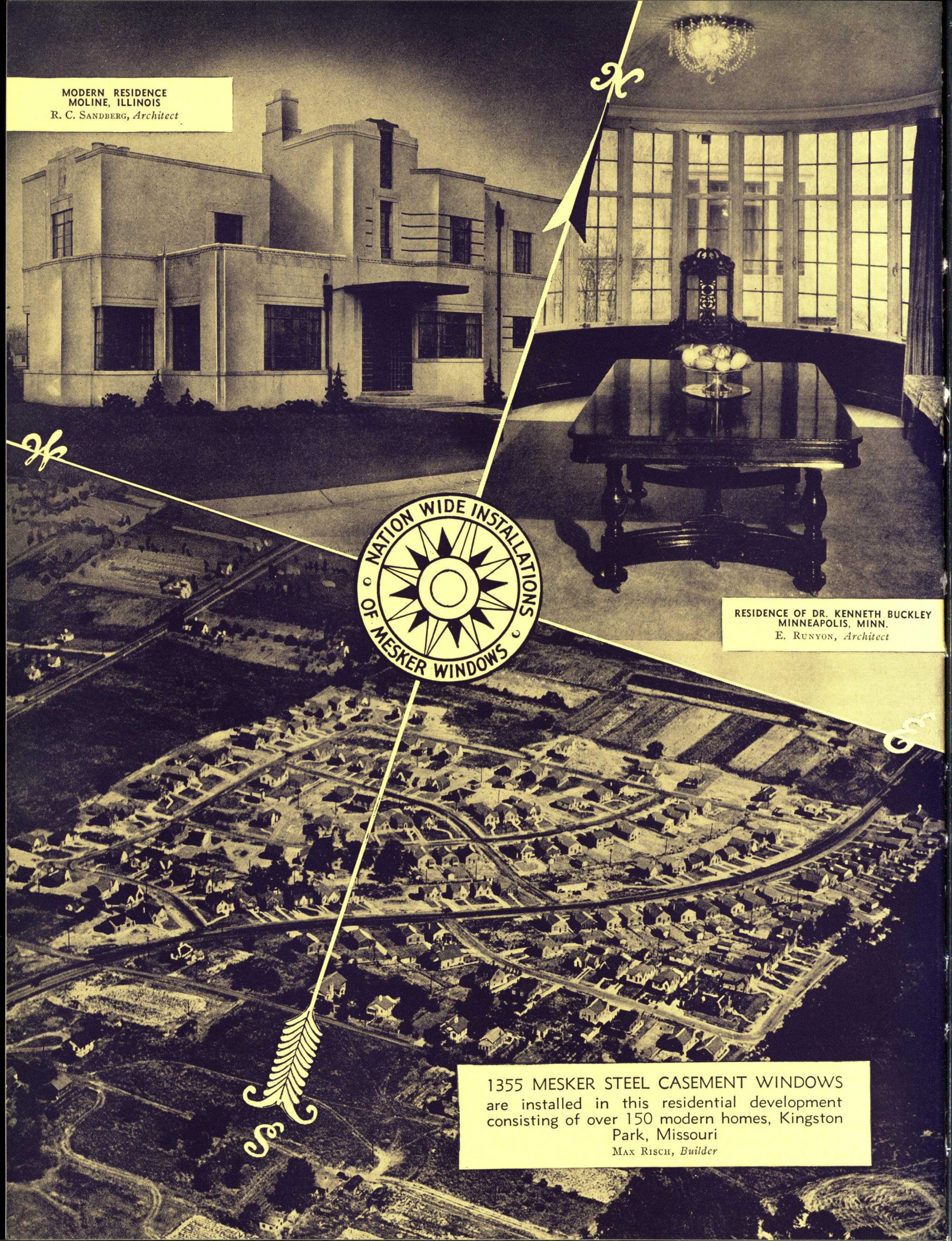
Construction (Vulcan and Series 14)—Stiles and rails shall be of tubular construction 1⅝x3 in. . . . all joints solidly reinforced and welded . . . glazing stops attached with steel screws shall be furnished on the inside where glass panels occur . . . steel panels shall be set to give a panel of equal depth on both sides of door . . . frames for Vulcan Doors shall be double rebated of proper depth to accommodate standard wall thickness shown . . . frames for Series 14 Doors shall be single rebated 4 in. in depth . . . all frames shall be anchored 1½ in. in floor.

Hardware—Vulcan Doors shall be prepared to receive manufacturer's standard hardware statuary bronze finish . . . furnish hinges, top and bottom bolts for double doors and cylinder locks. Series 14 Doors shall have manufacturer's standard hardware . . . Series 14 Swing type shall have hinges, top and bottom bolts for double doors and cylinder locks . . . Series 14 Slide type shall have complete overhead track equipment, cylinder locks, handles, floor guides and door stops.

Painting—All doors shall receive one factory coat of metallic primer paint.

Erection—All frames shall be erected as the masonry progresses . . . set frames plumb and square and anchor securely in masonry . . . doors shall be hung after frames are set.




MODERN RESIDENCE
MOLINE, ILLINOIS
R. C. SANDBERG, Architect
NATION WIDE INSTALLATIONS
OF MESKER WINDOWS
RESIDENCE OF DR. KENNETH BUCKLEY
MINNEAPOLIS, MINN.
E. RUNYON, Architect
1355 MESKER STEEL CASEMENT WINDOWS
are installed in this residential development consisting of over 150 modern homes, Kingston Park, Missouri
MAX RISCH, Builder

RICHEY, BROWNE & DONALD, INC.

Manufacturers of Steel, Bronze and Aluminum Windows

52-15 Flushing Avenue, MASPETH, CITY OF NEW YORK

REPRESENTATIVES

ATLANTA, GA., Dowman-Hobbs Co., 201½ Luckie St., N. W.
BALTIMORE, MD., Frank E. Black, 25 Clay St.
BOSTON, MASS., Miller-Service, 577 Highland Ave., Malden
CHICAGO, ILL., Charles L. Morse, 747 North Wabash Ave.
CINCINNATI, OHIO, Durbrow & Otte, 1426 Clay St.
CLEVELAND, OHIO, Vance Hives & Co., 1505 Broadway
COLUMBUS, OHIO, The B. M. Freeman Co., Room 1032, Atlas Building, 8 East Long St.
DALLAS, TEX., Universal Building Products Co. Inc., 2227 Cedar Springs Ave.
DES MOINES, IOWA, Louis I. Tower, 825 Euclid Ave.
DETROIT, MICH., Wm. T. Nelson, 2303 No. Main St., Royal Oak
HOUSTON, TEX., Robert Voigtlander, 1612 Miller St.
KANSAS CITY, MO., G. Edward Riley, 950 Dierks Building
LOS ANGELES, CALIF., C. P. Helpman, 722 Story Building, 610 So. Broadway
LOUISVILLE, KY., Thos. L. Barret, 112 So. 2nd St.
MIAMI, FLA., Miami Wire & Iron Works, 225 N. W. First Court
MILWAUKEE, WIS., S. A. Smith, 1012 No. Third St.
PHILADELPHIA, PA., H. D. Oliver, Jr., Room 2010, Architects Building, 17th St. at Sansom
PITTSBURGH, PA., J. F. Haldeman, Century Building, Seventh Ave.
ST. PAUL, MINN., Roy E. Milham, 2128 Berkeley Ave.
SEATTLE, WASH., Thos. Greenlees, 1149 Henry Building
SYRACUSE, N. Y., Roesch & Associates, Inc., 938 University Block

Browne Windows are made in various types and sizes for office buildings, hospitals, schools and universities, public buildings, department stores, industrial buildings, apartments, hotels, homes, etc. They may be in groups of one or more units as desired.

Browne Folding Type Fire Windows bear the labels of Underwriters' Laboratories Inc.

Browne Psychiatric Safety Windows are built with tee-bar muntins and stops which eliminate need of restraint bars or detention guards.

Description and Advantages of Browne Folding Type Windows

Operation—Sashes are firmly hinged together to open (outwardly) and close under symmetrical control of hinged arms attached to stationary vertical bar. These arms afford absolutely rigid support. A simple catch fastens sash when window is closed. Mechanical operators may be furnished when desired.

Weatherstripping—Heavy resilient felt weatherstripping is an integral part of the construction.

Weather Protection—The airtight and dustproof qualities have been established in laboratory tests.

Noiseproof—The felt weather cushions practically shut out street noises when windows are closed.

Ventilation—Ideal changing of air without drafts. A pleasant quality of ventilation is obtained by bowing sashes open to a maximum of 7 or 8 in. giving fresh air intake at bottom, exhaust at top, and no opening at sides. Vertical flanges at sill and head act as draft deflectors and obviate need of hopper vents.

Safety—All exterior surfaces of sashes and frame are accessible from the inside. The expense and danger of outside window cleaning and painting are eliminated.

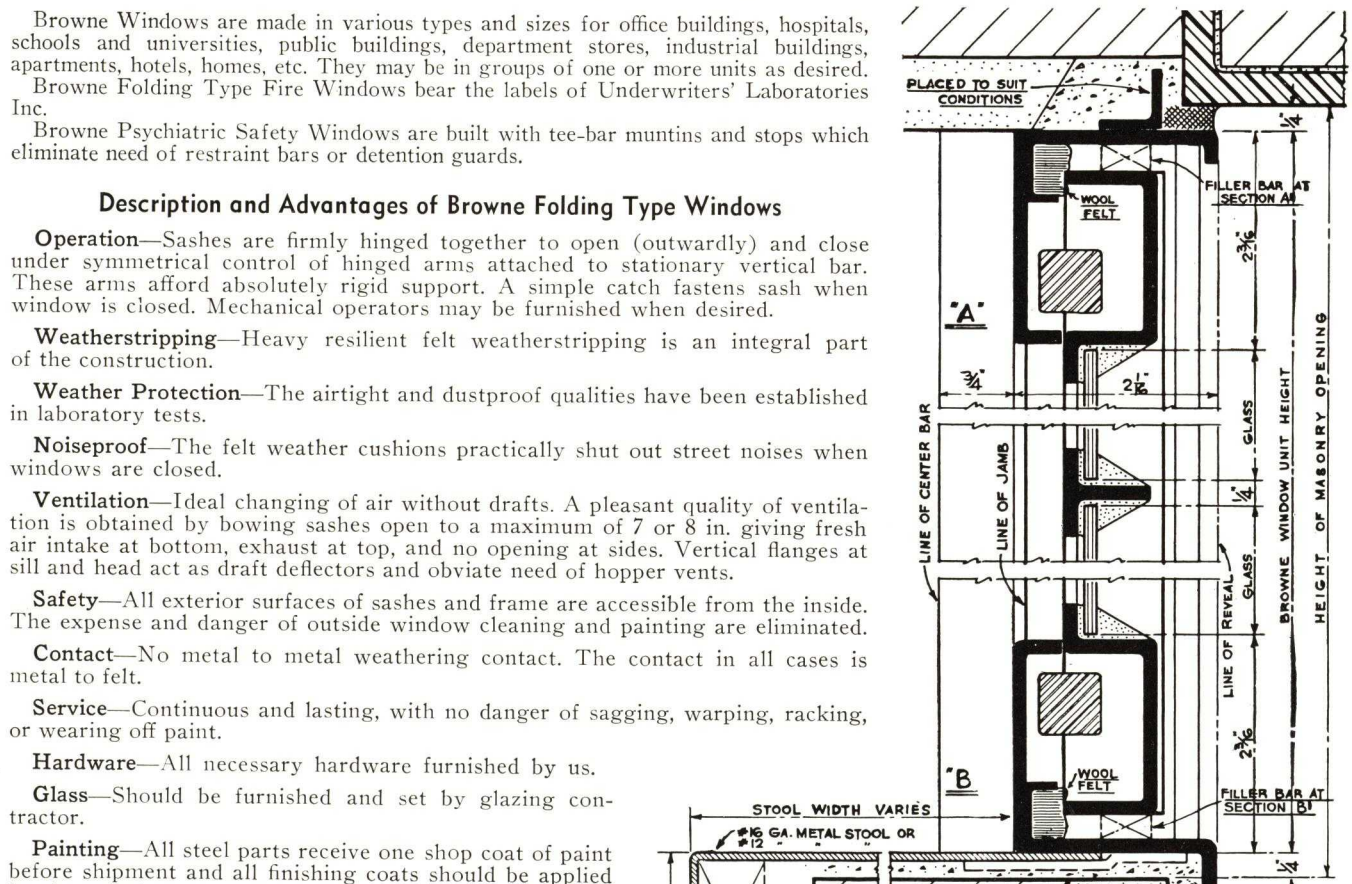
Contact—No metal to metal weathering contact. The contact in all cases is metal to felt.

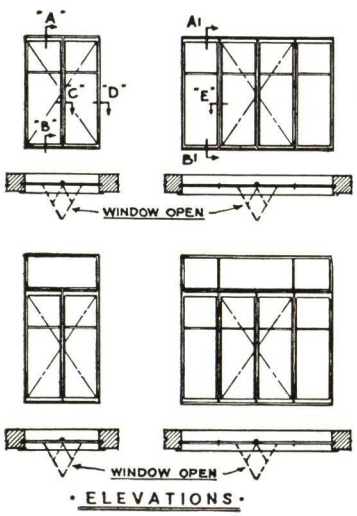
Service—Continuous and lasting, with no danger of sagging, warping, racking, or wearing off paint.

Hardware—All necessary hardware furnished by us.

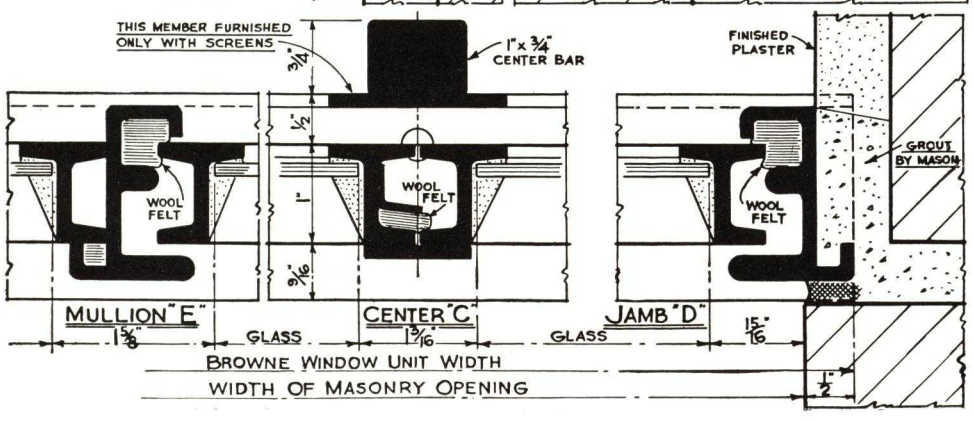
Glass—Should be furnished and set by glazing contractor.

Painting—All steel parts receive one shop coat of paint before shipment and all finishing coats should be applied by the painting contractor.





DETAILS SHOWN ARE FOR BROWNE WINDOW MODEL NO. 8



SECURITY PRODUCTS COMPANY

MAIN OFFICE AND FACTORY
ST. LOUIS, MISSOURI

Ventrolite

The modern window, especially adapted for Hospitals, Auditoriums, Office Buildings, Hotels and all types of public, residential and institutional buildings.

The "Ventrolite" window provides such feature as:

Ventilation—Approximately 100% of glass area with no direct drafts.

Safety—Window accidents and hazards of cleaning eliminated.

Protection—Danger of intrusion reduced to minimum with sash in either opened or closed position.

Weatherproof—All vertical and horizontal edges weatherstripped.

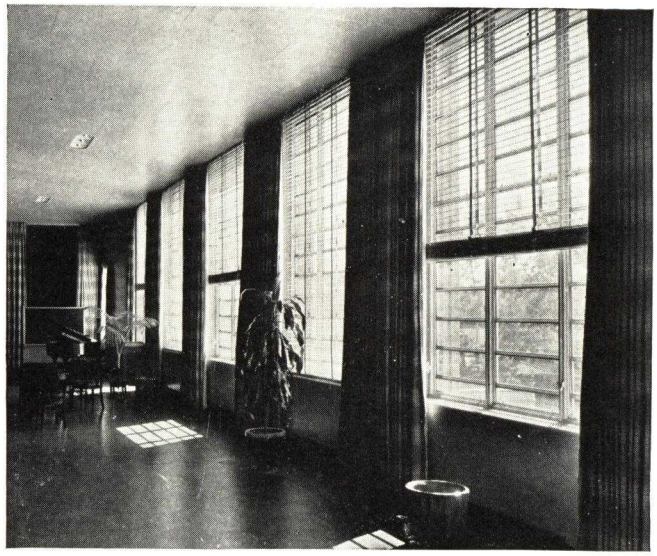
Screens——Quickly and easily installed, having no connection with operating mechanism.

Invisigard

The "Invisigard" window is especially adapted for Penitentiaries, Prisons, Jails, and all types of Detention and Penal institutions, being a combination of window and guard.

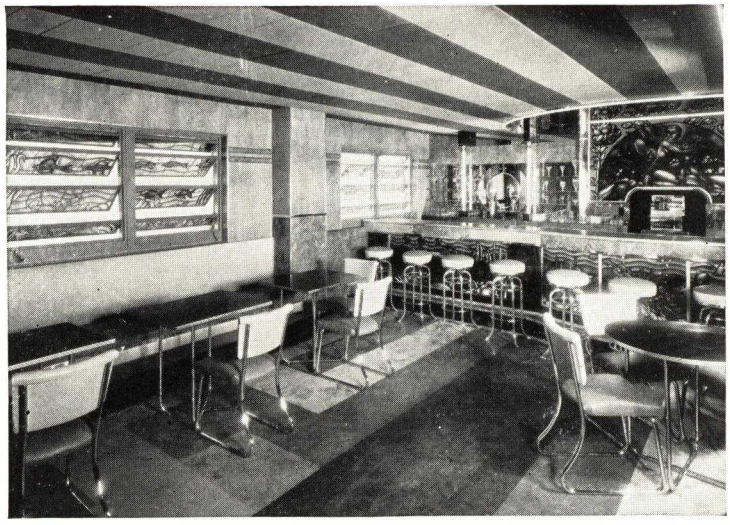
It has all the features of the "Ventrolite" and, in addition, the horizontal and vertical muntin bars are of tool and heat resisting steel, spaced so as to provide protection against escapes.

The operating mechanisms is properly enclosed to prevent mutilation by the prisoners.



Music Room, Children's Hospital, Denver, Colo.

Literature and other data furnished upon request.



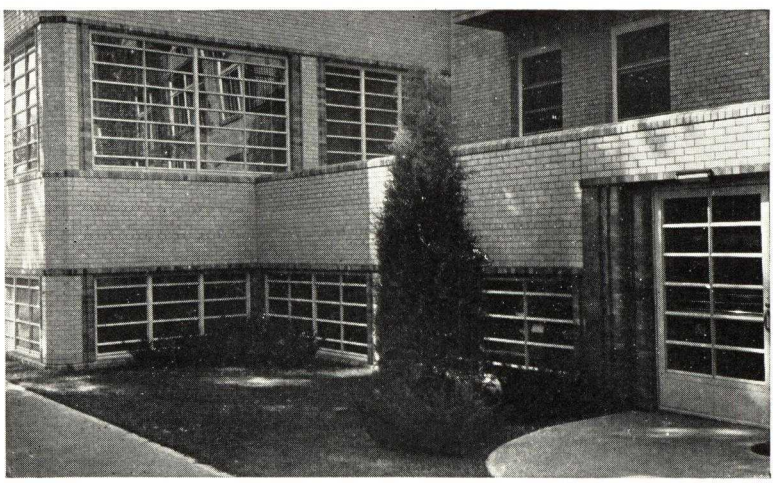
Cocktail Lounge, Embassy Hotel, Miami Beach, Fla.

LIST OF RECENT INSTALLATIONS

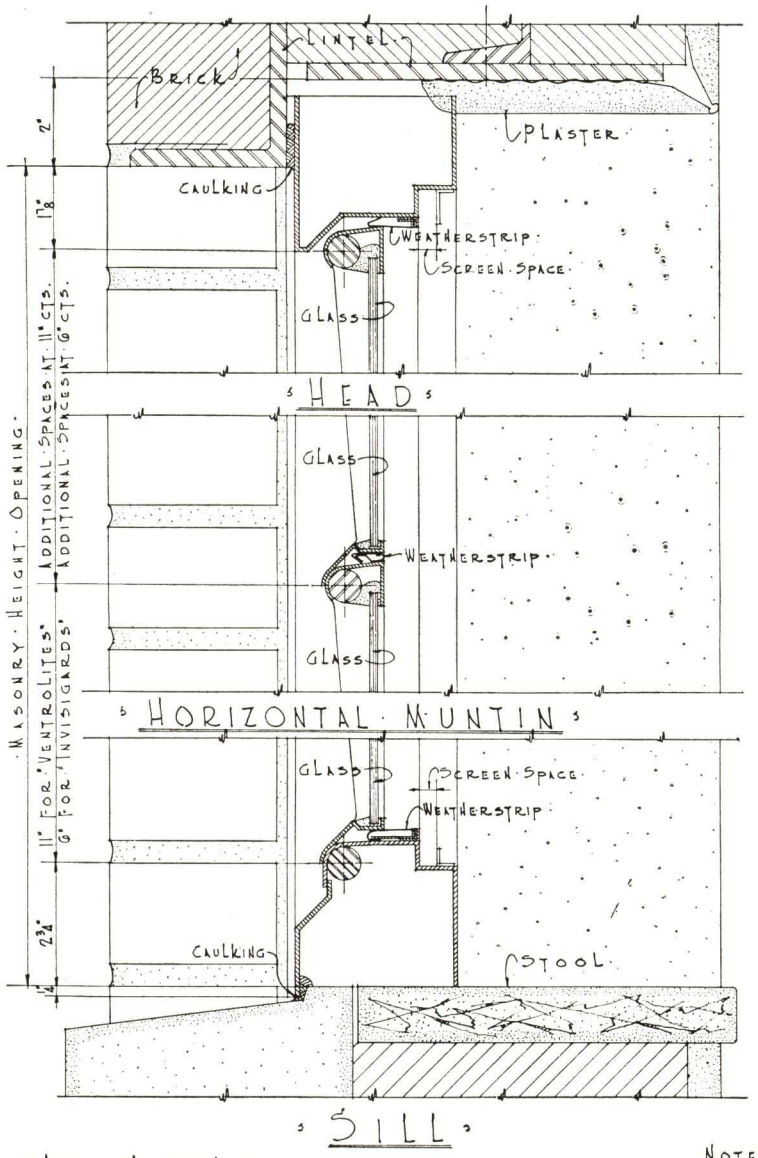
Location	Building
Albuquerque, N. M.	Lovelace Store
Brooklyn, N. Y.	Plymouth Cafeteria
Bryn Mawr, Pa.	Science Building, Bryn Mawr College
Cheyenne, Wyo.	Woolworth Building
Columbia, S. C.	Hospital
Dallas, Tex.	Parkland Hospital
Denver, Colo.	Children's Hospital
Flushing, L. I., N. Y.	Town Hall
Leavenworth, Kan.	Mess Hall, U. S. Penitentiary
Miami Beach, Fla.	Embassy Hotel Cocktail Lounge
Nashville, Tenn.	Davidson County Courthouse
New London, Conn.	Memorial Institute
New Orleans, La.	St. Bernard Market
New Orleans, La.	Tremain Market
New Orleans, La.	Apartment Building
New Orleans, La.	Dillard University
North Platte, Neb.	Woolworth Building
Richmond, Ind.	State Hospital
St. Louis, Mo.	Finkel Store and Apartment Building
San Marcos, Tex.	Hays County Jail
Santa Fe, N. M.	Municipal Building
Talihina, Okla.	State Tuberculosis Sanitarium
Yuma, Ariz.	U. S. Government Imperial Dam
Webster Grove, Mo.	City Hall
West Point, N. Y.	U. S. Military Barracks

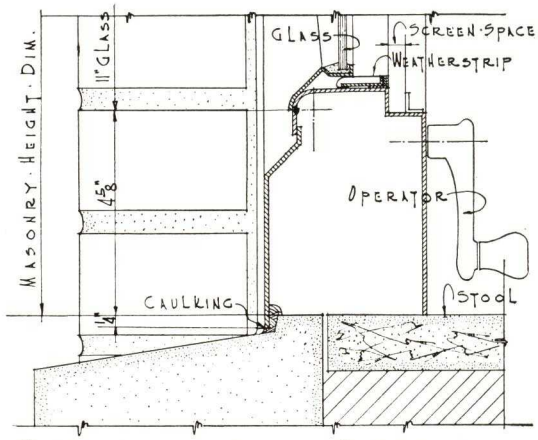
SALES REPRESENTATIVES

BALTIMORE, MD., 514 St. Paul St.
BOSTON, MASS., 137 Newbury St.
CLEVELAND, OHIO, 1737 E. 18th St.
DALLAS, TEX., 517 North Texas Building
DENVER, COLO., 1534 Blake St.
DETROIT, MICH., 15330 Archdale Ave.
DES MOINES, IOWA, 825 Euclid Ave.
EAST ORANGE, N. J., 167 So. Burnett St.
FORT WAYNE, IND., 1617 So. Calhoun St.
GREENVILLE, S. C., 19 W. Prentiss St.
HOUSTON, TEX., 507 Merchants & Manufacturers Building
JACKSONVILLE, FLA., 318 Sorento Road
LOUISVILLE, KY., 646 E. Jefferson St.
MIAMI, FLA., 1727 N. W. 28th St.
NEW YORK, N. Y., 30 Rockefeller Plaza
OKLAHOMA CITY, OKLA., 211 W. 10th St.
OMAHA, NEB., 636 Paxton Block
PITTSBURGH, PA., Century Building
PHILADELPHIA, PA., Architects Building
RICHMOND, VA., 14 No. 7th St.
ROANOKE, VA., 407 Carolina Ave.
SNYDER, N. Y., 116 Chateau Terrace
WASHINGTON, D. C., 218 Mills Building
WAYNE, PA., 108 West Wayne St.

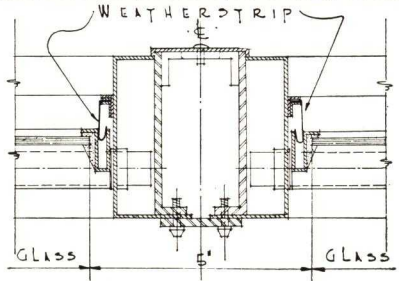


Children's Hospital, Denver, Colo.



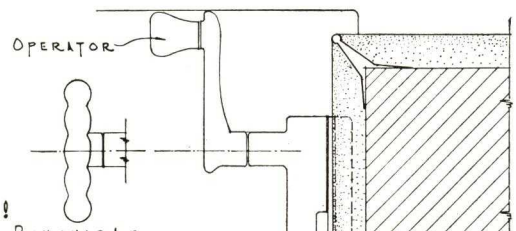


OPTIONAL SILL SECTION
FOR "VENTROLITE WINDOWS"

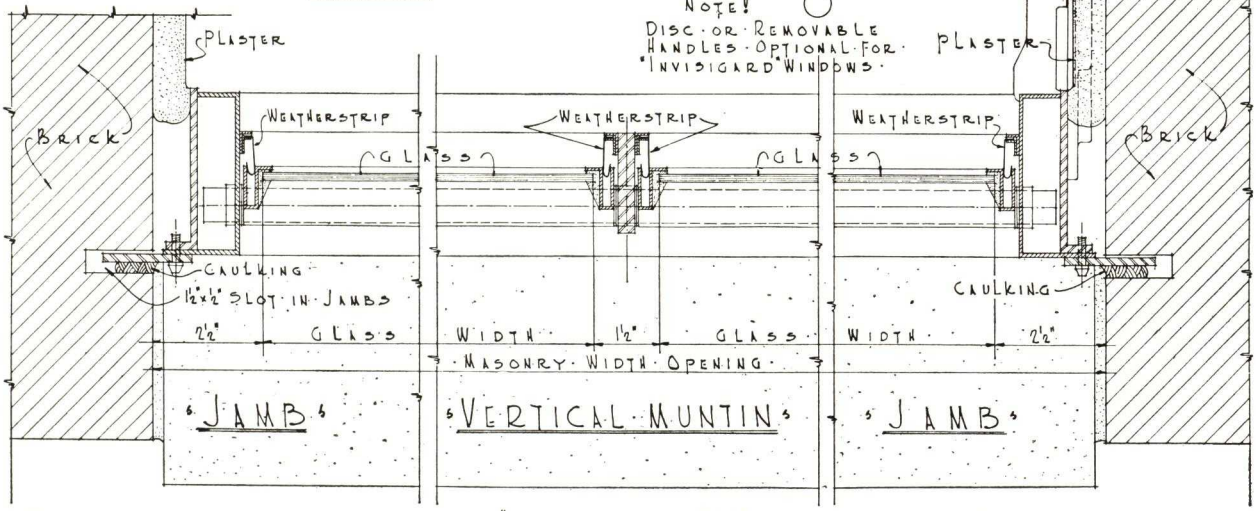


MULLION

NOTE!
MULLIONS REQUIRED ONLY WHEN
WIDTH OF OPENING EXCEEDS 5'-0"



NOTE!
DISC OR REMOVABLE
HANDLES OPTIONAL FOR
"INVISIGARD" WINDOWS



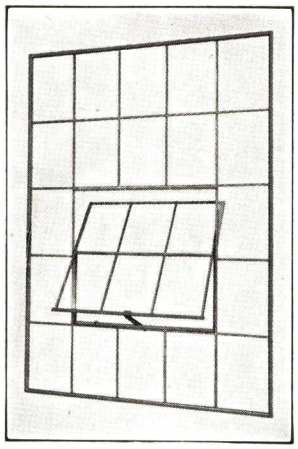
STANDARD DETAILS FOR "VENTROLITE" & "INVISIGARD" WINDOWS

SCALE 3" = 1'-0"

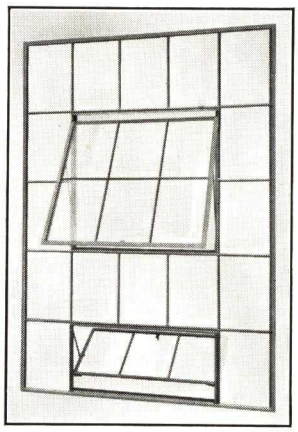
J. S. THORN COMPANY

Manufacturers of All Types of Steel Windows and Doors

PHILADELPHIA, PA.



Pivoted Window

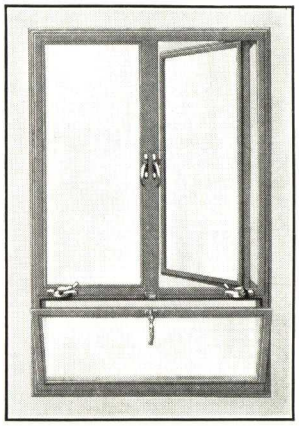


Projected Window

J. S. THORN COMPANY have served the building industry with metal windows and allied products for over a half century.

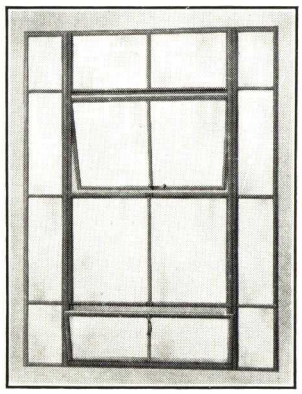
Our windows and accessories in every classification contain a "full measure" of the best materials, are of heavy, sturdy construction and are built to withstand unusual conditions.

Lewis Tower, Philadelphia, Pa.
ARTHUR W. HALL, Architect



Standard Combination Casement Window Fitted with "Screen Type" Hardware

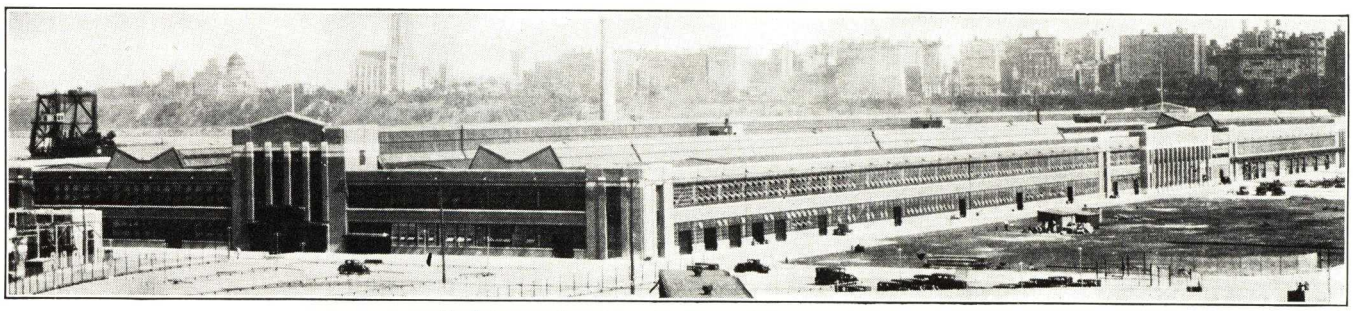
Worm and gear operator originated and patented by Thorn, No. 1941432



Standard Casement Projected Window

Worm gear controls for metal screen type casements is a Thorn development and is protected by a U. S. Patent.

All of our windows are made in standard types and sizes as recognized and listed by the U. S. Department of Commerce, National Bureau of Standards in Simplified Practice Recommendations R72.

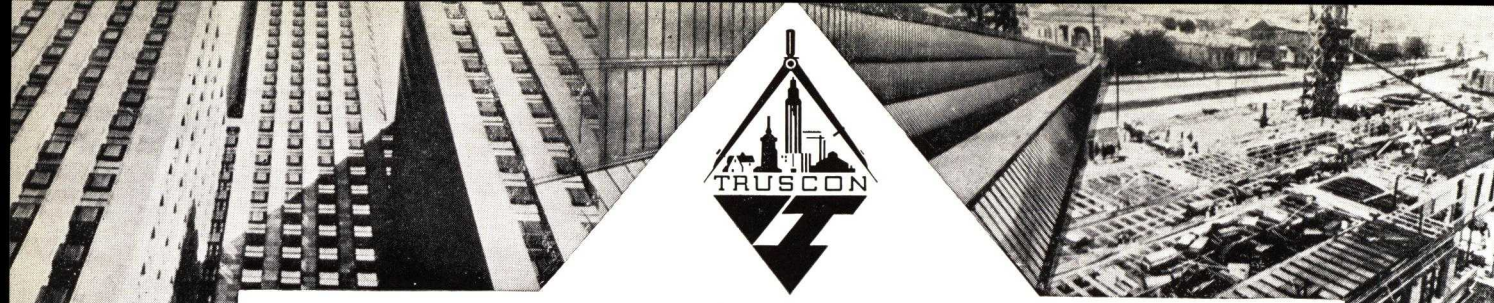


Ford Motor Co. Assembly Plant, Edgewater, N. J.

ALBERT KAHN, INC., Architect

TRUSCON

Building Products of Steel



TRUSCON STEEL COMPANY

Products and Services

PRODUCTS

THE TRUSCON STEEL COMPANY, of Youngstown, Ohio, is an institution of international scope—the largest company of its kind in the world, manufacturing a complete line of steel building products.

They have been developed in accord with modern architectural requirements for utility and quality, and include individual units peculiarly suited to all types of building and every structural condition.

Due to unusually efficient manufacturing facilities, the profession is assured of dependable workmanship. This, in turn, is supplemented by a nation-wide engineering organization equipped to render direct personal service in the designing room or the field. Our location of offices and warehouses guarantees speedy attention to inquiries.

The TRUSCON STEEL COMPANY of 1938 represents over *"Thirty-five Years of Pioneering and Leadership"* and the following noteworthy line of nationally known building and maintenance products:

Windows of Steel; Steel Doors and Frames; Reinforcing Steel; "O-T" Steel Joists, Clerespan Joists; Welded Steel Fabric; Metal Lath and Insulmesh for Plaster Bases; Ferroclad Insulation Panels; Steeldeck and Ferrocoustic Roofs; Structural Steel; Unigrid and Tee-grid Bridge Floors; Gratings; Safety Tread Steel; Rolled and Formed Sections; Power Transmission Structures; Steel Poles and Towers; Radio Antennae; "Silentaire," a Window Ventilator and Muffler; and varied Industrial Maintenance Products.

ARCHITECTURAL SERVICE

Truscon's designers and engineers work in close relationship with architects, builders and contractors in the interest of a better understanding of all requirements. Architects are invited to call on our Engineering and Sales Department for preliminary estimates, for investigations, studied reports, complete suggestions and definite quotations.

Window and Door Service

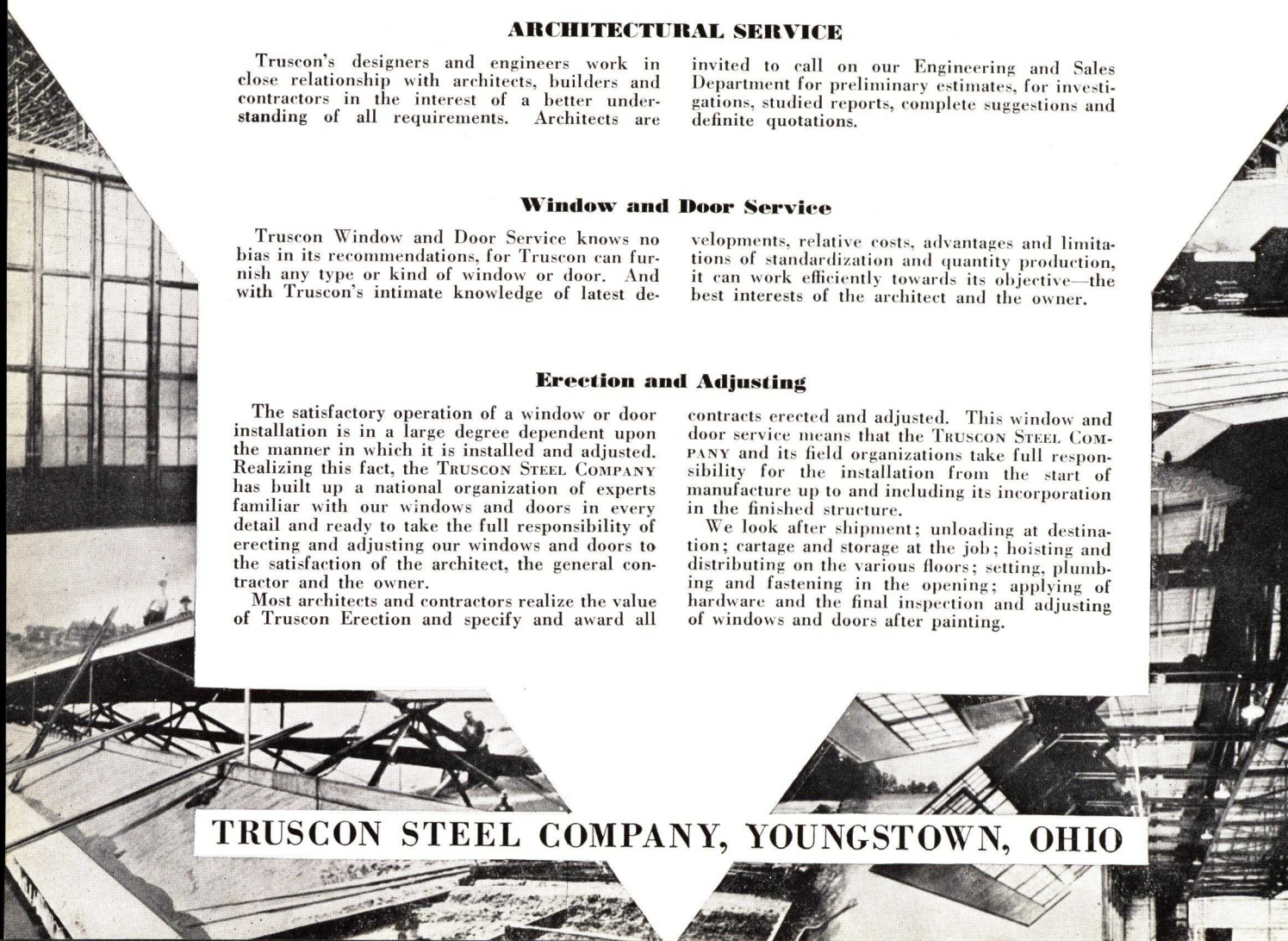
Truscon Window and Door Service knows no bias in its recommendations, for Truscon can furnish any type or kind of window or door. And with Truscon's intimate knowledge of latest developments, relative costs, advantages and limitations of standardization and quantity production, it can work efficiently towards its objective—the best interests of the architect and the owner.

Erection and Adjusting

The satisfactory operation of a window or door installation is in a large degree dependent upon the manner in which it is installed and adjusted. Realizing this fact, the TRUSCON STEEL COMPANY has built up a national organization of experts familiar with our windows and doors in every detail and ready to take the full responsibility of erecting and adjusting our windows and doors to the satisfaction of the architect, the general contractor and the owner.

Most architects and contractors realize the value of Truscon Erection and specify and award all contracts erected and adjusted. This window and door service means that the TRUSCON STEEL COMPANY and its field organizations take full responsibility for the installation from the start of manufacture up to and including its incorporation in the finished structure.

We look after shipment; unloading at destination; cartage and storage at the job; hoisting and distributing on the various floors; setting, plumbing and fastening in the opening; applying of hardware and the final inspection and adjusting of windows and doors after painting.



TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

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TYPES OF TRUSCON WINDOWS AND DOORS

Truscon steel windows and doors cover a wide range of building requirements and at the same time meet every condition of architectural harmony, simplicity, fine quality and superior craftsmanship demanded by the industry. Truscon offers the following types:

STEEL WINDOWS

Double-Hung Windows, Series 27-28-33—In types and sizes to meet architectural requirements.

Donovan Awning Type Windows, Series 38—Prevent sun glare and drafts; ideal for schools and hospitals.

Residence Casements, Series 5—A complete line for residence and apartment construction, with or without screen arrangements, including wood surrounds and Tempryte insulating windows.

Intermediate and Heavy Casements, Series 15, 15c and 25—For public and private monumental buildings.

Monumental Projected Windows, Series 15p—For quality installations in schools, offices, etc.

Detention Windows—For prisons, reformatories and psychopathic hospitals.

Architectural and Commercial Projected Windows—A practical window with many applications.

Continuous Windows and Mechanical Operators.

Utility and Basement Windows.

Coal Chutes and Steel Lintels.

Pivoted Windows—For Industrial and Commercial Buildings.

Screens, Sub-Frames and Stools—For all types of windows.

STEEL DOORS

Industrial Doors—For large and small openings.

Overdoors—Operating overhead.

Accordion Doors—Leaves fold against each other like a jack-knife.

Vertical Lift Doors.

Canopy Doors and Bifold Doors.

Airplane Hangar Doors—In various styles, straight track types, curved track types, canopy, telescoping, projected and original "Kanopy" types.

Pier Doors—A vertical lift-swing type.

DOUBLE HUNG WINDOWS

SERIES 27 AND 28

TRUSCON Series 27 and 28, plate type, Double-Hung Windows are galvanized and bronze weather stripped and meet U. S. Government specifications for salt spray test and air infiltration.

SPECIFICATIONS

1 *General*—All windows so indicated on the plans and elevations and called for in these specifications shall be the solid steel, plate type (galvanized and weather stripped) double-hung windows as manufactured by Truscon Steel Company of Youngstown, Ohio. No substitution shall be made without the written approval of the architect. (Specify herein whether Series 27 or 28 is required.)

2 *Scope of Work*—The steel window manufacturer shall include in his work all Double-Hung Steel Windows erected complete, and shall furnish and apply hardware and weights and make a final adjustment of these windows.

3 *Material*—All windows throughout shall be constructed of Truscon special hot-rolled new billet steel, galvanized. The gauges of the various sections will be as shown in table:

	Series 27	Series 28
Sill	14 gauge	12 gauge
Weight box	18 gauge	16 gauge
Cover plates and parting strip	16 gauge	16 gauge
Staff bead	12 gauge	12 gauge
Head and head covers	16 gauge	16 gauge
Rails and stiles of sash	14 gauge	12 gauge
Glazing Strips—Jambs and Meeting Rail	14 gauge	14 gauge
Glazing Strips—Top and Bottom Rail	14 gauge	12 gauge

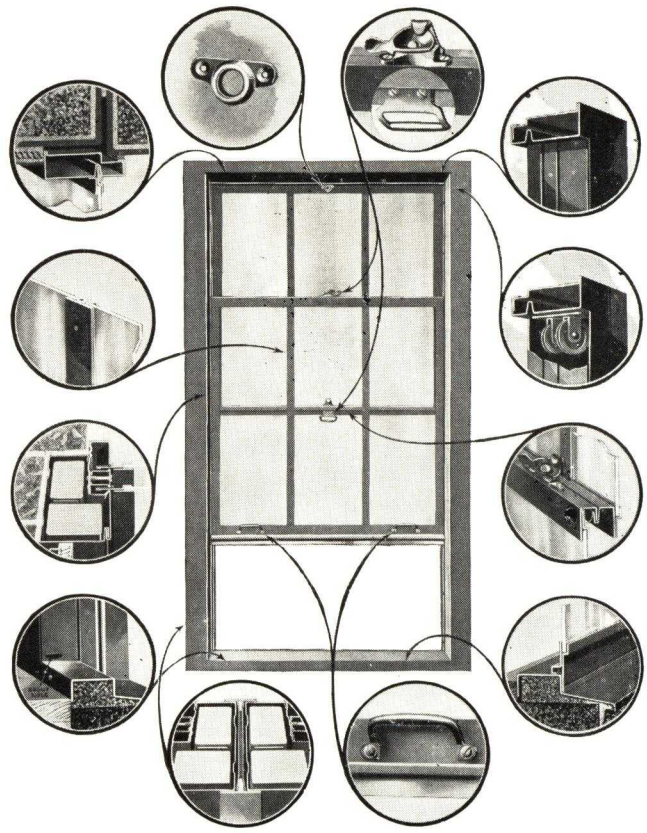
4 *Construction*—(a) *Frame Members:* head, sill and jamb construction, each one piece of metal exclusive of parting strip, weight box cover and head cover; all members formed straight and true with welded joints ground smooth; staff bead formed on exterior of frame.

(b) *Pulley Stiles* shall be formed with deep weathering and the pulley stile and weight box cover held in place with one line of oval head screws passing through a heavy reinforcing piece on inside of jamb. Adjustment of sash and frame shall be secured by these screws which hold the parting strip and weight box cover. The weight box cover shall run the full height of the jamb from sill to head, and shall be removable.

(c) A *Brass Check Plate* shall be attached at meeting rails to insure proper weathering.

(d) *Sash Members* shall be so designed that the distance from masonry opening to glass line at jambs and head will be 2½ in.

(e) *Glazing Strips* shall be secured with oval head screws to permit inside glazing.



5 *Weather Stripping*—Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rails and head. A spring bronze closure shall be applied to lower half of outer sashway.

6 *Hardware*—(a) *Frames* shall be equipped with pressed steel pulleys, bronze bushed and pressed steel housings with hard steel pulley axles. Sash shall be hung on zinc coated steel sash chains, having a tensile strength of at least 600 pounds, concealed behind pulley stiles and properly balanced with cast iron weights.

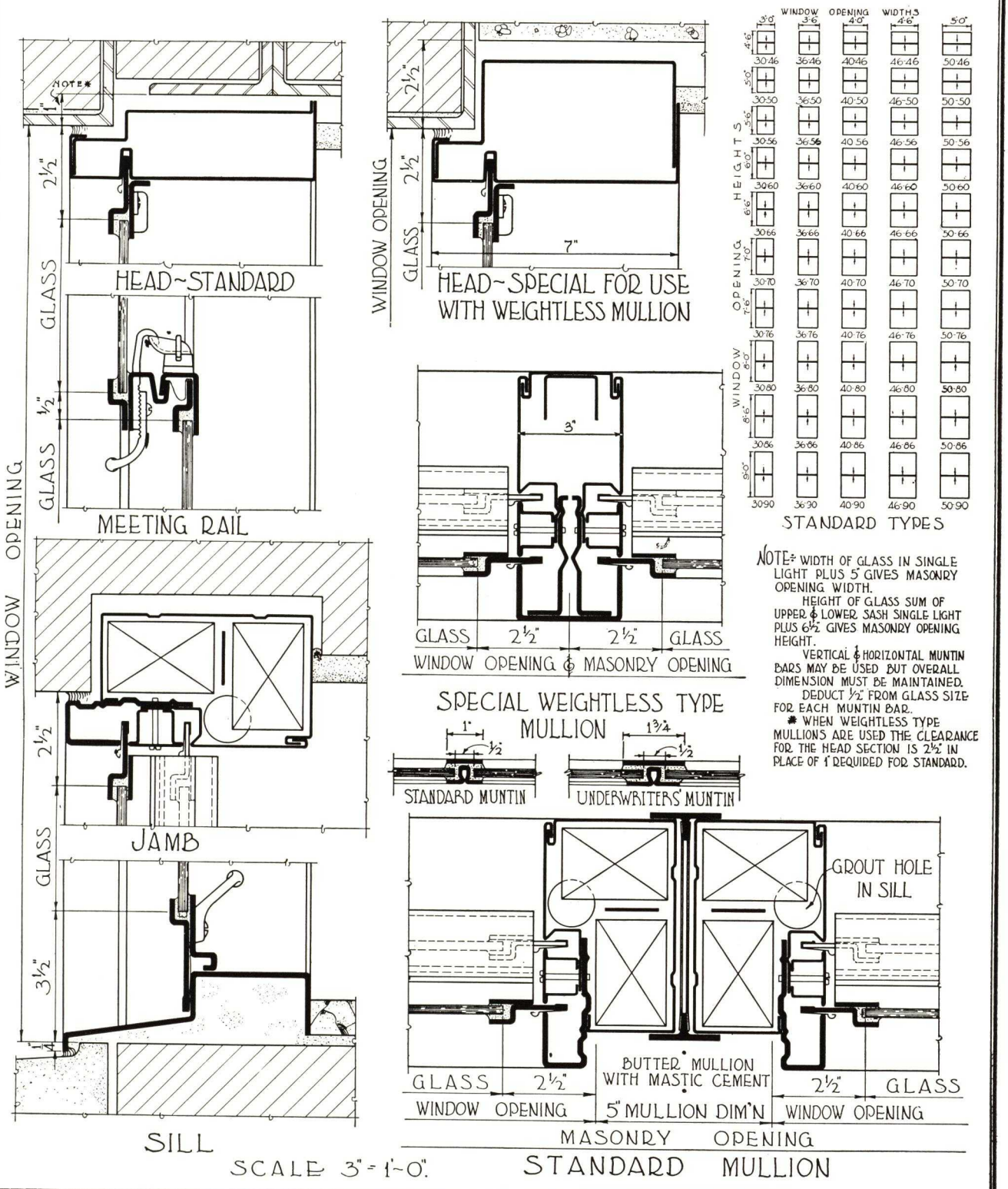
(b) *Sash* shall be equipped with one pair of lift handles, one combination adjustable sweep lock, one pull-down handle and one pole socket for upper sash, all of solid bronze.

(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

7 *Painting*—All windows shall be given one coat of protective paint after assembly and before shipment.

8 *Air Infiltration*—On double-hung windows shall be guaranteed not to exceed 1.00 cubic foot per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by wind at a velocity of 25 miles per hour.

9 *Galvanizing*—Galvanized materials shall show no rust after 50 hours continuous exposure at a temperature of 90 to 95 degrees Fahr. to the spray of 20 per cent salt (sodium chloride) solution.



NOTE* WIDTH OF GLASS IN SINGLE LIGHT PLUS 5" GIVES MASONRY OPENING WIDTH.
HEIGHT OF GLASS SUM OF UPPER & LOWER SASH SINGLE LIGHT PLUS 6½" GIVES MASONRY OPENING HEIGHT.
VERTICAL & HORIZONTAL MUNTIN BARS MAY BE USED BUT OVERALL DIMENSION MUST BE MAINTAINED.
DEDUCT ½" FROM GLASS SIZE FOR EACH MUNTIN BAR.
* WHEN WEIGHTLESS TYPE MULLIONS ARE USED THE CLEARANCE FOR THE HEAD SECTION IS 2½" IN PLACE OF 1" REQUIRED FOR STANDARD.

TRUSCON STEEL COMPANY Youngstown, Ohio

TYPES AND SIZES — STANDARD DETAILS

DOUBLE-HUNG STEEL WINDOWS

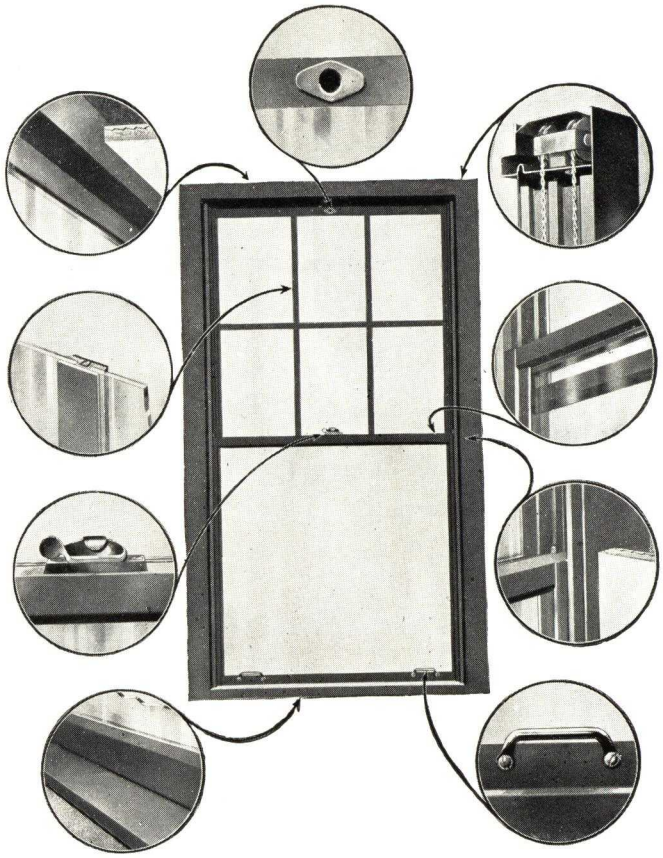
SERIES Nos. 27 and 28

PLATE No. **W-11**

OCTOBER, 1937

Peerless DOUBLE-HUNG WINDOWS SERIES 33

THE Peerless Double-Hung Steel Window, Series 33, combines a pleasing architectural design with maximum utility, durability, simplicity and economy. The tubular construction of the sash, frame members and combination jamb and weight well develops remarkable strength in the sections and at the same time imparts a proportion to them that makes the window thoroughly in harmony with requirements for monumental buildings.



SPECIFICATIONS

1 *General*—All windows so indicated on the plans and elevations and called for in these specifications shall be the Peerless Double-Hung Steel Windows, Series 33 (galvanized and weatherstripped) as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 *Scope of Work*—The steel window manufacturer shall include in his work all Double-Hung Steel Windows, erected complete, and shall furnish and apply hardware and weights and make a final adjustment of these windows.

3 *Material*—All windows throughout shall be constructed of Truscon special hot-rolled, new billet steel, copper-bearing and galvanized.

Gauges of the various sections will be as shown in table:

Sill	14 gauge
Weight box	18 gauge
Cover plates and parting strip	18 gauge
Head	16 gauge
Head cover	24 gauge
Rails and stiles of sash	18 gauge
Inside glazing strips	13 gauge

4 *Construction*—(a) *Frame Members:* The head frame shall be made up of two parts—the frame proper and the cover. The jamb frame and the weight box shall be made of one piece and shall have attached to it the jamb stop which shall also serve as an access panel to the weights. All members formed straight and true with welded joints.

(b) The *Jamb Stop* shall be removable to afford an exceptionally large opening for access to weights.

(c) *Sash Members:* Sash members shall be not less than $1\frac{1}{8}$ in. deep, front to back, and shall be so designed that the distance from masonry opening to glass lines at head will be $2\frac{5}{8}$ in. and at jambs $2\frac{1}{8}$ in. Corners of sash shall be welded.

(d) The *Meeting Rail* between upper and lower sash shall be formed so as to interlock.

(e) Where *Muntin Bars* are required, they shall butt against sash members and be so welded that wherever possible a flush surface is secured at intersections. A smooth outside and inside surface shall be maintained on all muntin bars.

(f) Convenient *Inside Glazing* shall be assured by the use of removable inside glazing strips at sides only. These glazing strips shall be secured with oval-head screws.

5 *Weather Stripping*—Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rail and head.

6 *Hardware*—(a) Frames shall be equipped with grey iron pulleys having hard white maple bearings saturated in paraffin under steam pressure and running on $\frac{5}{16}$-in. round, cold-rolled axles mounted in pressed steel housings. Sash shall be hung on zinc coated steel sash chain, having a tensile strength of at least 600 pounds, exposed and properly balanced with cast iron weights.

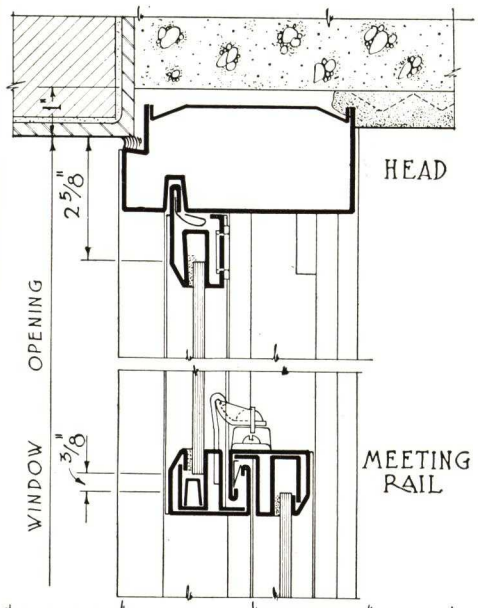
(b) Sash shall be equipped with one pair of solid bronze lift handles, solid bronze sweep lock, cadmium plated steel sweep lock strike, and one cadmium plated steel pole socket.

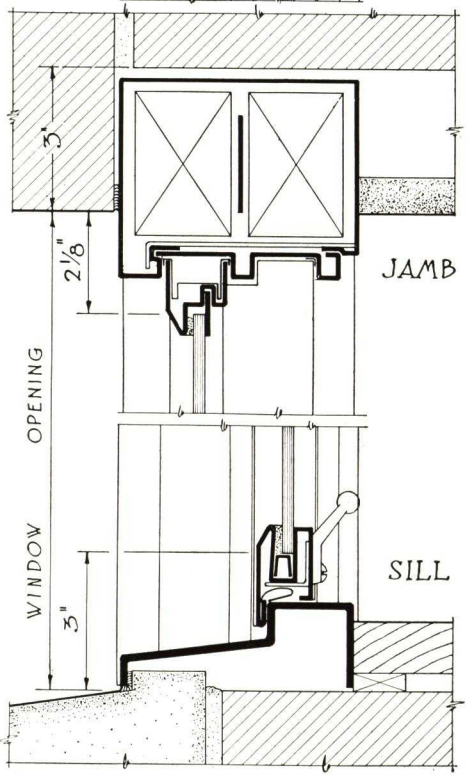
(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

7 *Painting*—All windows shall be given one coat of protective paint after assembly and before shipment.

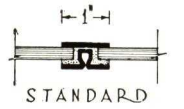
8 *Air Infiltration*—On double-hung windows shall be guaranteed not to exceed 1.00 cubic foot per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by wind at a velocity of 25 miles per hour.

9 *Galvanizing*—Galvanized materials shall show no rust after 50 hours continuous exposure at a temperature of 90 to 95 degrees Fahr. to the spray of 20 per cent salt (sodium chloride) solution.

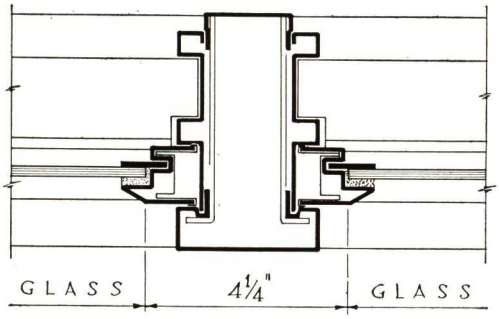




TYPICAL SECTION

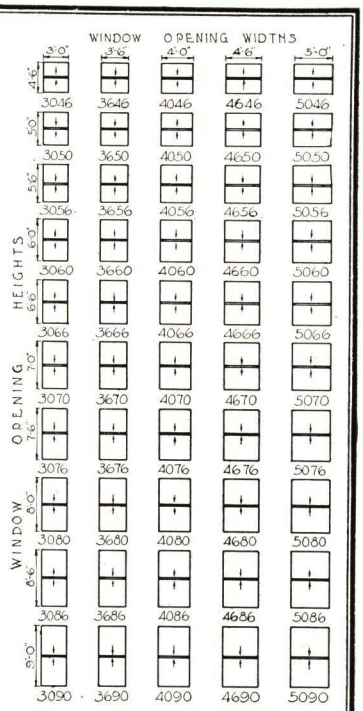


MUNTIN BAR DETAILS



WEIGHTLESS MULLION

WHEN THIS TYPE OF MULLION IS USED THE DOUBLE-HUNG SASH ARE BUILT IN ONE INTEGRAL FRAME.



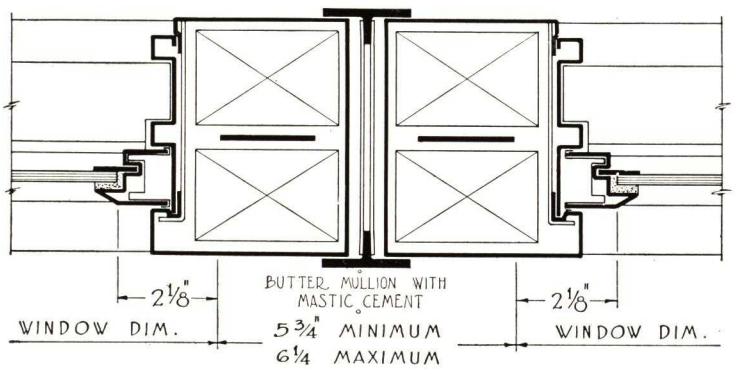
STANDARD TYPES

NOTE: WIDTH OF GLASS IN SINGLE LITE PLUS 4¼" GIVES MASONRY OPENING, ALSO WINDOW WIDTH.

HEIGHT OF GLASS SUM OF UPPER & LOWER SASH SINGLE LITE PLUS 6" GIVES MASONRY OPENING HEIGHT, ALSO WINDOW HEIGHT.

VERTICAL & HORIZONTAL MUNTINS MAY BE USED BUT OVERALL DIMENSION MUST BE MAINTAINED.

DEDUCT ½" FROM GLASS SIZE FOR EACH MUNTIN BAR.



STANDARD MULLION

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES — STANDARD DETAILS *Peerless* DOUBLE-HUNG STEEL WINDOW SERIES 33	PLATE No. **WW-9** OCTOBER, 1935

GENERAL INFORMATION, DOUBLE HUNG WINDOWS

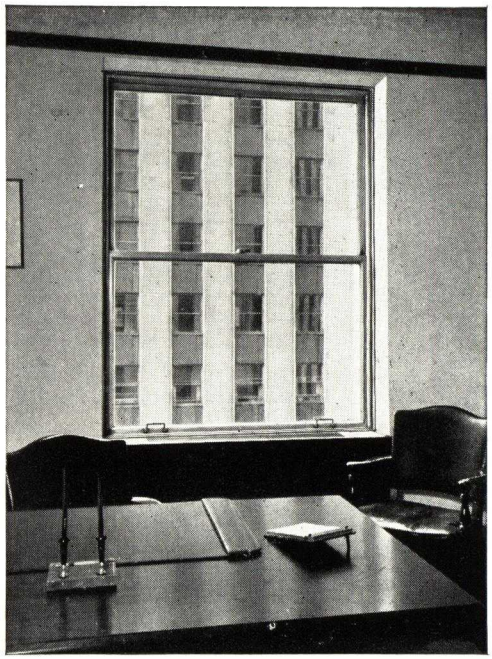
Series 27 · · 28 · · 33

FRAMES are made in one unit and are solidly welded at corners, insuring alignment and ease of operation. Because they are completely fabricated in the factory, field labor is small, and the actual ultimate price compares favorably with that of windows of inferior materials.

Weightless mullions, as detailed on pages 5 and 7, give narrow sight lines as required in certain architectural designs. In this construction the separate windows are built as an integral unit and all weights are carried at the opening jambs and there are no weights carried in the mullion.

Standard mullions are made of structural "Tees" and straps, and are used to join individual units in the field.

Muntin bars can be furnished in accord with individual specifications.



WINDOW UNITS WITH TRANSOMS

Transoms are incorporated in the main frame of the standard size Double-Hung Window. They are not a separate unit. All hardware is of standard design and finish.

COUNTERBALANCED WINDOWS

Counterbalanced windows are of the same design as standard Windows, except that counterweights are omitted and the sash counterbalance each other.

SEGMENTAL OR CURVED HEAD UNITS

Segmental or Curved Head Units can be provided in almost any radii or design. The inside of this window is finished square to facilitate the use of shades and draperies.

ERECTION AND ADJUSTMENT

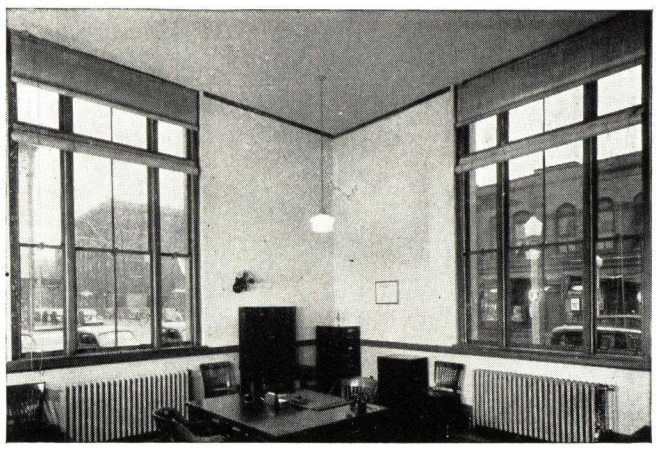
Most architects and contractors realize the value of Truscon Erection and specify and award all contracts for double-hung windows erected and adjusted. This service means that Truscon takes full responsibility for the windows from the start of manufacture up to and including their incorporation in the finished structure.

UNDERWRITERS' WINDOWS

All Truscon Standard Double-Hung Steel Windows meet Underwriters' specifications except for limiting unit sizes and glass sizes, and for wide glazing strips which are not required for ordinary use.

Underwriters' prescribed limits are:

1. Units without Transoms are limited to 6 ft. 0 in. in width and 10 ft. 0 in. in height and to 60 sq. ft. in area.
2. Units with Transoms are limited to 6 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom height, and to 60 sq. ft. in area. Transoms in such units limited to 3 ft. 0 in. in height.
3. Multiple unit openings consisting of single units conforming to limits shown in paragraphs 1 and 2 and Vertical Mullions are not limited in width.
4. Twin Windows (Weightless Mullion types) without Transoms are limited to 10 ft. 0 in. in width and 10 ft. 0 in. in height and to 100 sq. ft. in area.
5. Twin Windows (Weightless Mullion types) with Transoms are limited to 10 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom Height, and to 100 sq. ft. in area. Transoms in such units are limited to 3 ft. 0 in. in height.
6. Glass sizes for Series 27 and 28 individual lights are limited to 48 in. in width and 54 in. in height and to 720 sq. in. exposed glass area.
7. Glass sizes for Series 33 individual lights are limited to 48 in. in width and 54 in. in height and to 505 sq. in. exposed glass area.



DONOVAN AWNING TYPE WINDOWS

SERIES 38

DAYLIGHT illumination without sun glare, and natural ventilation without draughts are provided for schools, hospitals, offices, and public buildings by Donovan Awning Type Windows. They are made of high quality steel and are superior in design, construction, workmanship and operation. Their moderate cost makes them practical for any building.

SPECIFICATIONS

General —All windows so indicated on the plans and elevations and called for in these specifications shall be Series 38 Donovan Awning Type steel windows as manufactured by the Truscon Steel Company of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

2 Material—

(a) All members shall be constructed from Truscon specification hot rolled new billet steel designed particularly for the construction of this window. Weathering projections shall be rolled integral with the sections to provide overlapping, parallel surface contacts of not less than ¼ in. at both outside and inside points of closure. Movable sash shall make both outside and inside contacts against one-piece hot rolled section at head, jambs and sill.

(b) The combined weight of frame and ventilator sections at head and jamb shall be not less than 5.3 lbs. per linear foot and at sill not less than 4.15 lbs. All outside frame sections shall be not less than 1⅝ in. in depth and ventilator rails not less than 1½ in.

3 Operation—

(a) The lower ventilator shall be the manual of operation controlling the opening and closing of the upper ventilators.

(b) The construction of the component parts shall be such that all ventilators shall open and close simultaneously and be so arranged that the upper ventilator or ventilators may be left open while the bottom ventilator is closed, or the bottom ventilator open with the upper ventilators closed.

(c) The ventilators in each window shall be connected by a ⅝ in. x $\frac{5}{16}$ in. steel bar concealed, when window is closed, in jamb frame. Each ventilator to have sliding friction pivot shoes at top corners traveling in the frame section and fixed to connecting bars by engaging pins. Lower or sill ventilator to be equipped with a concealed clutch releasing mechanism in top rail for the purpose of disengaging the pivot pins from connecting bars to allow lower ventilator to be closed while upper ventilators are left open or upper ventilators closed and sill ventilator open. The engaging of sill ventilator pivot pins with connecting bars to be automatic.

(d) All ventilators shall swing out at bottom. Ventilators shall be hung by bronze guide shoes sliding in jamb frame and shall be joined to connecting bars by hard steel pins supported by bronze brackets at top corners of each ventilator. Guide shoes to serve as friction pivots to hold ventilators firmly in any open position. Ventilators supported at each jamb by steel swing arms, all concealed in frame when ventilators are closed.

4 Construction—

(a) Corners of frame and ventilators shall be mitered and electrically butt welded or mortise and tenoned air hammer riveted and electrically welded. All welds shall be ground smooth on outside exposed surfaces. Outside frame section shall be of an unequal channel shape with the long leg extending ¾ in. beyond window dimension as continuous anchor flange.

(b) Muntins as shown shall be a specially designed "T" bar section and shall be continuous between ventilator rails. At intersections there shall be a mechanical joint rigidly interlocking the muntins FLUSH with each other. Intersection of muntins with ventilator rails shall be mortised, tenoned and air hammer riveted.

(c) All ventilators shall be supported on high carbon steel swing arms of not less than 1 in. x $\frac{3}{16}$ in. in size. Both ends attached by double riveted brackets. Top end of supporting arms for upper ventilators shall have pivot point located beyond the outside face of side rails to obtain efficient leverage to hold the ventilators closed tightly with minimum tension on bottom ventilator. The pivot bracket shall completely house the end of the supporting arm which projects through the ventilator side rails on the outside. Pivot pins in ends of arms to be not less than ⅜ in. diameter steel, working in bronze flanged bushings.

5 Hardware—

(a) The bottom ventilator shall be equipped with water rolled specification solid bronze cam locking handle fitted to the lower rail and a clutch at the center of the upper rail. Base of cam handle to be so designed to dowel with strike to prevent side motion of ventilator. (Polished bronze furnished at slight extra if required.)

(b) Each ventilator in the window shall be equipped with water rolled solid bronze shade brackets and cord rollers. Shade brackets shall be attached at the lower corners of each ventilator and the cord rollers at the center of the upper rail.

(c) Shade guides shall be furnished as required (slight added cost).

6 Mechanical Operators—

(Include only when required.)—

Mechanical Operators shall be provided to operate all ventilators simultaneously in single or multiple window openings. The clutch releasing mechanism shall be omitted.

(a) Operating mechanism to consist of teeth cut in lower ends of ⅝ in. x $\frac{5}{16}$ in. steel bars, pinion gears, $\frac{15}{16}$ in. cold rolled horizontal shaft and worm gear power unit.

(b) A specially constructed hollow sill made of 12 gauge material shall fully conceal all parts of the mechanical operators. Removable cover plate to be provided to permit access to all working parts.

(c) All openings with sill 6 ft. 0 in. or less from floor shall be provided with a removable crank handle.

(d) All openings with sill more than 6 ft. 0 in. from floor shall have (choice of) (1) concealed vertical shaft and miter gear units concealed in chase in wall (2) chain wheels, chain guard and endless chain extending to within easy reach of floor.

7 Shop Painting—

(a) All window units shall be given a coat of protective rust resisting gray paint baked on at a temperature of 300° for a duration of one hour.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

8 Erection—

Window units shall be trued in all directions and set plumb in the masonry.

In setting windows, wedges to hold unit in place must be located so as not to cause bulging or distortion.

After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

The erection of the windows shall be performed by the manufacturer of same.

9 Glazing—

(To be done by glazing contractor.)—

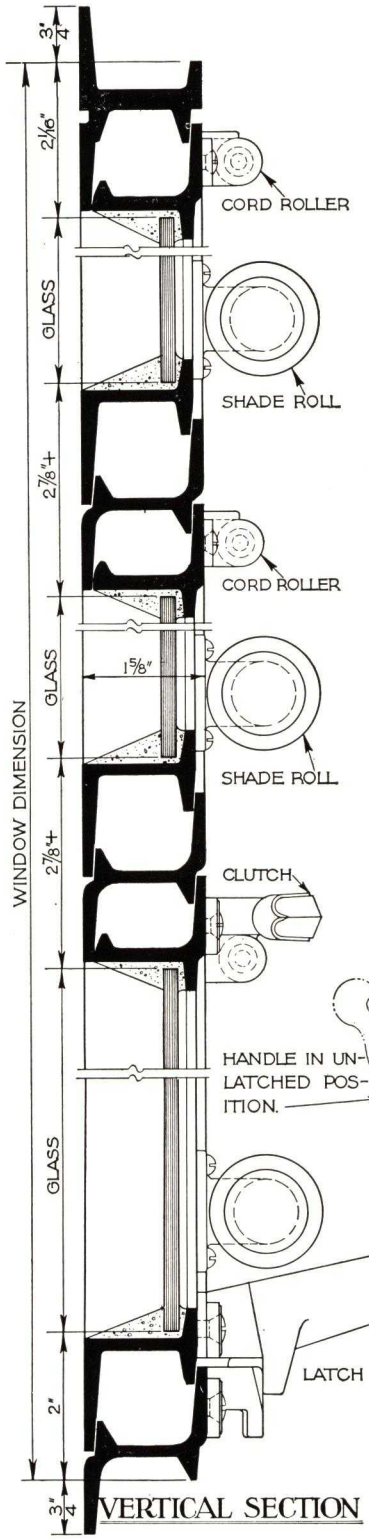
Architect to specify either one of the following methods of glazing:

Specifications for Spring Clip Glazing:

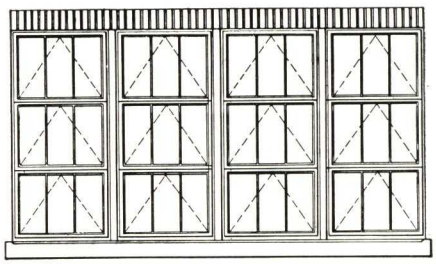
All windows shall be glazed on the OUTSIDE. Glass shall be bed and face puttied and held in place by Truscon copper clad wire glazing clips.

Specifications for Bead Glazing:

All windows shall be glazed on the INSIDE. Glass shall be bedded in steel window putty and held in place with continuous glazing beads attached to the window with brass screws.

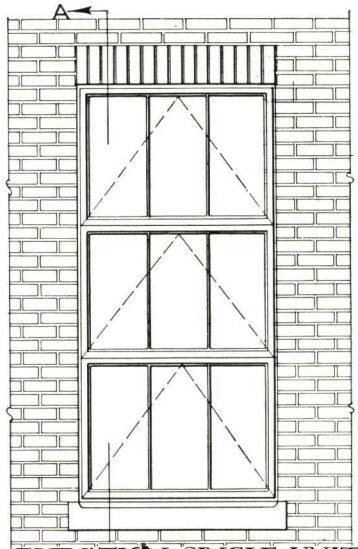


VERTICAL SECTION



TYPICAL ELEVATION

SECT. "AA"



ELEVATION-SINGLE UNIT

TYPES & SIZES

WIDTHS

WINDOW	GLASS
2'-6"	12 3/8"
2'-9"	13 7/8"
3'-0"	15 3/8"

HEIGHTS

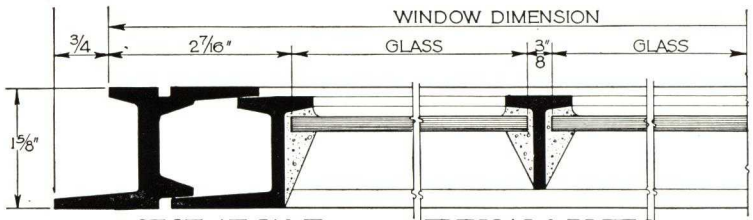
	WINDOW	GLASS
"A"	5'-0"	26½"
	5'-6"	29½"
	6'-0"	32½"
	6'-6"	35½"
"C"	7'-5½"	26½"
	8'-2½"	29½"
	8'-11½"	32½"
"E"	7'-5½"	26½"
	8'-2½"	29½"
	8'-11½"	32½"

WIDTHS

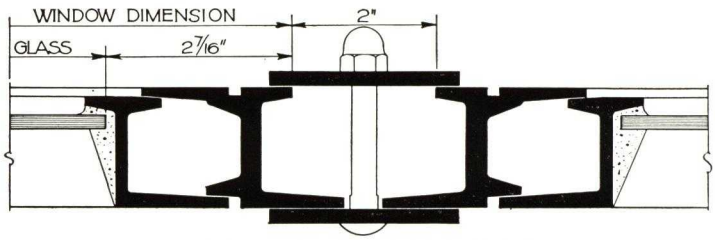
WINDOW	GLASS
3'-3"	11 1/8"
3'-6"	12 1/8"
3'-9"	13 1/8"
4'-0"	14 1/8"
4'-3"	15 1/8"
4'-6"	16 1/8"

HEIGHTS

	WINDOW	GLASS
"B"	5'-0"	26½"
	5'-6"	29½"
	6'-0"	32½"
	6'-6"	35½"
"D"	7'-5½"	26½"
	8'-2½"	29½"
	8'-11½"	32½"
"F"	7'-5½"	26½"
	8'-2½"	29½"
	8'-11½"	32½"

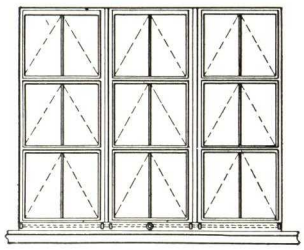


SECT. AT JAMB TYPICAL MUNTIN

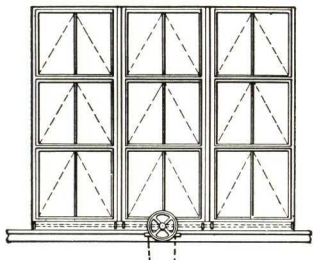


SECTION THRU MULLION

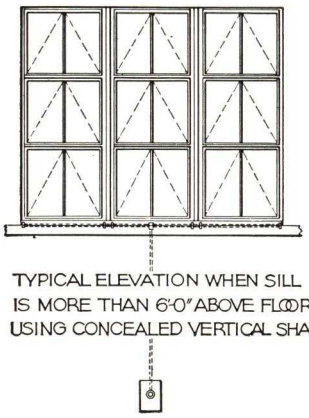
TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES — STANDARD DETAILS DONOVAN AWNING TYPE STEEL WINDOWS SERIES 38	PLATE No. P-9 OCTOBER, 1937



TYPICAL ELEVATION WHEN SILL IS 6'-0" OR LESS ABOVE THE FLOOR.

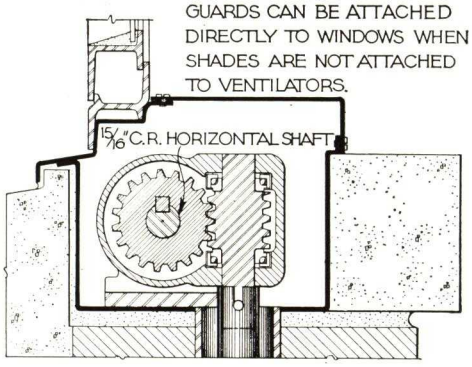


TYPICAL ELEVATION WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR USING CHAIN CONTROL.

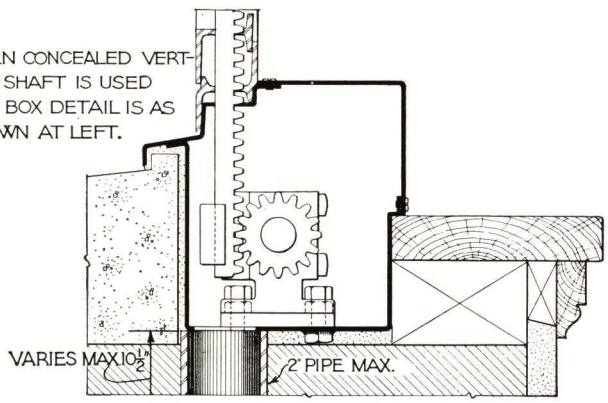


TYPICAL ELEVATION WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR USING CONCEALED VERTICAL SHAFT.

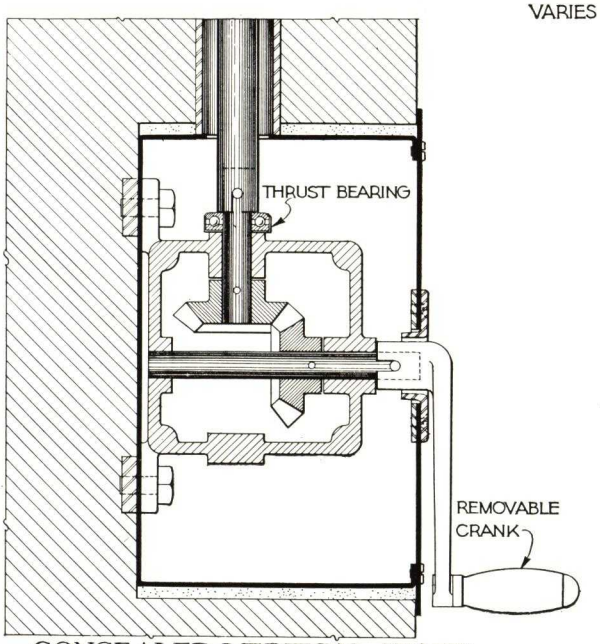
SCREENS AND/OR WIRE GUARDS CAN BE ATTACHED DIRECTLY TO WINDOWS WHEN SHADES ARE NOT ATTACHED TO VENTILATORS.



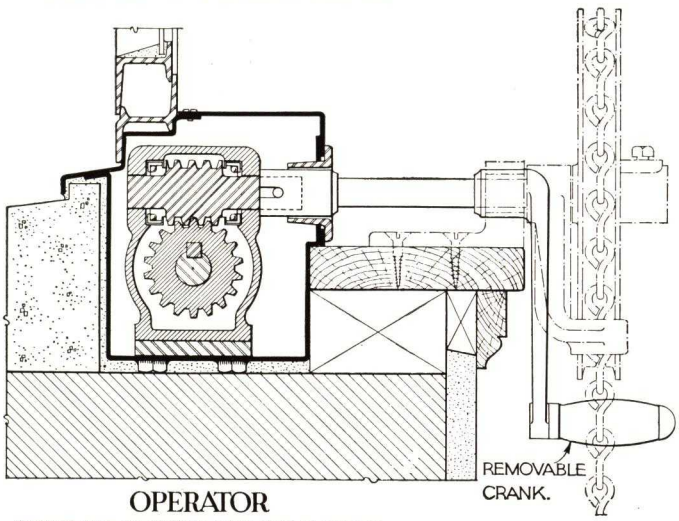
WHEN CONCEALED VERTICAL SHAFT IS USED SILL BOX DETAIL IS AS SHOWN AT LEFT.



DETAIL OF PINION GEAR



CONCEALED VERTICAL SHAFT
WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR



OPERATOR
WHEN SILL IS 6'-0" OR LESS ABOVE FLOOR. ALTERNATE CHAIN CONTROL (SHOWN BY DOTTED LINES) WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR.

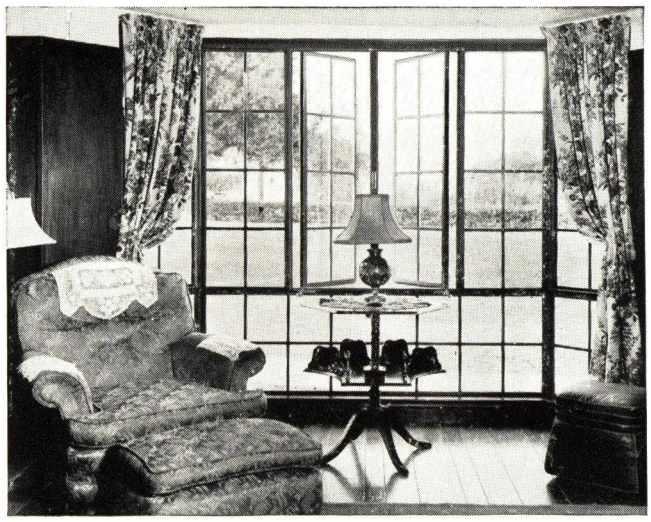
TRUSCON STEEL COMPANY Youngstown, Ohio	MECHANICAL OPERATORS DONOVAN AWNING TYPE STEEL WINDOWS SERIES 38	PLATE No. P-10 OCTOBER, 1937

RESIDENCE CASEMENTS SERIES 5

TRUSCON Casements are modern windows of inherent beauty, architectural harmony, simplicity, fine quality and superior craftsmanship. They include the best time tested features in design, operation and serviceability. They are manufactured in numerous types and sizes to conform with any style of architecture. But regardless of the type, whether it be for fixed screen and operator type hardware or side hinged screen and non-operator type hardware, with or without vertical muntins, the basic construction elements are identical for each and every unit.

Tempryte Insulating windows for operator type casements are available for use in rigorous climates or for air conditioning.

Casements in a large range of sizes, with or without sill ventilators, transoms, and mullions, permit a selection of the exact types to meet individual requirements.



SPECIFICATIONS

1 ***General***—All windows so indicated on the plans and elevations and called for in these specifications shall be Residence Casements, Series 5, as manufactured by Truscon Steel Company, Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 ***Scope of Work***—This contractor shall include in his work the furnishing of all steel casements complete, the adjusting after erection but before glazing, and the attaching of hardware, all as called for on drawings and specified herein. This contractor shall also furnish the necessary mastic as called for in the manufacturer's standards.

3 ***Material***—Truscon specification low carbon new billet, hot-rolled steel, shall be used in the manufacture of all members.

4 ***Construction***—(a) All casements and standard combinations shall be manufactured in complete units at factory. The nominal glass size shall be 8x12 in.

(b) All frames, stiles and rail members of swing leaves shall be Zee bars. All corners shall be mitered and electrically butt welded. Exposed faces at welds shall be ground smooth.

(c) All muntins shall be Tee Bars with a $\frac{5}{8}$ in. face and a depth of $\frac{7}{8}$ in., and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with face on the inside.

(d) Joints of muntins with frames, stiles and rails shall be tenoned, mortised and air hammer riveted. Horizontal muntins shall be punched for glazing clips.

(e) Windows shall be hinged to swing right or left as indicated.

(f) Continuous double contact weathering between swing leaves and frame shall be provided.

(g) All side hung swing leaves shall open outward and be equipped with heavy extension (cleaning) hinges securely electrically welded to frames and swing leaves.

(h) Transom ventilators shall be hinged at the top to open out and shall be equipped with close-up hinges.

(i) Sill ventilators shall be bottom hinged to open in and shall be equipped with steel butt hinges and two friction adjusters. All sill ventilators shall be prepared to receive standard fixed type screens applied to the outside. No special screen hardware necessary.

(j) Where combinations of standard units are required for any single opening, vertical and horizontal mullions shall be used to join them.

(k) A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head when the ventilator extends full height of the opening.

(l) All units shall be drilled to receive standard shade bracket hardware.

5 ***Unattached Hardware***—(a) All unattached hardware shall be packed and shipped separately to prevent damage and shall be applied after erection.

Hardware shall be non-operator type or operator type. (Architect to specify which type is required.)

NON-OPERATOR TYPE

(b) For side hinged ventilators, standard black finish cam action locking handle shall be furnished. (Beveled brass strike plate shall be attached in shop.)

(c) For transom ventilators, standard black finish push bar, notched to hold ventilator open in several positions, shall be furnished.

(d) For sill ventilators standard black finish cam action locking handle and keeper shall be furnished. The handle shall conform in design with the side hinged ventilator locking handle.

OPERATOR TYPE

(e) Operator type hardware shall control the ventilator independently of the screen. The underscreen operator shall securely hold the ventilator in open positions.

(f) For side hinged ventilators standard bronze finish concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and bronze channel guide for operator shall be attached in shop.)

(g) Concealed latch locking handles shall have both cam action and kick out action.

(h) Worm drive underscreen operators and locking handles shall have bronze lacquer finish. Operator arm is cadmium plated.

(i) For transom ventilators standard bronze finish push bar shall be furnished.

(j) For sill ventilators standard concealed latch locking handle, conforming in design with side hinged ventilator locking handle shall be furnished.

6 ***Painting***—(a) Casements shall be given one prime coat of steel grey mineral paint at factory before shipment.

(b) All windows shall be BONDERIZED before painting (standard east of Rockies.) (West of Rockies at slight extra cost.)

7 ***Erection***—(a) Each casement unit shall be set plumb and true, aligned after installation and adjusted before glazing.

(b) Mastic in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

(When so desired, the Erection Division of TRUSCON STEEL COMPANY will contract for the erection and adjusting of all casements in prepared openings.)

8 ***Glazing***—(To be done by glazing contractor.) All casements shall be glazed on the outside. Glass shall be held in place by Truscon copper clad, spring steel wire glazing clips. All glass shall be bed and face puttied with special steel casement putty.

Notes: Glazing clips and mastic are furnished and shipped with casements without additional charge.

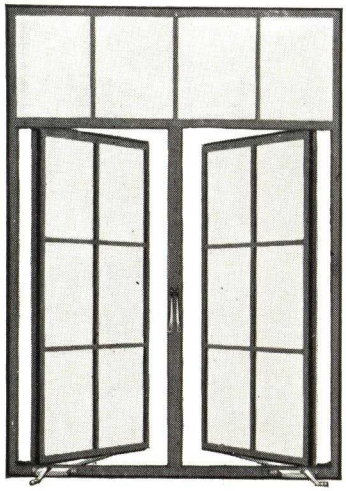
Cam locking handles and worm and gear operators can be furnished in solid bronze, Old English, Butler Nickel or Chromium finish at an additional cost, Architect to specify finish.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown outside putty glazed, provided glass lights do not exceed 125 sq. in. exposed glass area.

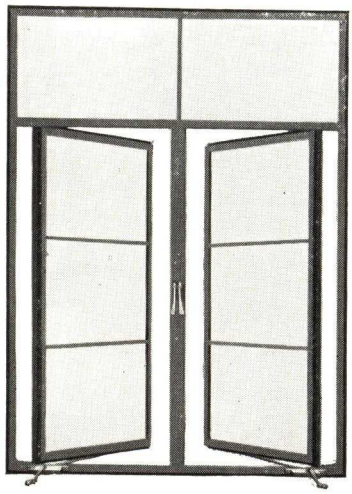
RESIDENCE CASEMENTS SERIES 5

OPERATOR TYPE



SERIES 5-A

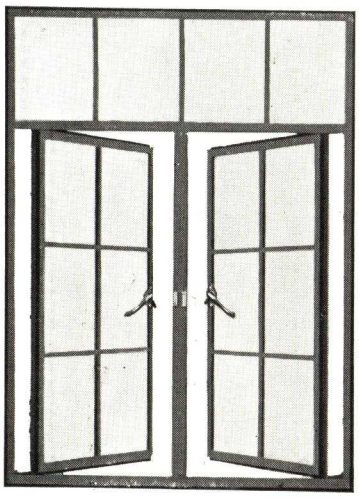
Standard muntin arrangement and designed for worm drive operator control and concealed locking handle. Provisions are made for use of fixed type screens. A stool gauge is shipped attached to sill member to insure proper location of stool.



SERIES 5-B

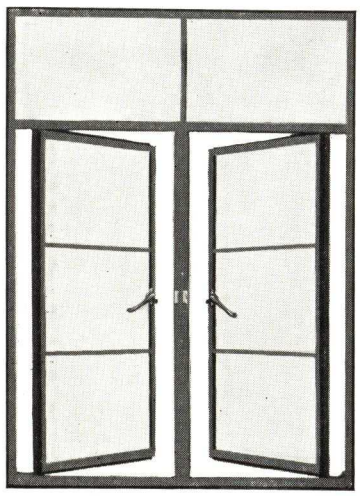
Alternate vertical muntin bars omitted. This style of casement has been developed for use in building designs where the accentuation of horizontal lines is desired. All other construction features are identical with Series 5-A casements.

NON-OPERATOR TYPE



SERIES 5-C

Designed for use where a non-operator type window is desired. Provided with a cam acting locking handle and friction type hinges to hold window in any desired position. Provisions will be made on these windows for side hinged or wicket screens when so specified. Primarily intended for use where screening is not a prime factor.



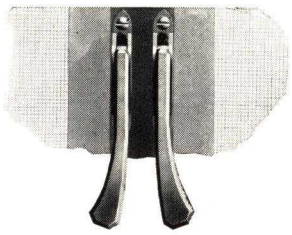
SERIES 5-D

Alternate vertical muntin bars omitted. Developed for use in building designs where the accentuation of horizontal lines is desired. Provisions will be made on these windows for side hinged or wicket screens when so specified. Primarily intended for use where screening is not a prime factor.

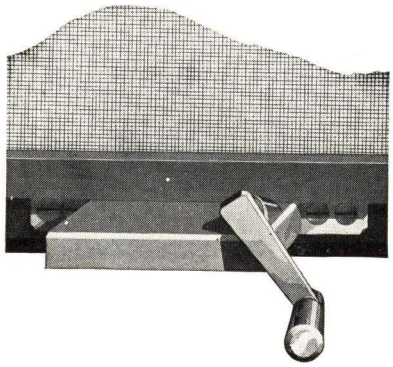
Note: Casement types indicated on pages 14-15-16 can be furnished in either 5-A, 5-B, 5C or 5-D Series.

HARDWARE FOR TRUSCON RESIDENCE CASEMENTS

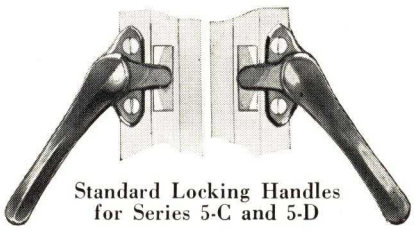
Series 5



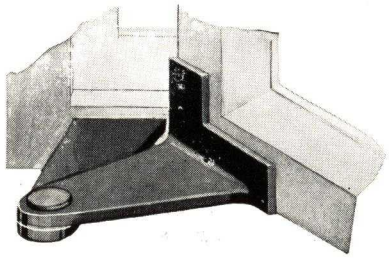
Screen Type Locking Handles
for Series 5-A and 5-B



Worm Drive Operator
for Series 5-A and 5-B



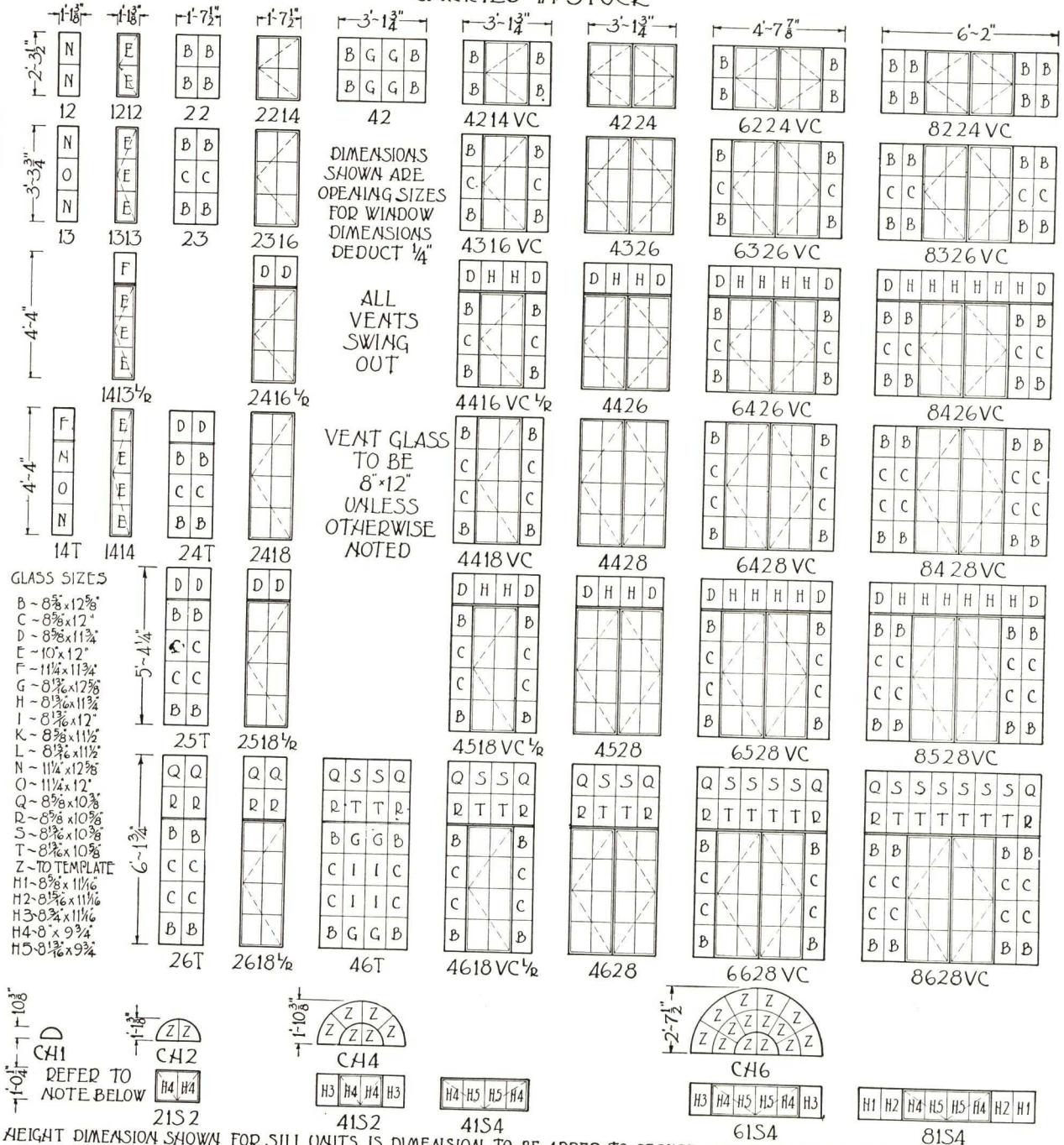
Standard Locking Handles
for Series 5-C and 5-D



Extension Hinge
for Series 5 Casements

STANDARD UNITS

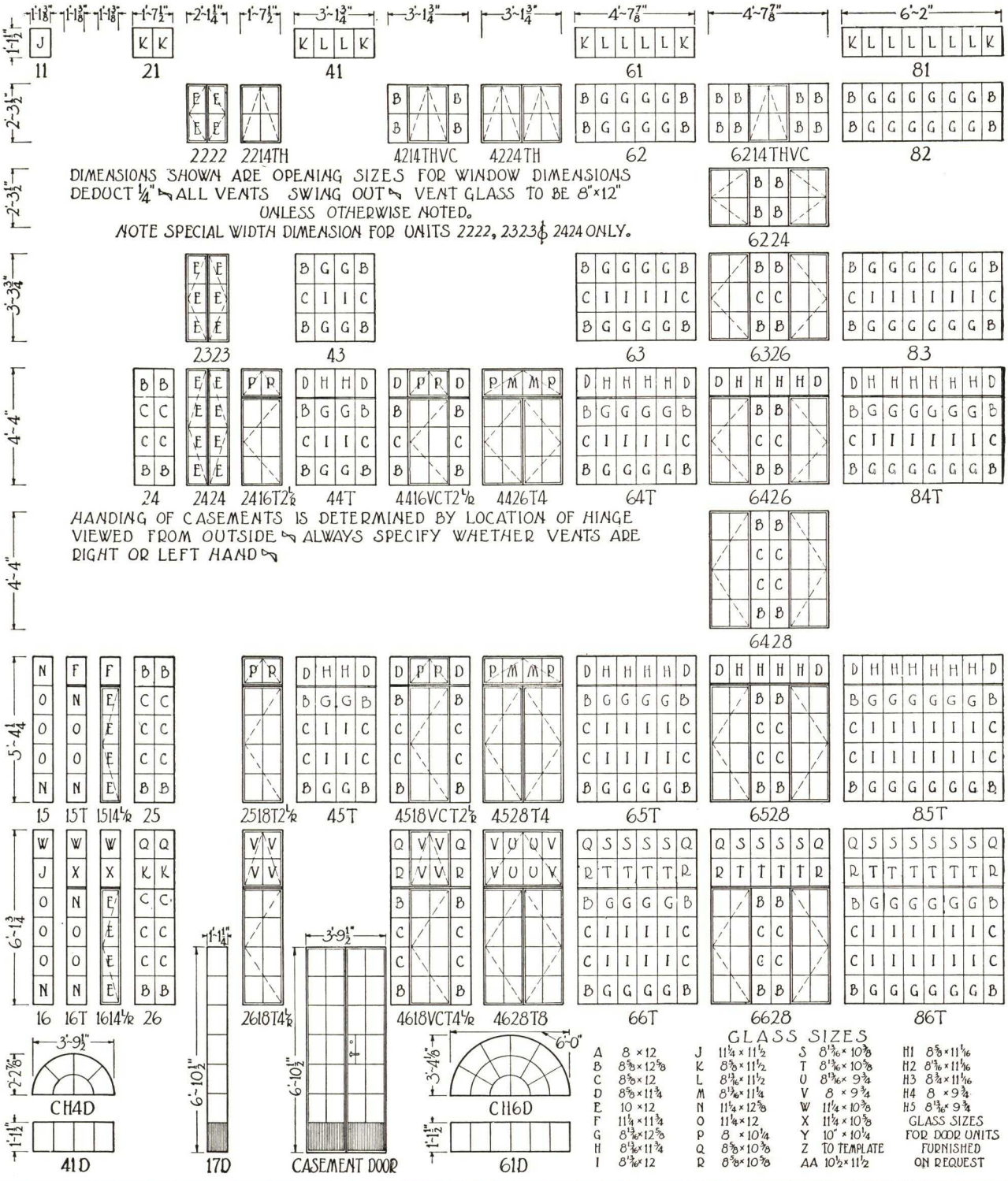
CARRIED IN STOCK



HEIGHT DIMENSION SHOWN FOR SILL UNITS IS DIMENSION TO BE ADDED TO SECURE OPENING DIMENSION OF COMBINATION UNIT↘ FOR OPENING DIMENSION OF SILL UNITS USED AS SEPARATE WINDOWS ADD ¾" TO HEIGHT DIMENSION SHOWN ALL VENTS VIEWED FROM OUTSIDE↘ HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE ↘ ALWAYS SPECIFY WHETHER VENTS ARE RIGHT OR LEFT HAND ↘

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-21** JULY, 1936

FACTORY SHIPMENT



DIMENSIONS SHOWN ARE OPENING SIZES FOR WINDOW DIMENSIONS
DEDUCT ¼" ALL VENTS SWING OUT VENT GLASS TO BE 8"×12"
UNLESS OTHERWISE NOTED.
NOTE SPECIAL WIDTH DIMENSION FOR UNITS 2222, 2323 & 2424 ONLY.

HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE ALWAYS SPECIFY WHETHER VENTS ARE RIGHT OR LEFT HAND

GLASS SIZES

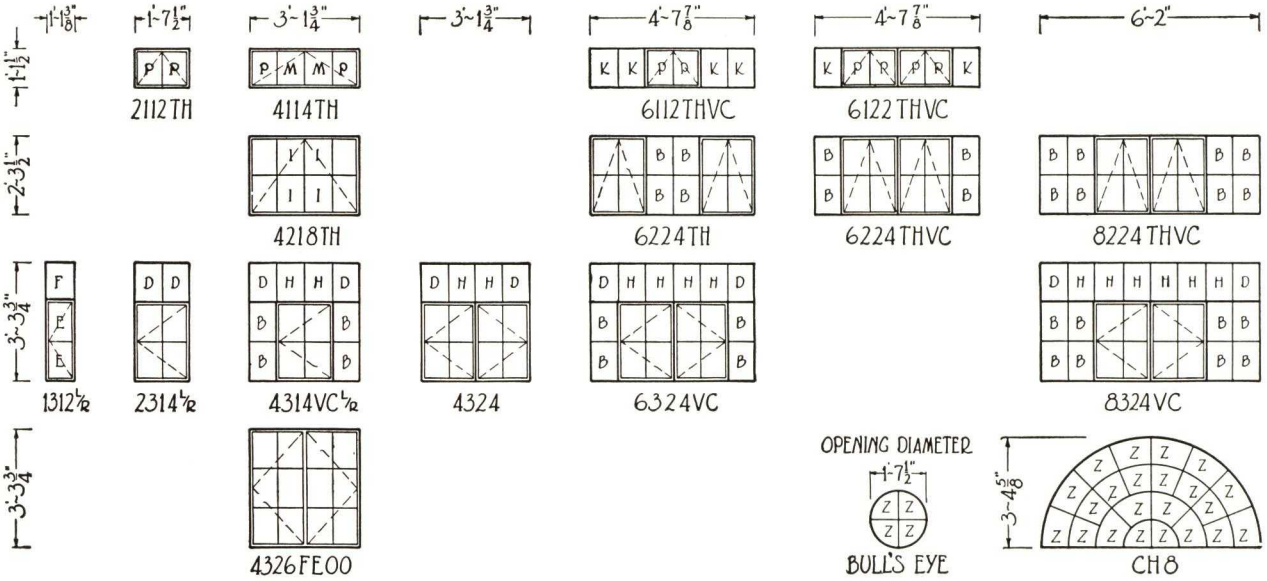
A	8 × 12	J	11¼ × 11½	S	8 13/16 × 10⅜	H1	8⅝ × 11 1/16
B	8⅜ × 12⅜	K	8⅜ × 11½	T	8 13/16 × 10⅜	H2	8⅝ × 11 1/16
C	8⅜ × 12	L	8 13/16 × 11½	U	8 13/16 × 9¾	H3	8¾ × 11 1/16
D	8⅜ × 11¾	M	8 13/16 × 11¼	V	8 × 9¾	H4	8 × 9¾
E	10 × 12	N	11¼ × 12⅜	W	11¼ × 10⅜	H5	8 13/16 × 9¾
F	11¼ × 11¾	O	11¼ × 12	X	11¼ × 10⅜	GLASS SIZES FOR DOOR UNITS FURNISHED ON REQUEST	
G	8 13/16 × 12⅜	P	8 × 10¼	Y	10" × 10¼		
H	8 13/16 × 11¾	Q	8⅜ × 10⅜	Z	TO TEMPLATE		
I	8 13/16 × 12	R	8⅜ × 10⅜	AA	10½ × 11½		

TRUSCON STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-21A
JULY, 1936

MADE ON ORDER



VENT GLASS TO BE 8"×12" UNLESS OTHERWISE NOTED

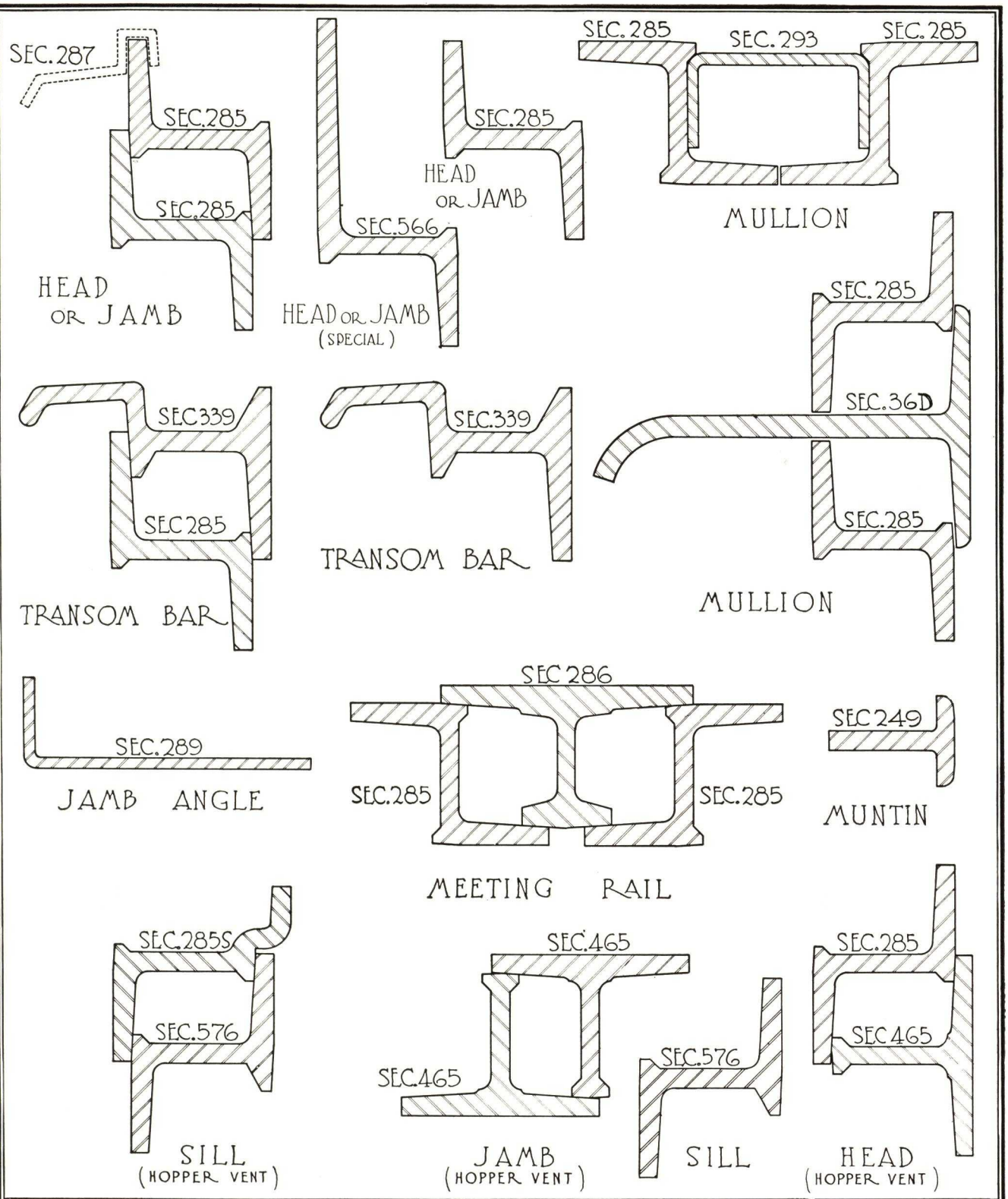
DIMENSIONS SHOWN ARE OPENING SIZES FOR WINDOW DIMENSIONS DEDUCT ¼"

FOR GLASS SIZES REFER TO PLATE CR21A

ALL VENTS VIEWED FROM OUTSIDE ↘ HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE ↘ ALWAYS SPECIFY WHETHER VENTS ARE LEFT OR RIGHT ↘

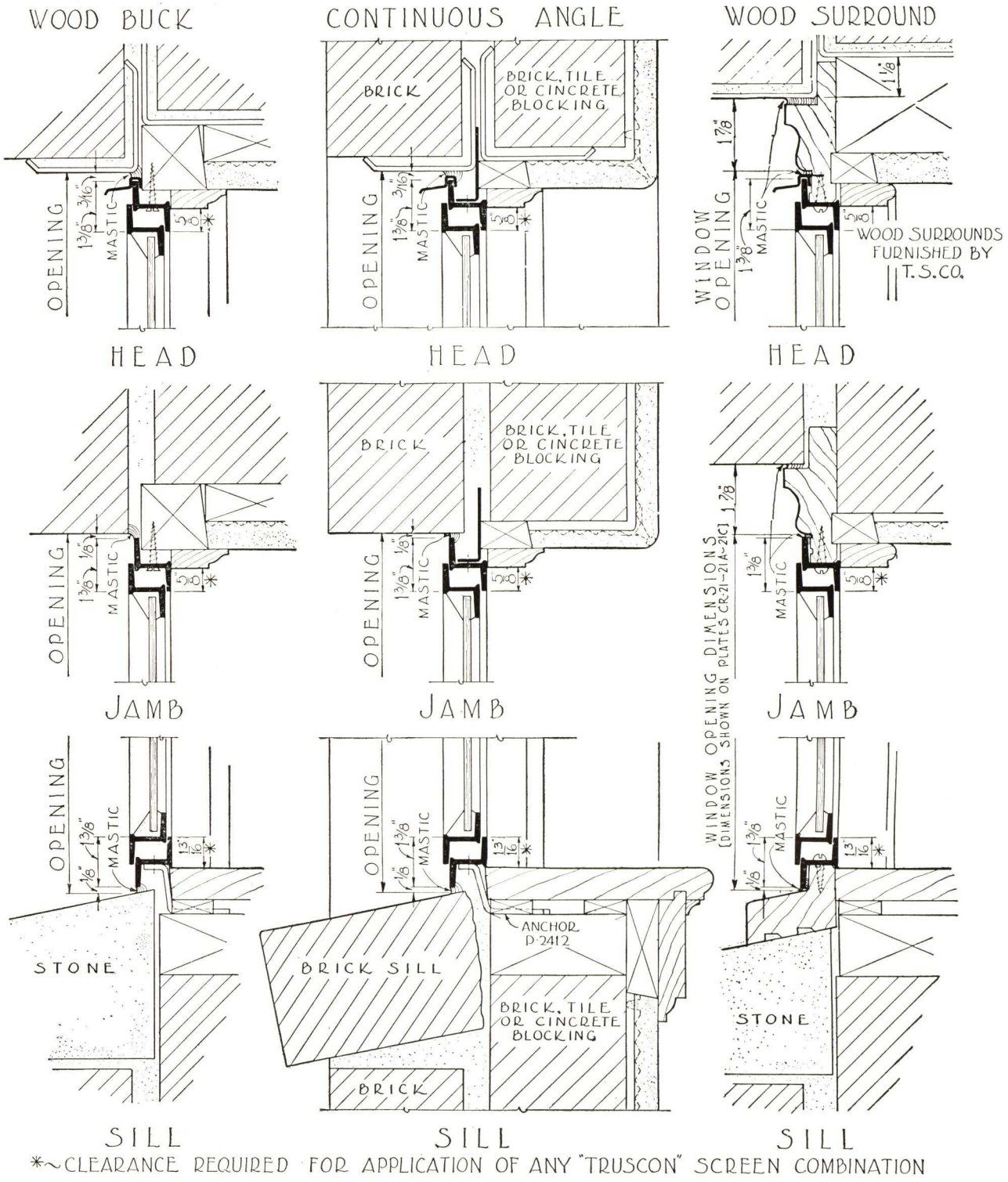
FE00 ~ MEANS FIRE ESCAPE UNIT OPENING OUT.
FE01 ~ MEANS FIRE ESCAPE UNIT OPENING IN.

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-21C** OCTOBER, 1934



TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS **RESIDENCE CASEMENTS** SERIES 5.	PLATE No. **CR-22** OCTOBER, 1937

SOLID MASONRY CONSTRUCTION

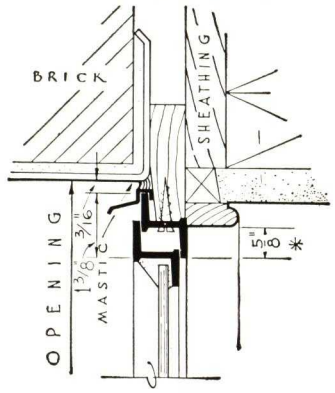


*~CLEARANCE REQUIRED FOR APPLICATION OF ANY "TRUSCON" SCREEN COMBINATION

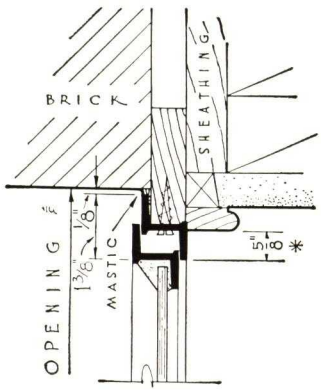
TRUSCON STEEL COMPANY Youngstown, Ohio	SOLID MASONRY CONSTRUCTION DETAILS **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-23** JUNE, 1936

BRICK VENEER CONSTRUCTION

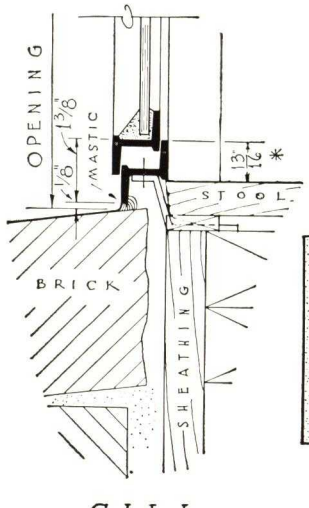
WOOD BUCK



HEAD

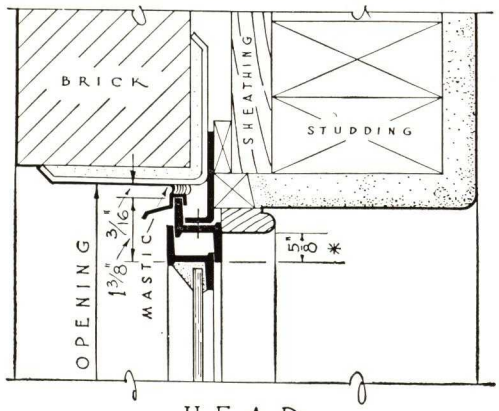


JAMB



SILL

CONTINUOUS ANGLE



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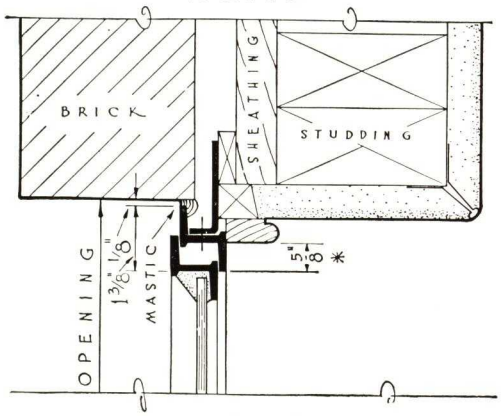

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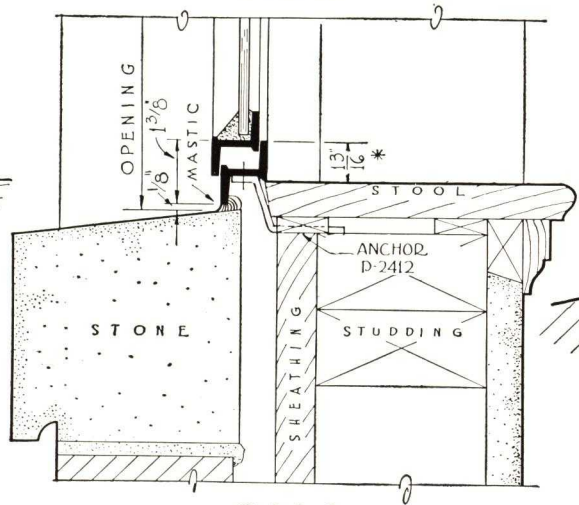
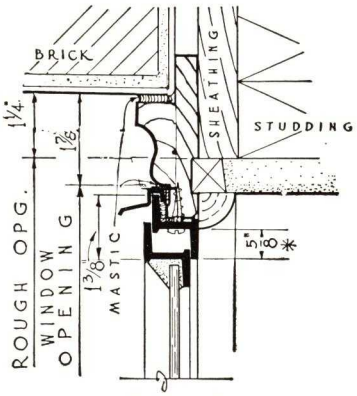


SILL

WOOD SURROUND



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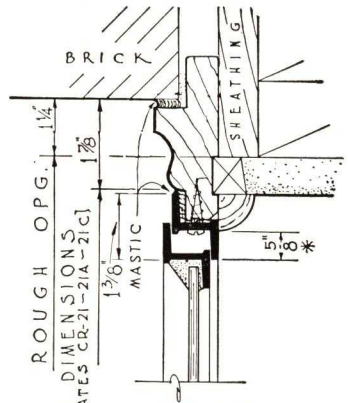

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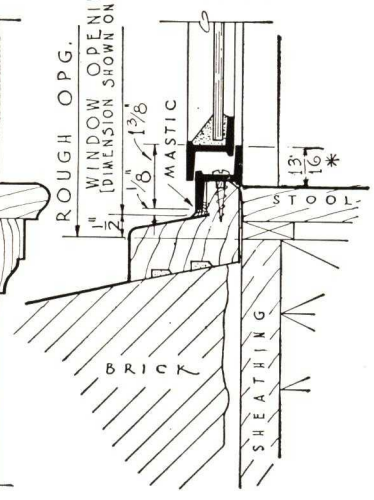
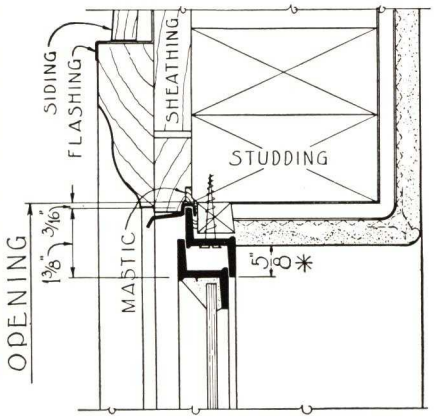


SILL

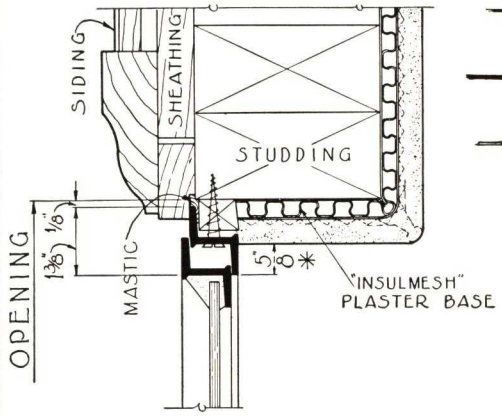
* CLEARANCE REQUIRED FOR APPLICATION OF ANY TRUSCON" SCREEN COMBINATION.

TRUSCON STEEL COMPANY Youngstown, Ohio	DETAILS OF BRICK VENEER CONSTRUCTION **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-24** JUNE, 1936

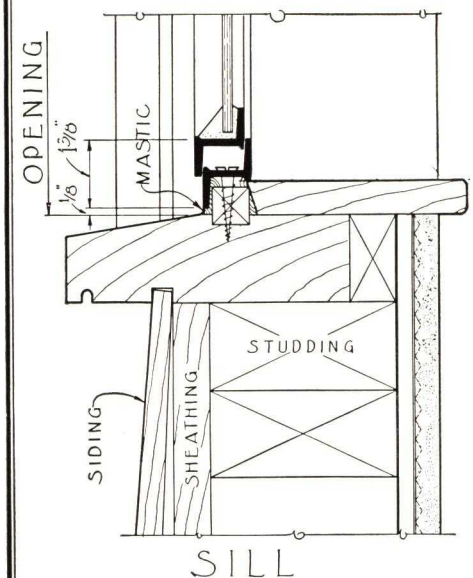
FRAME CONSTRUCTION



HEAD

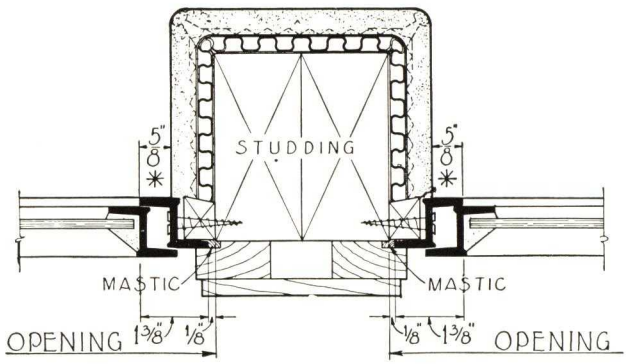


JAMB



SILL

EXTERIOR ELEVATION
TWO WINDOW BAY ~ FRAME MULLION



MULLION

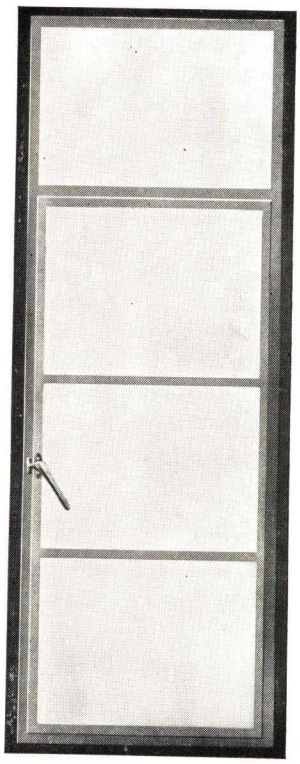
*~CLEARANCE REQUIRED FOR INSTALLATION OF ANY "TRUSCON" SCREEN COMBINATION

TRUSCON STEEL COMPANY Youngstown, Ohio	FRAME CONSTRUCTION DETAILS **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-25** JULY, 1936

HOME DEVELOPMENT CASEMENTS SERIES 5HM

THE Truscon Home Development Window, designed primarily for homes where cost is of paramount consideration, is truly a modern window. Horizontal lines are accentuated. Hardware and screens are simple in design, but offer convenience in opening or closing the window. Screens are "insect tight." Sections used in the manufacture of the Home Development Casement are the same as those used in the production of Residence Casements.

Twenty sizes and 32 types are carried in stock for immediate shipment. These stock units should take care of practically any job requirements.



GLASS SIZE

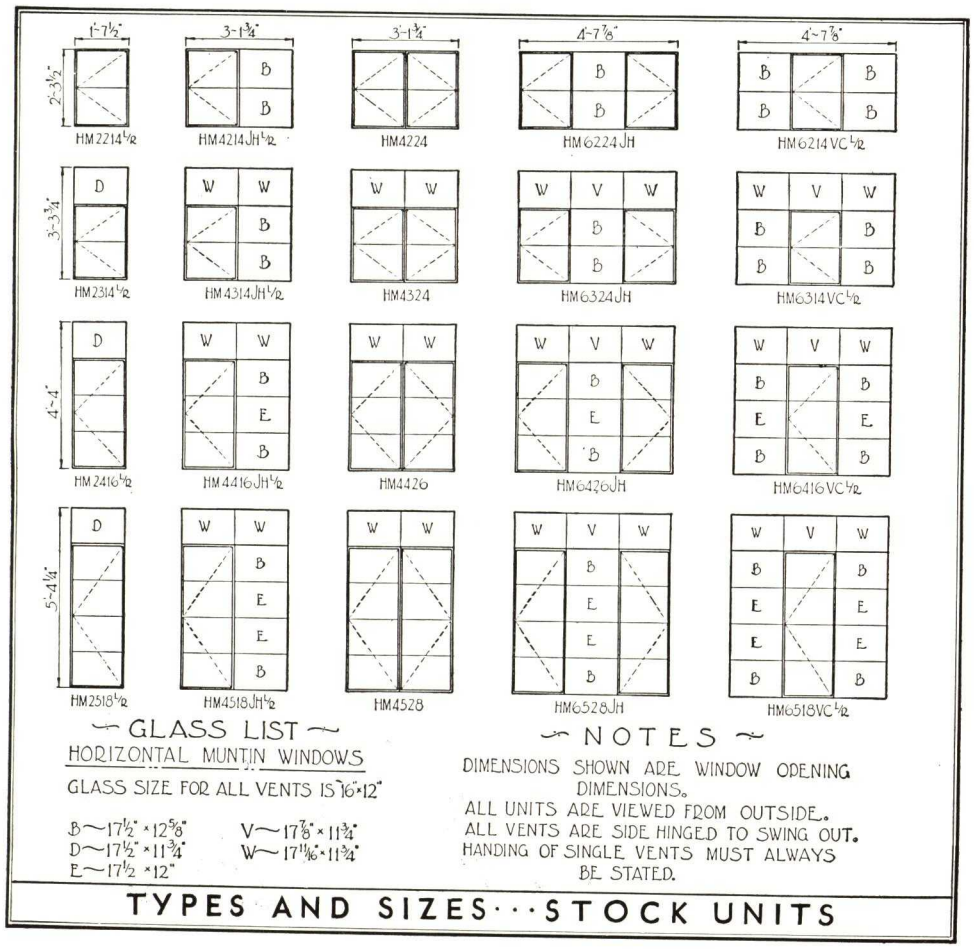
The nominal glass size of 16 in. x 12 in., as compared with the 8 in. x 12 in. glass size of the Residence Casement, means a considerable saving in glazing costs.

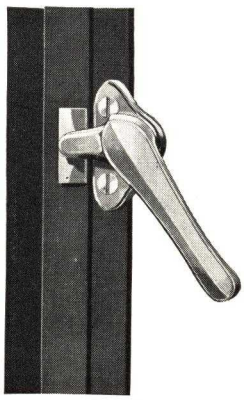
HARDWARE

This locking handle has been designed especially for use with the Home Development Casement. Cam action insures the ventilators being drawn tightly against the frame for better weathering. Handles are black lacquer finish over cast metal. Extension type friction hinges hold the ventilator in any open position and make it possible to wash the outside of the glass from inside the room.

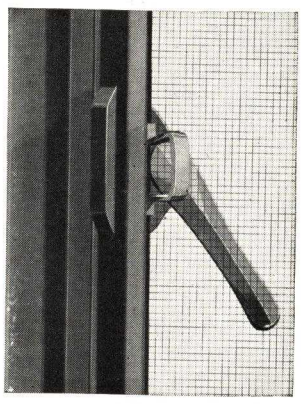
SCREEN

The screen used with the Home Development Casement is of the side hinged type. The new type locking handles are so designed that the screen frame fits tightly against the casement frame even when the ventilator is closed. Screens have rewireable electro-galvanized steel frame and (.0113 in. diameter) bronze screen cloth, 16 mesh. Frame is of angle construction. The frame is finished with one coat of baked enamel.





Locking Handle



Detail of Screen Frame

ARCHITECTURAL CASEMENTS SERIES 15

THE Architectural Casement, Series 15, has been designed to fill the need of a heavier type of casement for better class residential, apartment, public and semi-public buildings. Although standard types are available to fill average requirements, these casements can be built to conform with any architectural design.

SPECIFICATIONS

1 *General*—All windows so indicated on the plans and elevations and called for in these specifications shall be Architectural Casements, Series 15, as manufactured by Truscon Steel Company of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 *Material*—Truscon specification, low carbon, new billet, hot-rolled, steel shall be used in the manufacture of all members.

3 *Construction*—(a) *All units* shall be square and true and constructed of sections not less than $1\frac{7}{16}$ in. deep. The combined weight of frame and ventilator sections exclusive of glazing beads or sub-frames shall be not less than 3.51 pounds per linear foot. The outside framing section shall be a channel leg section continuous from sill to head and jamb to jamb and shaped for double flat contact weathering of not less than $\frac{3}{8}$ in. between frames and swing leaves. Each corner of swing leaves and frames shall be mitered, electrically butt welded and ground smooth.

(b) *Muntins* shall be specially designed Tee Bar sections and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted (see note).

(c) *All stiles, rails, frames and muntins* shall be prepared for outside putty glazing with spring clips. (See note.)

(d) *All side hinged ventilators* shall open out unless otherwise specified and shall be equipped with Truscon design extension three-knuckle steel hinges having bronze bushing and bronze bearing washers and acorn head steel hinge bolt with acorn nut. Hinge design shall prevent removal of locked ventilator by taking out hinge bolt.

Top hinged ventilators shall be hung on steel butt hinges with bronze pins.

(e) *A continuous drip* shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

(f) *Windows* shall be prepared to receive either operator type or non-operator type hardware as hereinafter specified.

4 *Hardware*—(a) *All hardware* shall be bronze, medium statuary finish.

NON-OPERATOR TYPE

(b) *For side hinged swing leaves* up to and including five feet in height, a bronze cam acting locking handle and bronze strike shall be furnished. For side hinged swing leaves over five feet in height or when center line of swing leaf is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

(c) *For top hinged transoms* a bronze push arm shall be furnished.

(d) *For double vented units* with clear opening (no meeting rail) bronze cremone bolt hardware shall be furnished.

OPERATOR TYPE

(e) *Operator type hardware* shall control the ventilator independently of the screen. The underscreen operator shall hold the ventilator securely in open position.

(f) *For hinged ventilators* solid bronze concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and channel guide for operator shall be attached in the shop.)

(g) *Concealed latch locking handles* shall have both cam action and kick out action.

For ventilators over 5 ft. 0 in. in height a double concealed latch locking device shall be furnished.

(h) *Worm drive underscreen operators* shall have $\frac{3}{4}$ in. diameter worm and operator arm with machine cut teeth. Case and crank shall be solid bronze, the arm shall be cadmium plated steel.

(i) *For top hinged ventilators* a heavy solid bronze underscreen push arm shall be furnished.

5 *Painting*—(a) Casements shall be given one coat of protective paint at factory before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

6 *Erection*—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction. After windows have been placed in opening and before they have been glazed, the ventilator shall be carefully adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

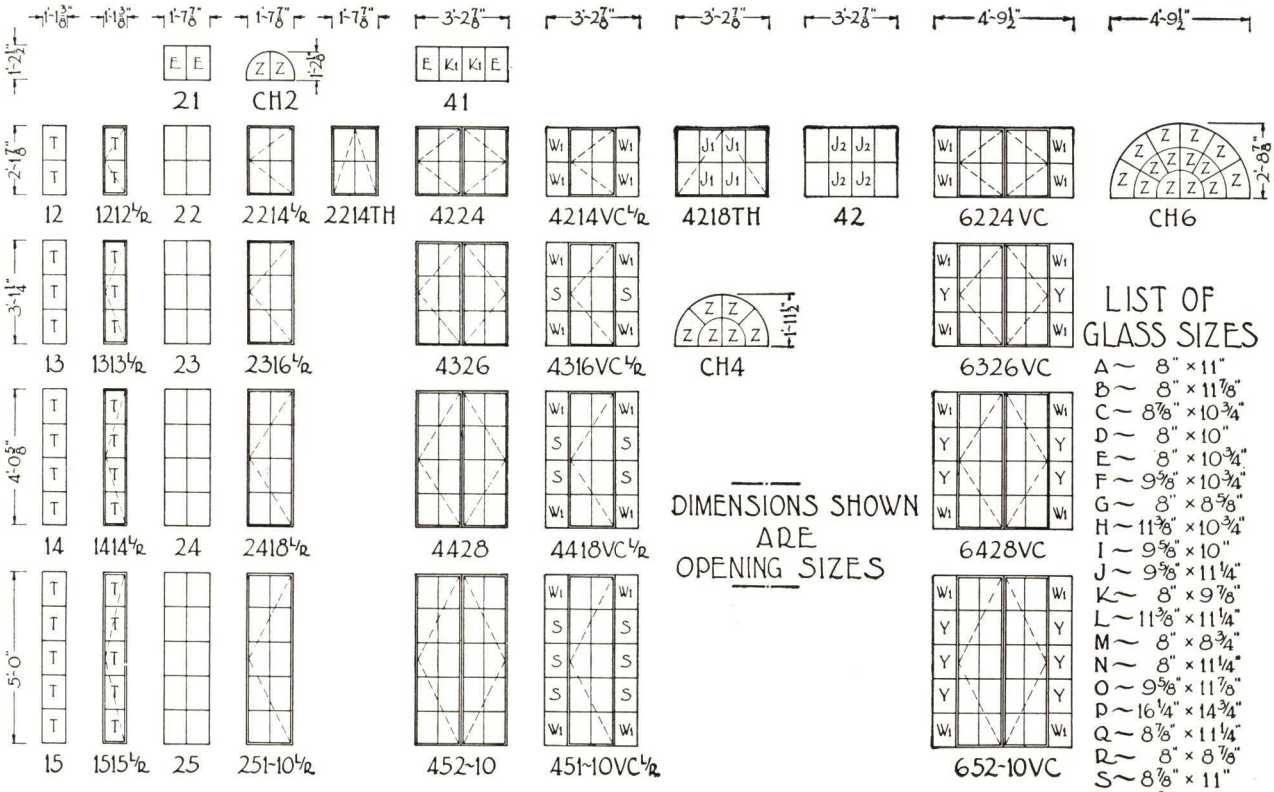
7 *Glazing*—(To be done by glazing contractor.) All casements shall be glazed on the outside with glazing clips (See note).

Notes *Muntin bars may be omitted if desired.*
Windows may be inside bead glazed if specified.
Architectural Casements, Series 15, can be furnished to "open in."

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 6 ft. 6 in. in width and 6 ft. 6 in. height. Mullions not permitted. Side hinged, (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 125 sq. in. exposed area, if standard muntin bar is used, or 350 sq. in. exposed area, if extra heavy muntin bar is used, and 155 sq. in., exposed area, if inside bead glazing is used.

STANDARD TYPES



DIMENSIONS SHOWN ARE OPENING SIZES

LIST OF GLASS SIZES

A ~ 8" × 11"
B ~ 8" × 11⅞"
C ~ 8⅞" × 10¾"
D ~ 8" × 10"
E ~ 8" × 10¾"
F ~ 9⅝" × 10¾"
G ~ 8" × 8⅝"
H ~ 11⅜" × 10¾"
I ~ 9⅝" × 10"
J ~ 9⅝" × 11¼"
K ~ 8" × 9⅞"
L ~ 11⅜" × 11¼"
M ~ 8" × 8¾"
N ~ 8" × 11¼"
O ~ 9⅝" × 11⅞"
P ~ 16¼" × 14¾"
Q ~ 8⅞" × 11¼"
R ~ 8" × 8⅞"
S ~ 8⅞" × 11"
T ~ 9⅝" × 11"
V ~ 11⅜" × 11"
W ~ 9⅝" × 9⅞"
X ~ 9⅝" × 10⅛"
Y ~ 8 13/16" × 11"
Z ~ TO TEMPLATE
B1 ~ 11⅜" × 10⅞"
J1 ~ 8 15/16" × 10⅝"
K1 ~ 9⅛" × 10¾"
N1 ~ 16¼" × 13⅞"
O1 ~ 9⅛" × 11¼"
P1 ~ 8¾" × 10¾"
S1 ~ 9 3/16" × 8⅝"
U1 ~ 9 3/16" × 8¾"
V1 ~ 9 3/16" × 8⅞"
W1 ~ 8 13/16" × 11⅞"
X1 ~ 8 13/16" × 10½"
A2 ~ 8 13/16" × 10⅝"
C2 ~ 8 13/16" × 12½"
E2 ~ 8 13/16" × 10⅜"
F2 ~ 8¾" × 11¼"
G2 ~ 8⅞" × 10⅜"
I2 ~ 9⅛" × 11⅞"
J2 ~ 9⅛" × 11"
K2 ~ 8⅞" × 10½"
L2 ~ 16¼" × 22¼"
M2 ~ 16¼" × 16⅝"
O2 ~ 9⅛" × 10⅜"

NOTES

Dimensions shown are opening sizes.

All casements are viewed from the outside.

Handing of casements is determined by location of hinges. Hinged at the right is a right hand casement. Hinged at the left is a left hand casement.

Muntin bars may be omitted if desired.

All casements to be set in mastic cement.

Standard mullion dimension is ¼".

Where mullions are used, to obtain opening dimensions, add together opening dimensions of the specific windows to be combined.

Unless otherwise noted glass size to be 8" x 11".

For casement door, sidelights and transoms, types and sizes see plate CA-10, page 30.

TRUSCON STEEL COMPANY Youngstown, Ohio

STANDARD TYPES AND SIZES

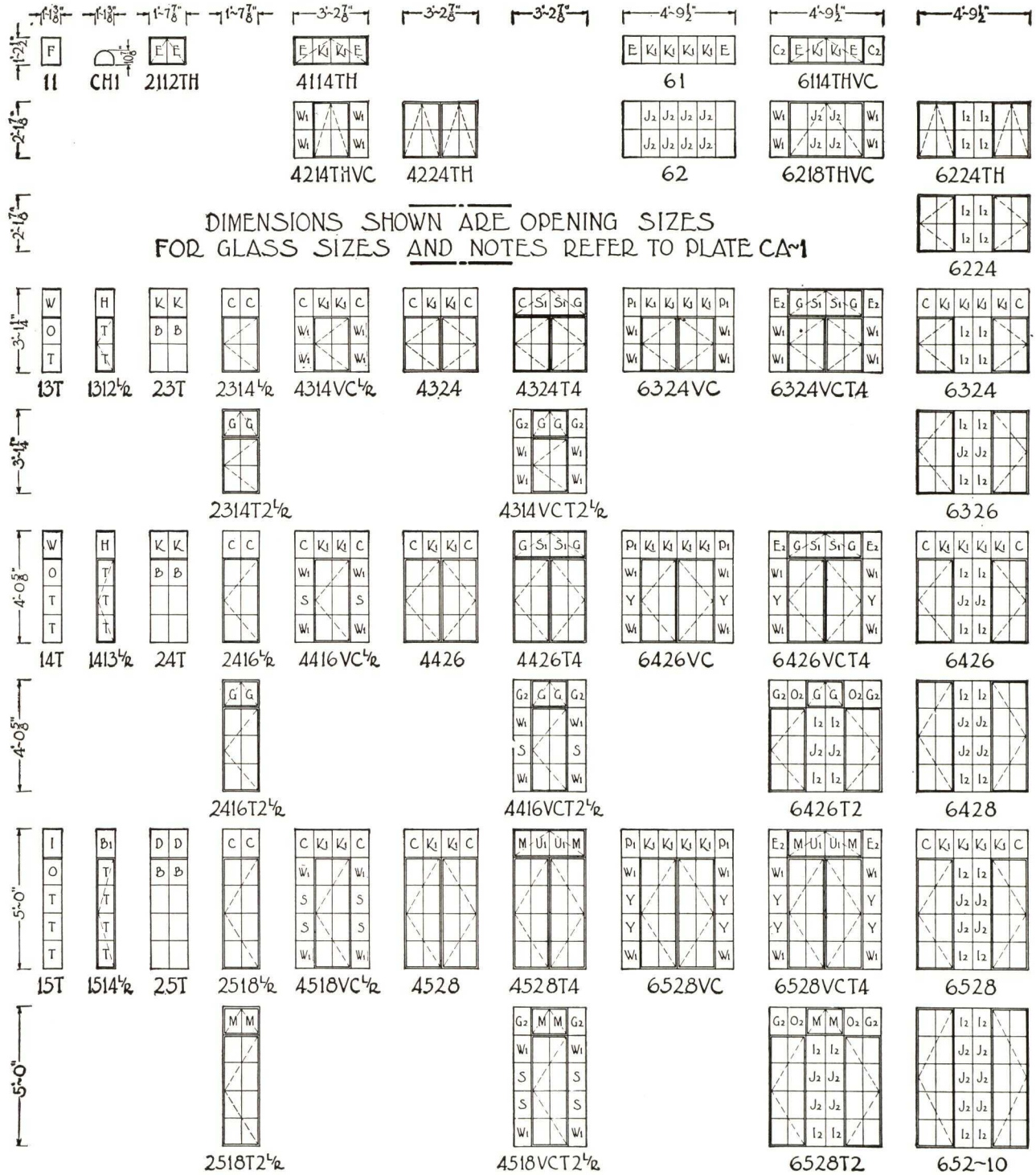
ARCHITECTURAL STEEL CASEMENTS

SERIES 15

PLATE No. **CA-1**

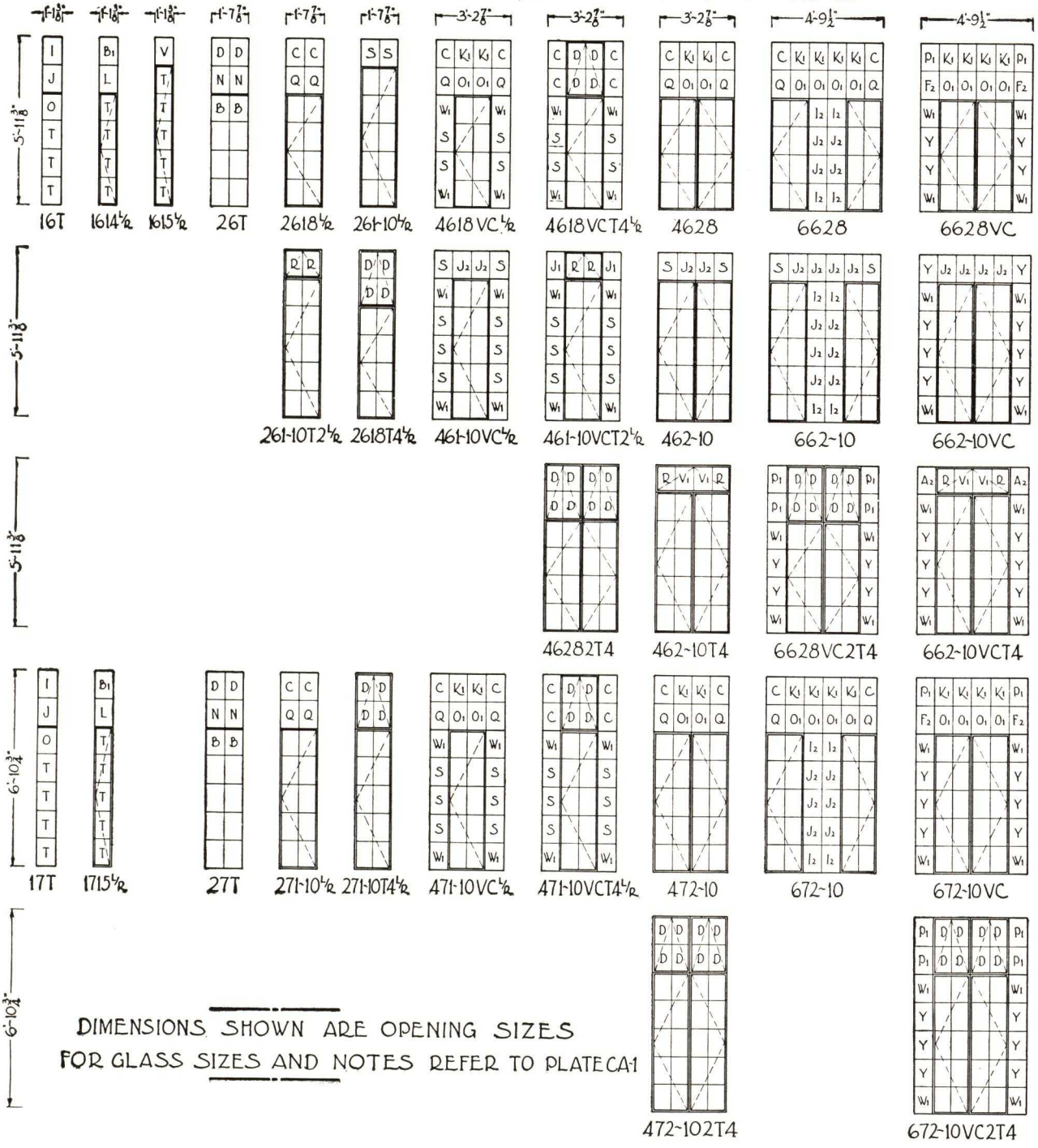
NOVEMBER, 1934

NON-STOCK TYPES



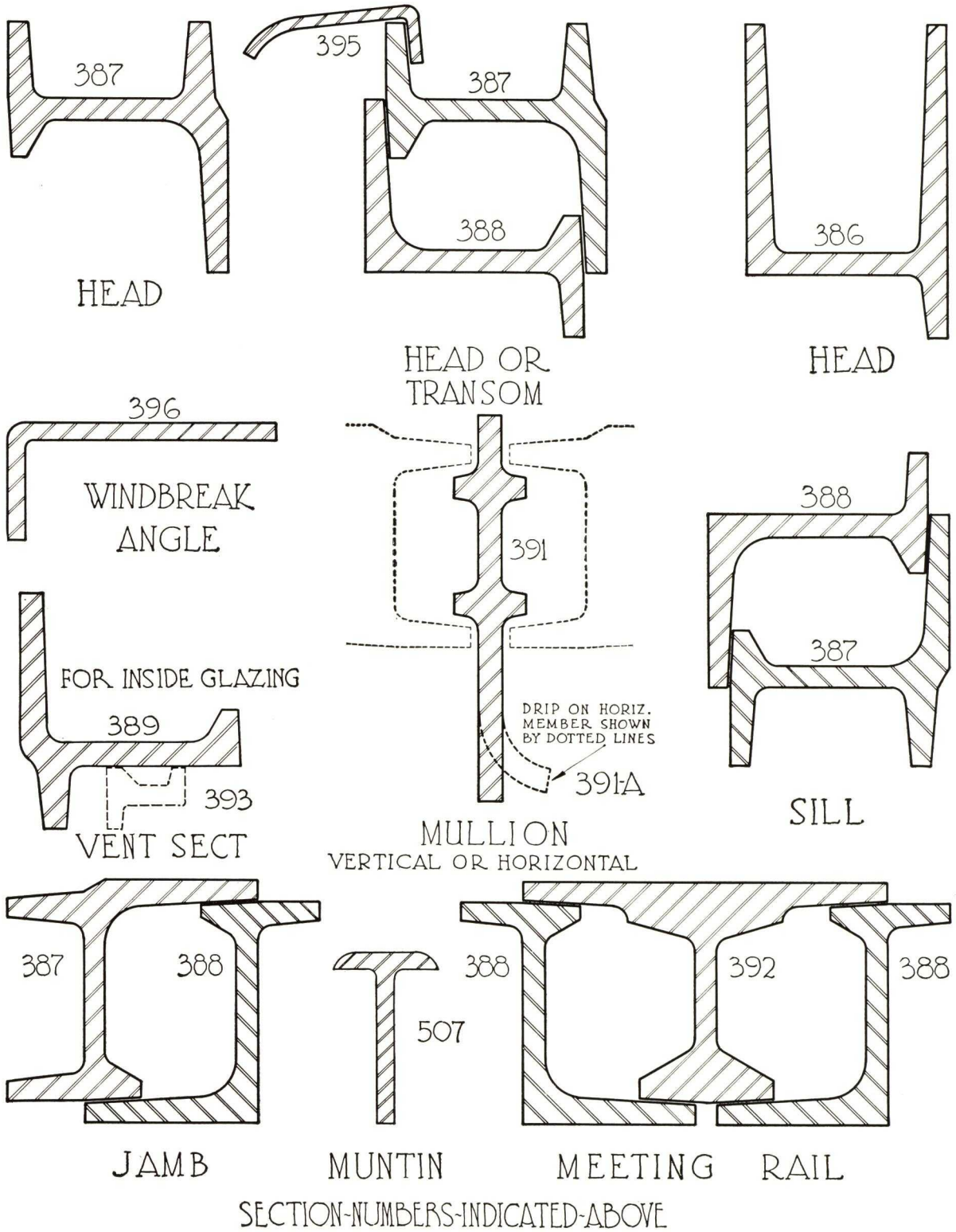
TRUSCON STEEL COMPANY Youngstown, Ohio	NON STOCK-TYPES AND SIZES ARCHITECTURAL STEEL CASEMENTS SERIES 15	PLATE No. CA-2 NOVEMBER, 1934

NON~STOCK TYPES



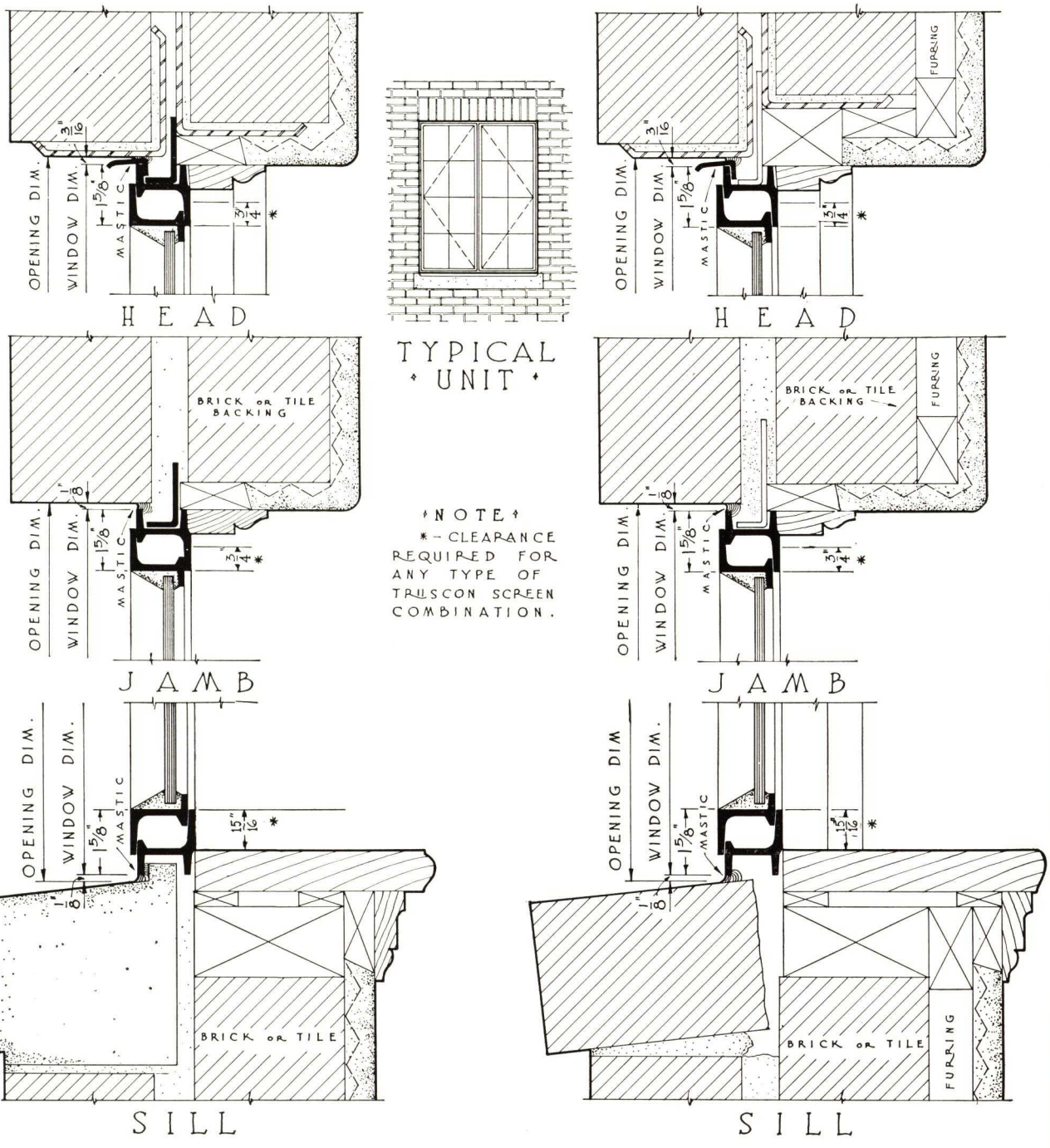
DIMENSIONS SHOWN ARE OPENING SIZES
FOR GLASS SIZES AND NOTES REFER TO PLATE CA-1

TRUSCON STEEL COMPANY Youngstown, Ohio	NON STOCK-TYPES AND SIZES ARCHITECTURAL STEEL CASEMENTS SERIES 15	PLATE No. CA-3 NOVEMBER, 1934



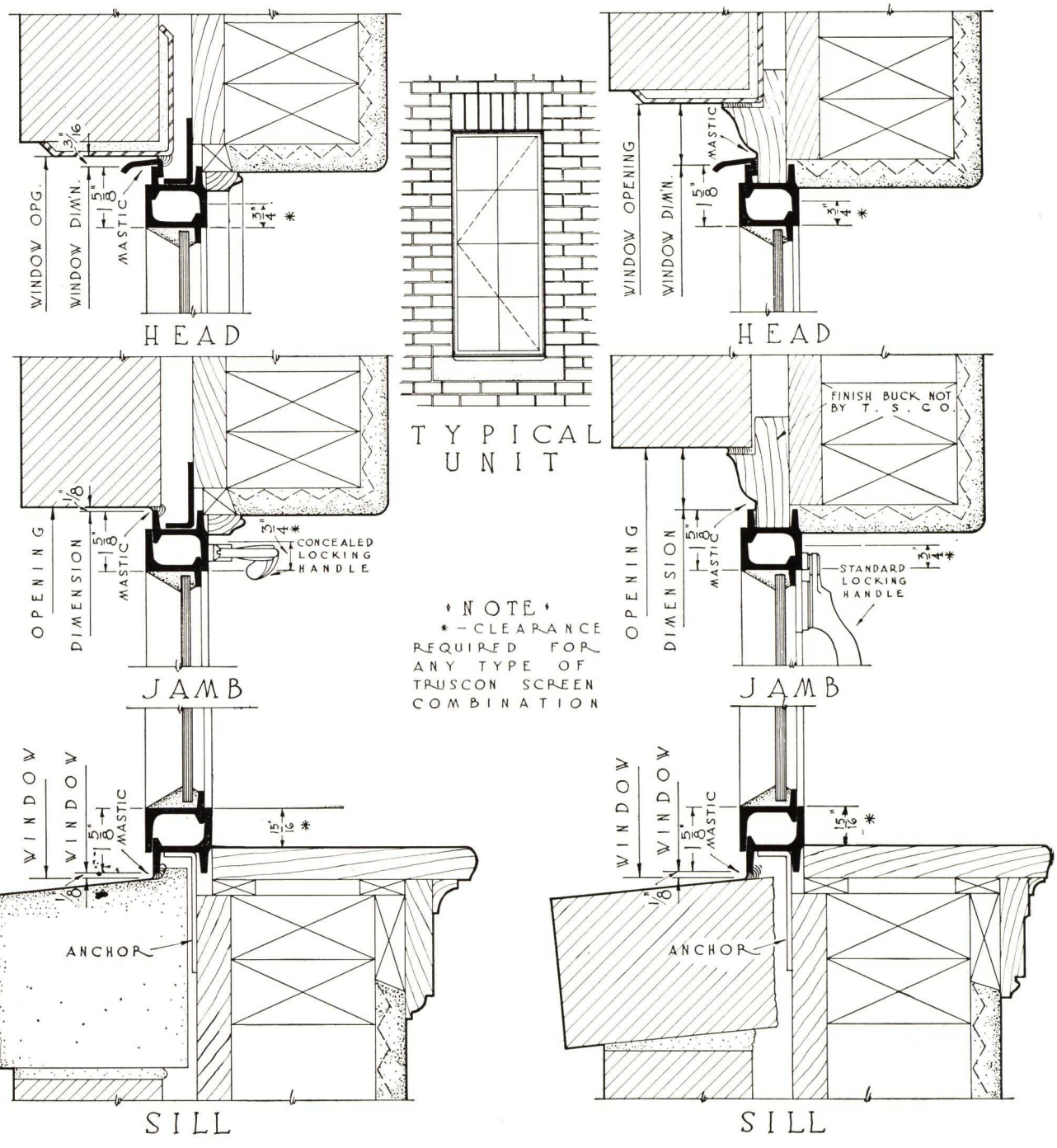
TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS ARCHITECTURAL STEEL CASEMENTS SERIES 15	PLATE No. CA-4 OCTOBER, 1937

SOLID MASONRY DETAILS



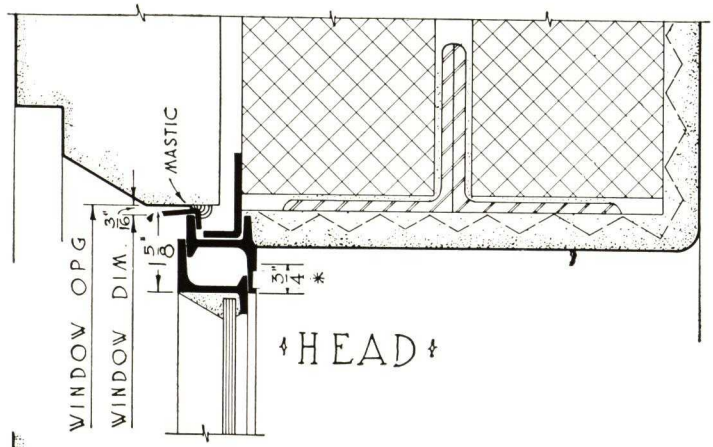
TRUSCON STEEL COMPANY Youngstown, Ohio	SOLID MASONRY INSTALLATION DETAILS **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-7** AUGUST, 1936

BRICK VENEER DETAILS

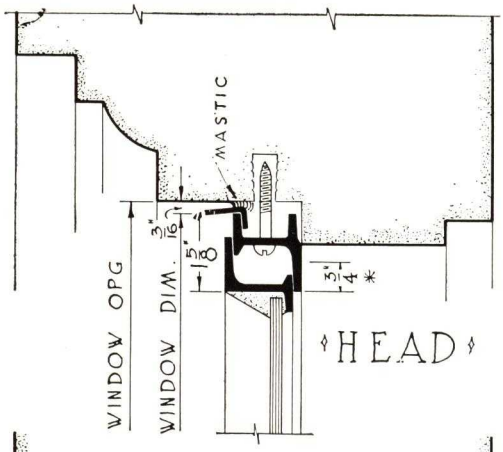


TRUSCON STEEL COMPANY Youngstown, Ohio	BRICK VENEER INSTALLATION DETAILS ARCHITECTURAL STEEL CASEMENTS SERIES 15	PLATE No. CA-8 AUGUST, 1936

STONE DETAILS



HEAD



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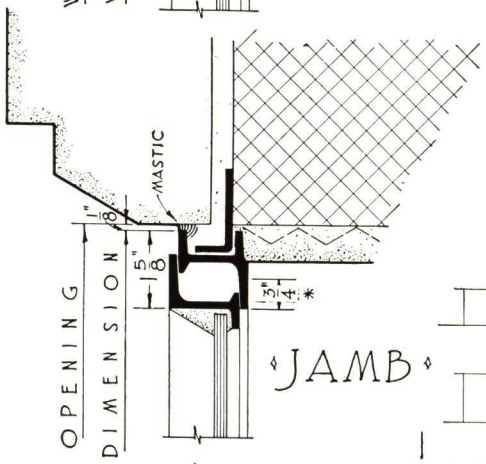
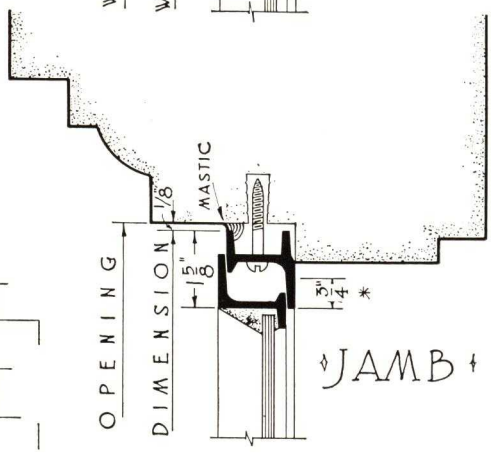
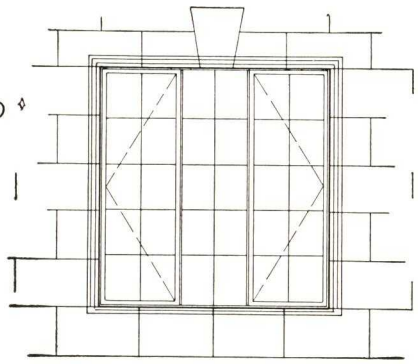


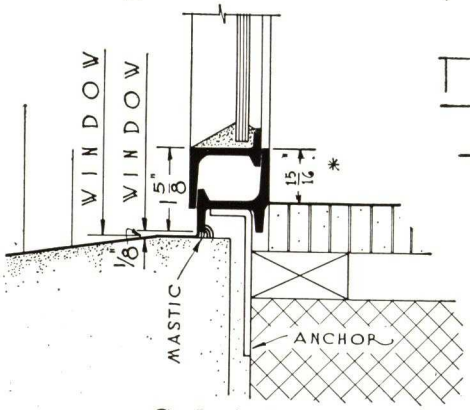
JAMB



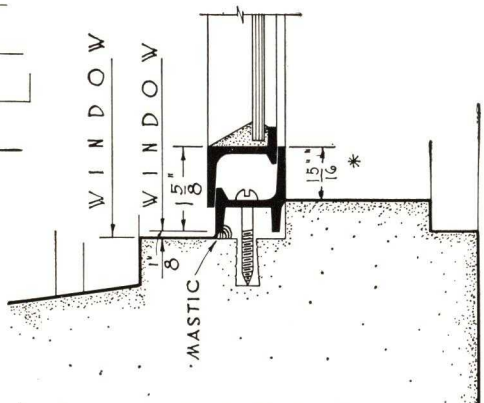
JAMB



TYPICAL UNIT



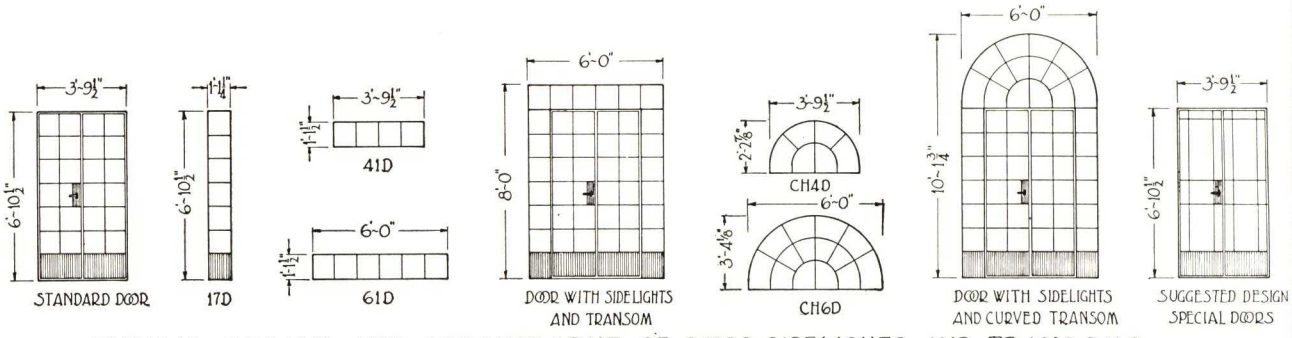
SILL



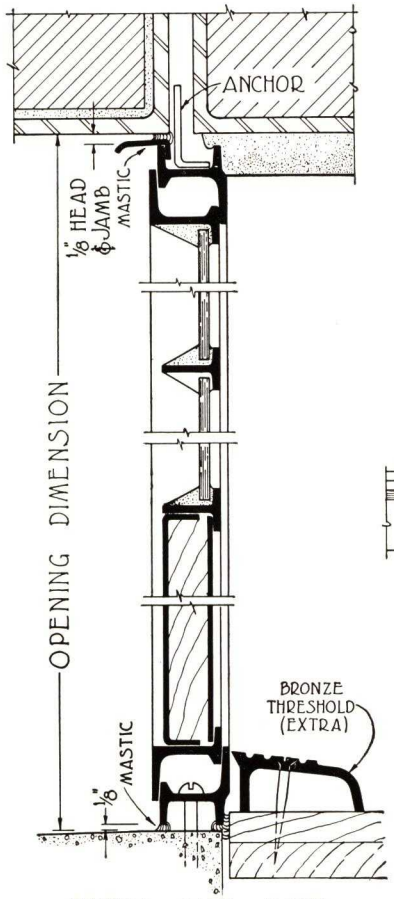
SILL

NOTE
5/8" * — CLEARANCE REQUIRED FOR ANY TYPE OF TRUSCON SCREEN COMBINATION.

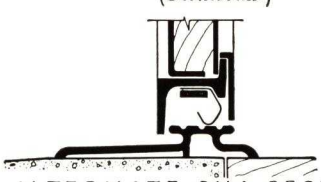
TRUSCON STEEL COMPANY Youngstown, Ohio	STONE INSTALLATION DETAILS **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-9** OCTOBER, 1932



TYPICAL DESIGN AND ARRANGEMENT OF DOORS SIDELIGHTS AND TRANSOMS



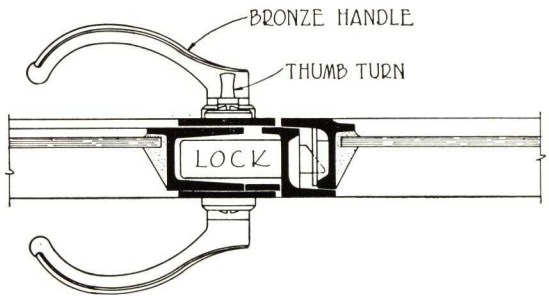
SWING OUT DOOR
(STANDARD)



ALTERNATE SILL DESIGN
THRESHOLD AS PART OF FRAME

STANDARD DOORS

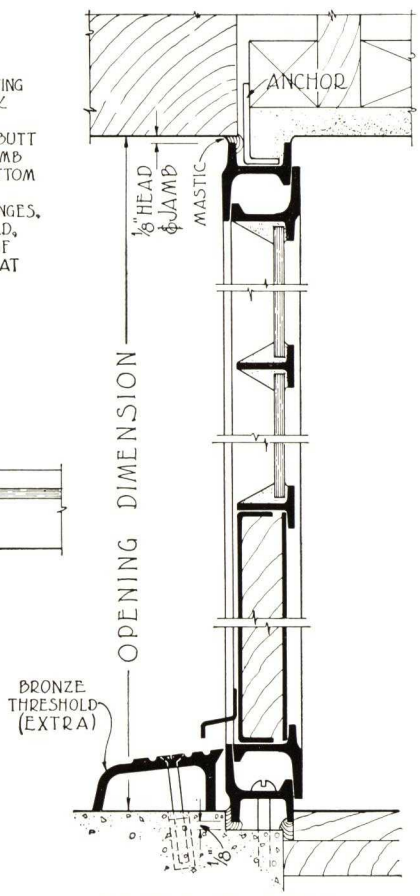
STANDARD DOORS SWING OUT ONLY ~ MUNTINS, EXCEPTING THE TWO HORIZONTAL MUNTINS FRAMING THE LOCK CASE, MAY BE OMITTED.
STANDARD DOORS ARE PROVIDED WITH THREE STEEL BUTT HINGES PER LEAF, MORTISE LOCK, HANDLES AND THUMB TURN ON ACTIVE LEAF, CONCEALED TOP AND BOTTOM BOLT ON INACTIVE LEAF.
CYLINDERS FOR MORTISE LOCK, BRONZE BUTT HINGES, BRONZE FRICTION ADJUSTERS, BRONZE THRESHOLD, DUMMY LOCK CASE AND HANDLES FOR INACTIVE LEAF AND PANIC BOLT HARDWARE WILL BE FURNISHED AT EXTRA COST.



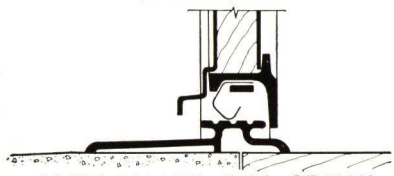
DETAIL AT MEETING RAIL
SHOWING LOCKING HANDLES
(STANDARD SWING OUT DOORS)

SPECIAL DOORS

SPECIAL DOORS, TO SWING IN OR OUT, ARE BUILT IN ANY SIZE UP TO 5'-0" WIDE × 7'-6" HIGH (FOR DOUBLE DOORS) OF INTERMEDIATE WEIGHT SECTIONS AND UP TO 6'-0" WIDE × 8'-0" HIGH (FOR DOUBLE DOORS) OF HEAVY WEIGHT SECTIONS.
SPECIAL DOORS MAY BE GLAZED INSIDE WITH GLAZING BEADS.
THE SAME HARDWARE IS AVAILABLE FOR SPECIAL DOORS AS THAT SPECIFIED FOR STANDARD DOORS.



SWING IN DOOR
(SPECIAL)

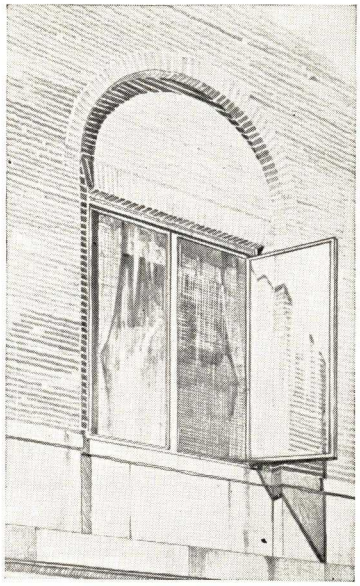


ALTERNATE SILL DESIGN
THRESHOLD AS PART OF FRAME

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS ARCHITECTURAL CASEMENT DOORS SERIES 15	PLATE No. CA-10 NOVEMBER, 1935

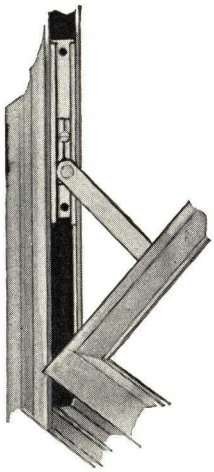
HARDWARE FOR CASEMENTS

Series 15, 15C, 15P and 25

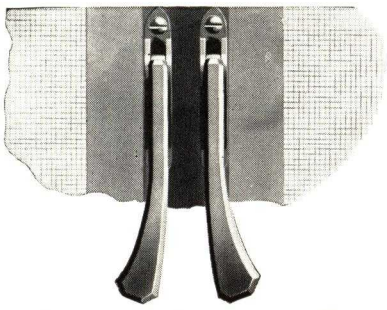


Cremone Bolt Assembly with Finger Pull

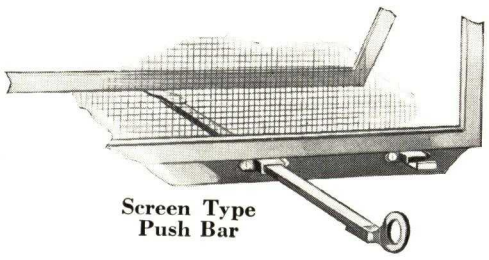
Worm and Gear Operator



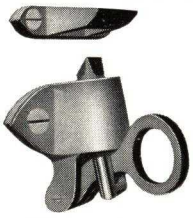
Concealed Side Arm



Screen Type Locking Handles



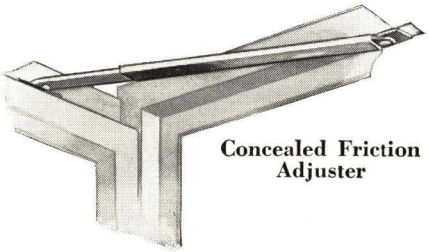
Screen Type Push Bar



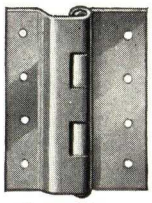
Transom Latch Pole Operated

Transom Latch Cord Operated

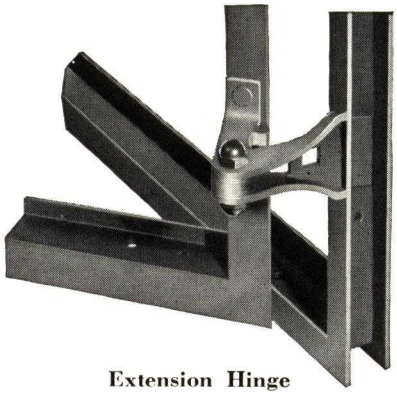
Double Locking Device



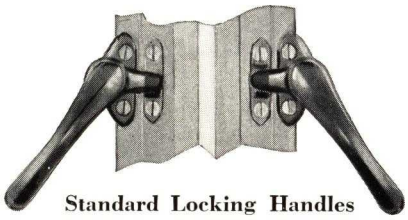
Concealed Friction Adjuster



Butt Hinge

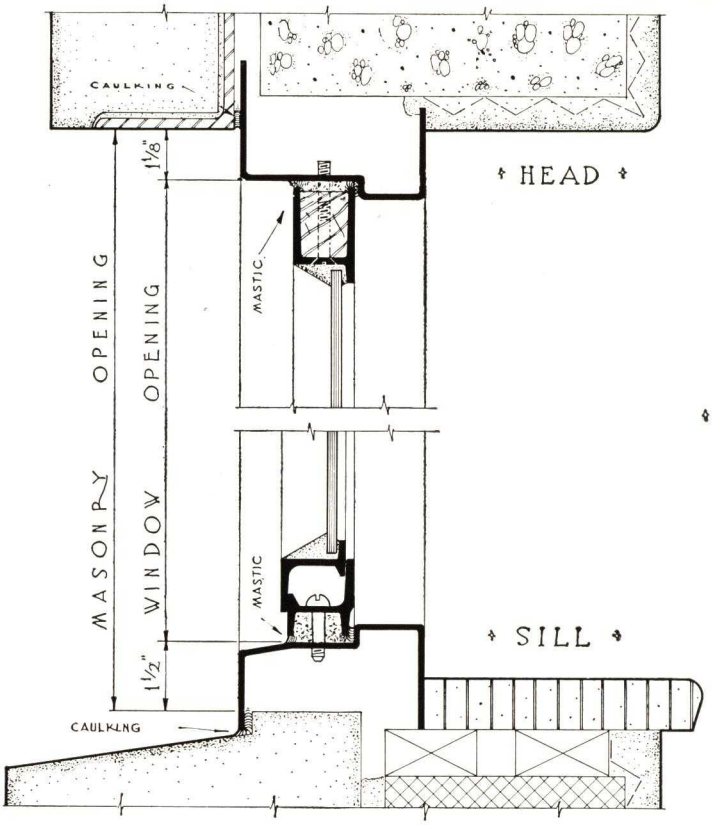


Extension Hinge

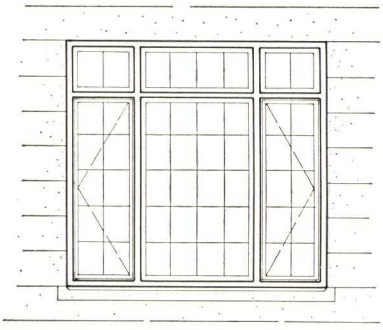


Standard Locking Handles

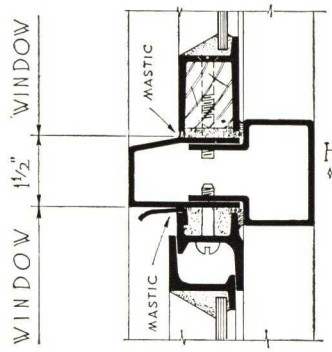
SUB - FRAME INSTALLATION



SECTION



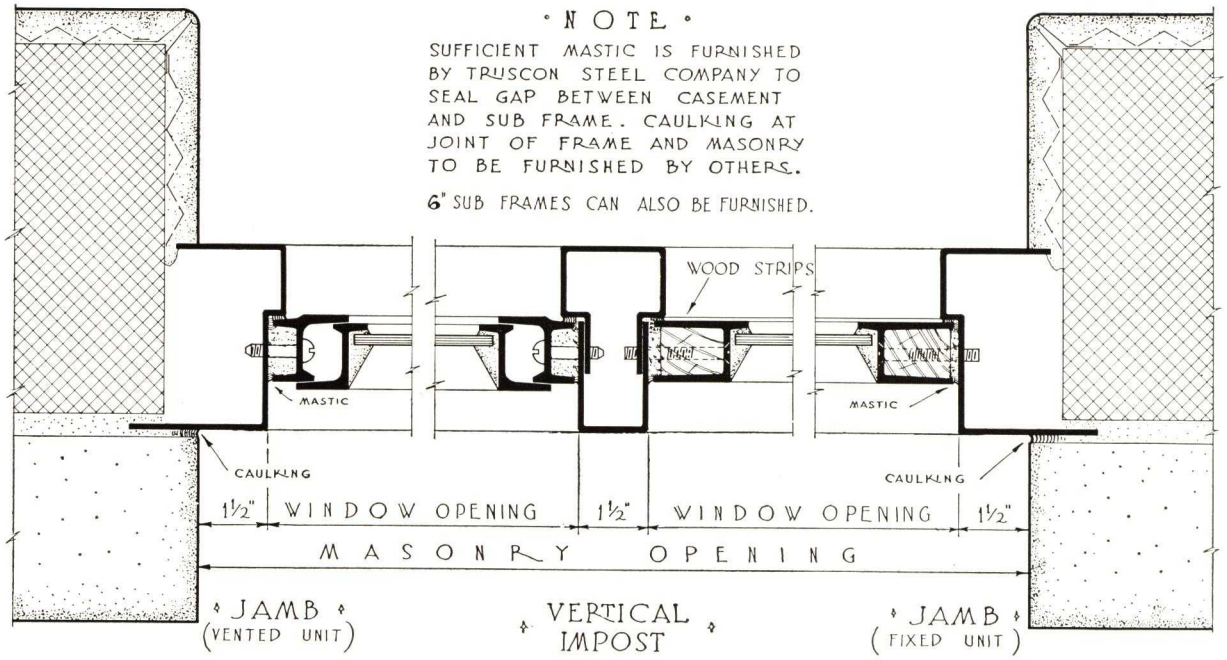
TYPICAL ELEVATION



NOTE

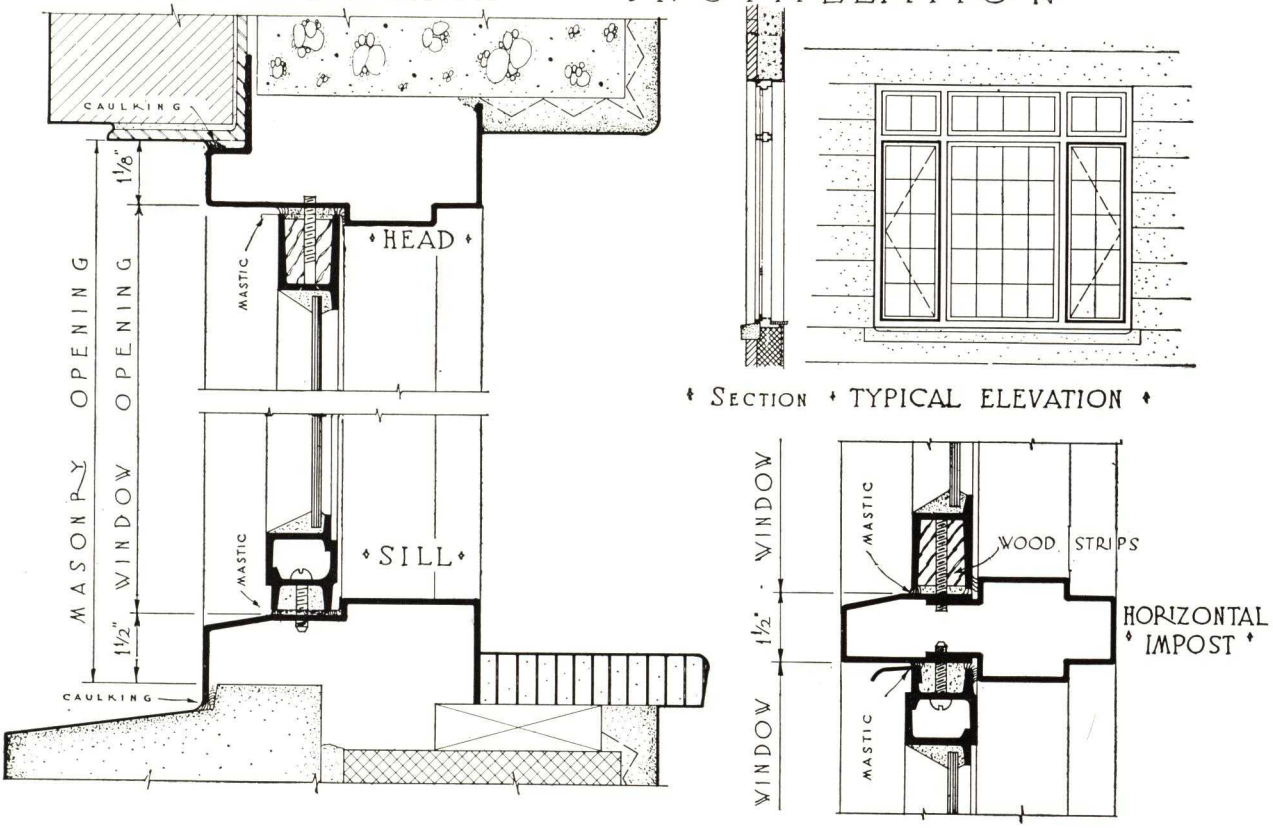
SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF FRAME AND MASONRY TO BE FURNISHED BY OTHERS.

6" SUB FRAMES CAN ALSO BE FURNISHED.



TRUSCON STEEL COMPANY Youngstown, Ohio	4" SUB-FRAME SERIES 15, 15C AND 15P	PLATE No. CA-6 OCTOBER, 1937

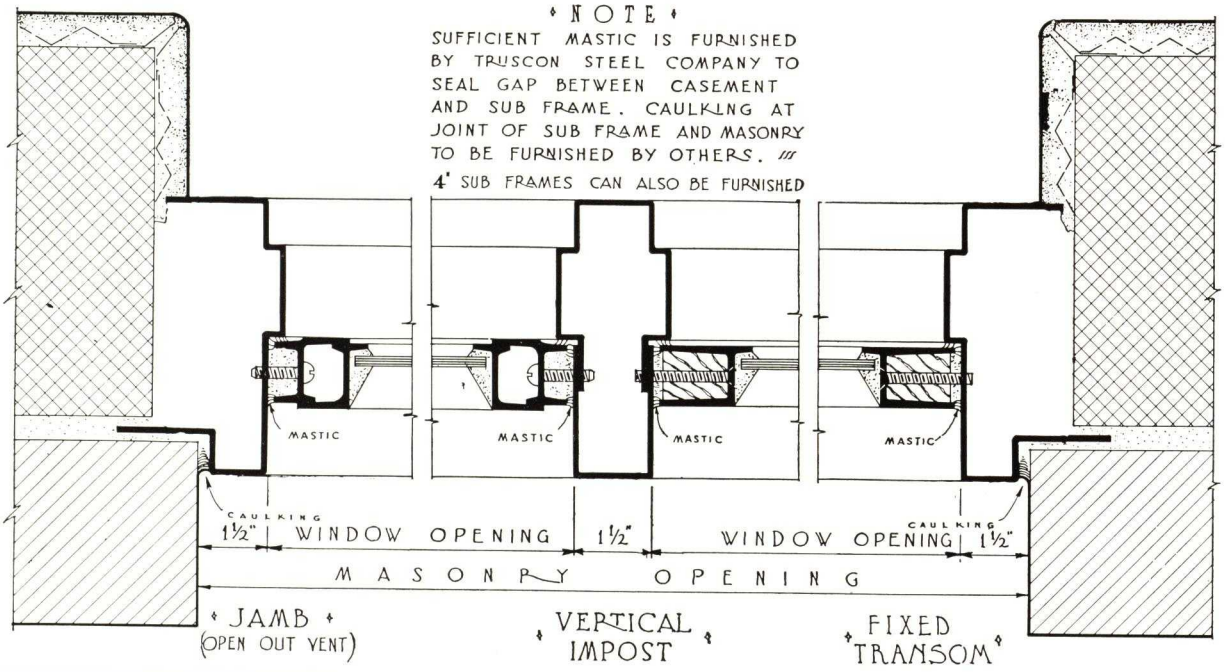
SUB - FRAME INSTALLATION



NOTE

SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF SUB FRAME AND MASONRY TO BE FURNISHED BY OTHERS. ///

4' SUB FRAMES CAN ALSO BE FURNISHED

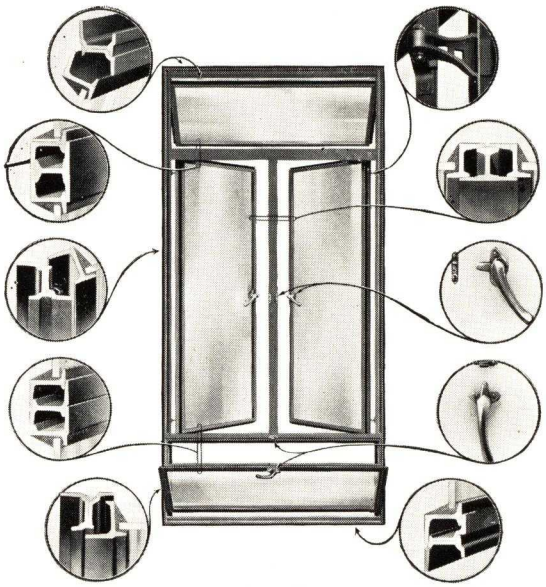


TRUSCON STEEL COMPANY Youngstown, Ohio	**6" SUB-FRAME** SERIES 15, 15C AND 15P	PLATE No. **CM-4** OCTOBER, 1937

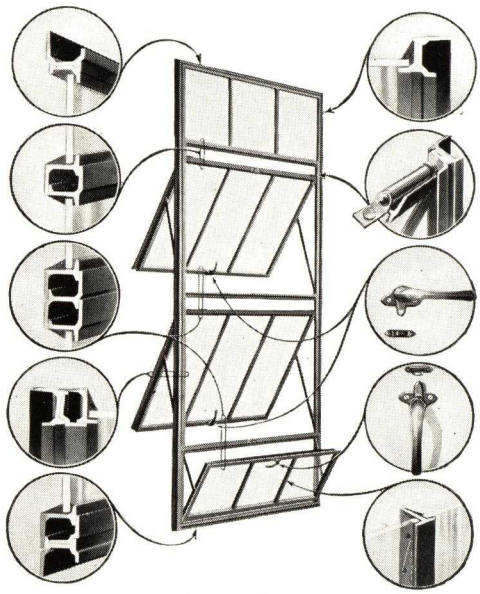
MONUMENTAL WINDOWS SERIES 15C AND 15P

MONUMENTAL Windows are suitable for use in hospitals, educational and public buildings, and other buildings of similar character.

Their appearance is in complete harmony with such buildings as they are constructed of intermediate casement sections, and employ casement hardware. They are extra heavy to withstand the constant usage encountered in such buildings.

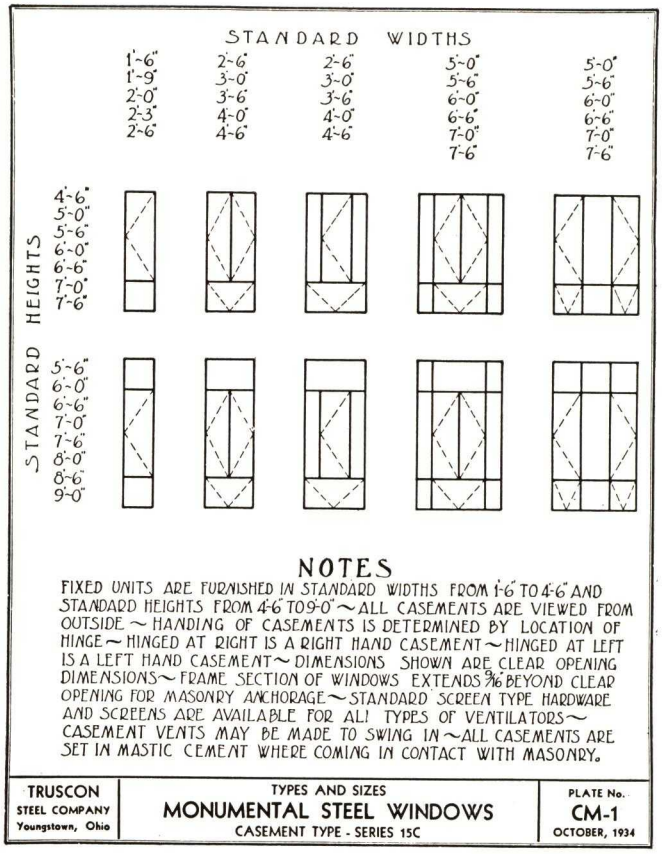


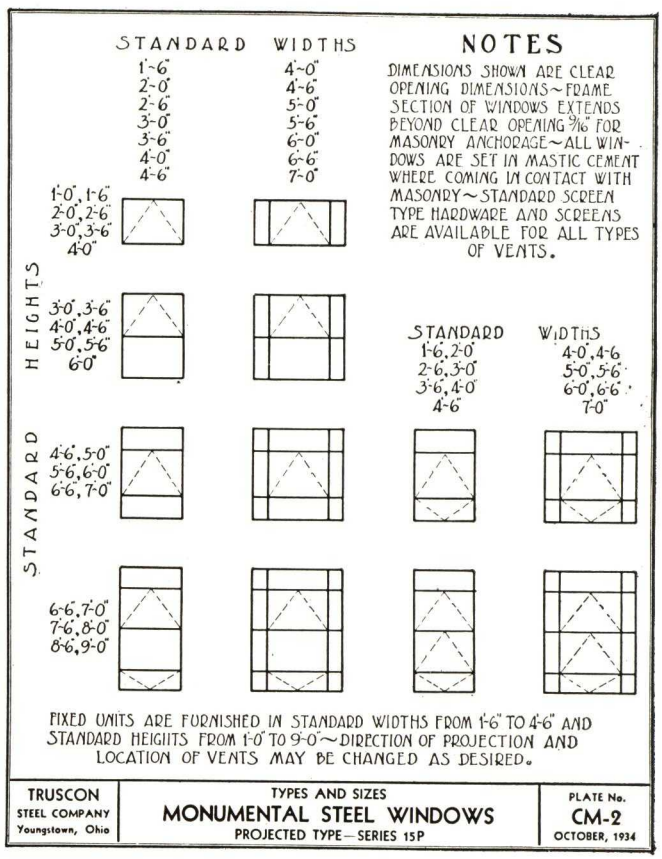
Series 15C
Casement Type



Series 15P
Projected Type

Specifications on Page 35





SPECIFICATIONS (SERIES 15C AND 15P WINDOWS)

1 *General* —All windows so indicated on the plans and elevations and called for in these specifications shall be Truscon Monumental Windows, either casement type Series 15-C or projected type, Series 15-P, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 *Material*—Truscon specification low carbon, new billet, hot-rolled, steel shall be used in the manufacture of all members.

3 *Construction*—All units shall be square and true, constructed of sections not less than $1\frac{7}{16}$ in. deep.

(a) The *Outside Frame* shall be an unequal leg section, designed for $\frac{5}{8}$ in. anchorage on the outside leg and continuous from head to sill and jamb to jamb and shaped for double flat contact weathering not less than $\frac{3}{8}$ in. between ventilators and frame members or rails. Outside Frame Section may also be equal leg section with continuous fins. Each corner of sash and frames shall be electrically butt welded rigid and tight and ground smooth before assembly. The ventilators and frame shall be made perfectly straight and true to insure perfect weathering and ease of operation.

(b) *Muntins*, where required, shall be a specially designed "T" bar section and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

(c) All *Stiles, Rails, Frames and Muntins* shall be prepared for outside putty glazing with clips. (See note.)

(d) *Series 15C Side Hinged Ventilators* shall swing out unless otherwise specified and shall be equipped with Truscon design extension three-knuckle steel hinges having bronze bushing and bronze bearing washers and acorn head steel hinge bolt with acorn nut. Hinge design shall prevent removal of locked ventilator by taking out hinge bolt. On non-operator type ventilators, hinges shall be friction type. On operator type ventilators, hinges shall be free swinging. Series 15C transom and sill ventilators shall be of the projecting type. A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

(e) *Series 15P Ventilators* shall be of the projecting type opening down and outward or up and inward as indicated. Each ventilator shall be balanced on two $\frac{3}{16}$x1 in. high carbon steel supporting arms attached to frame and ventilator by special shoulder rivets having a bronze flange bushing. Each ventilator shall be equipped with vertical sliding brass friction shoe at each jamb.

4 *Hardware*—(a) All *Hardware* shall be bronze medium statuary finish.

NON-OPERATOR TYPE

(b) For *Side Hinged Ventilators* up to and including 5 ft. in height, a bronze cam acting locking handle and bronze strike shall be furnished.

For *Side Hinged Ventilators* over 5 ft. in height or when center line of ventilator is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

For *Double Vented Units* with clear opening (no meeting rail), bronze cremone bolt hardware shall be furnished.

(c) For *Projected Ventilators* a bronze cam acting locking handle and, where necessary, a bronze pole ring shall be furnished as standard. Where desired and specified, bronze spring latch, either pole or cord operated, shall be furnished.

OPERATOR TYPE

(d) *Operator type hardware* shall control ventilator independently of the screen. Underscreen operator shall hold the ventilator securely in open position.

(e) *For side hinged ventilators* solid bronze concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and channel guide for operator shall be attached in the shop.) Concealed latch locking handle shall have both cam action and kick out action. (For ventilators over 5 ft. 0 in. in height, a double concealed latch locking device shall be furnished.) Worm drive underscreen operator shall have $\frac{3}{4}$ in. diameter worm and operator arm with machine cut teeth. Case and crank shall be solid bronze, arm is cadmium plated steel.

(f) *Standard screen type hardware for down and outward projecting ventilators* shall consist of heavy bronze push arm operating through the frame or intermediate bar sections.

5 *Painting*—(a) Windows shall be given one prime coat of grey mineral paint at factory before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

6 *Erection*—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction.

After windows have been placed in opening and before they are glazed, the ventilator shall be carefully adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

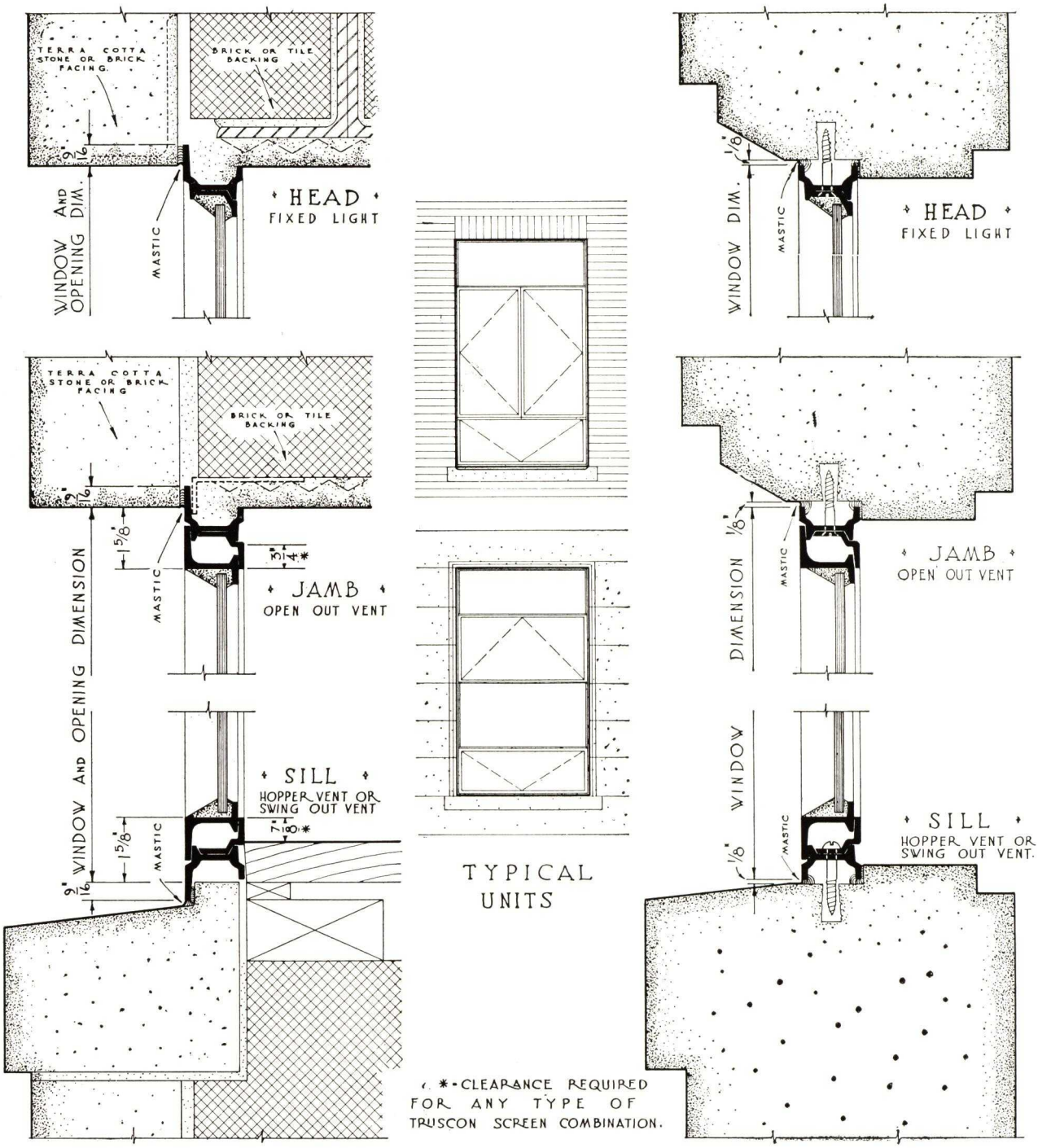
7 *Glazing*—(To be done by glazing contractor.) All windows shall be glazed on the outside with glazing clips (see note).

Notes: Windows may be inside bead glazed with solid section, hot-rolled glazing beads if desired and so specified.
When specified, Series 15C Monumental Casements can be furnished to "open in."

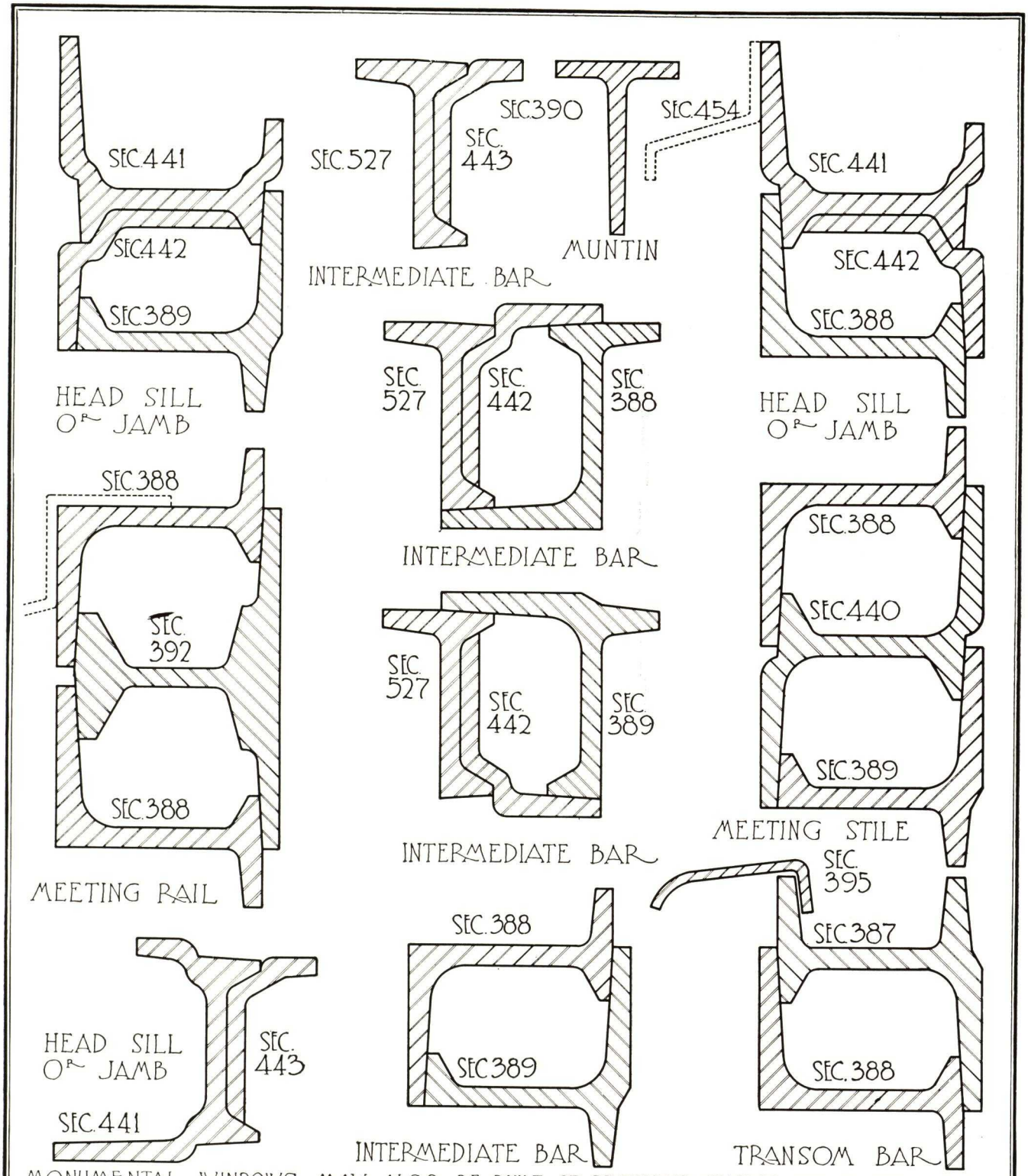
UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 5 ft. 0 in. in width and 10 ft. 0 in. in height. Mullions not permitted. Side hinged (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 350 sq. in., exposed area, and 155 sq. in., exposed area, if inside bead glazing is used.

SOLID MASONRY CONSTRUCTION



TRUSCON STEEL COMPANY Youngstown, Ohio	MASONRY INSTALLATION **MONUMENTAL STEEL WINDOWS** CASEMENT AND PROJECTED TYPES (SERIES 15C AND 15P)	PLATE No. **CM-5** NOVEMBER, 1934



MONUMENTAL WINDOWS MAY ALSO BE BUILT OF SECTIONS SHOWN ON PLATE CA-4

TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS **MONUMENTAL STEEL WINDOWS** CASEMENT AND PROJECTED TYPES (Series 15C and 15P)	PLATE No. **CM-3** OCTOBER, 1937

PARAMOUNT CASEMENTS SERIES 25

WHERE architectural treatment and ventilation require exceptionally large swing leaves, Paramount Casements, Series 25, will meet the most exacting architectural specifications.

SPECIFICATIONS

1 *General*—All windows so indicated on the plans and elevations and called for in these specifications shall be Paramount Casement Windows, Series 25, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 *Construction*—(a) Windows shall be custom made and of type, size and design to swing either in or out, as shown on the drawing.

(b) *Major Members* shall be not less than 1½ in. in depth and shall be hot-rolled from new billet steel. The combined weight of frame and swing leaf members shall be not less than 4 lbs. per linear foot.

(c) *All Corners* of swing leaves and frames shall be mitered and electrically butt welded and all exposed surfaces ground smooth. Double contact of not less than ⅜ in. shall be provided for weathering on all windows where swing leaves contact frame members.

3 *Hardware*—(a) *Unattached Hardware* shall be solid bronze, Medium Statuary finish of Truscon standard design. Standard screen type hardware shall be furnished and windows prepared for same when so specified *(illustrated on page 31)*. Unattached hardware shall be packed separately and shipped with windows.

(b) *Swing Leaves* shall be provided with standard extension cleaning hinges, either friction or free swinging types; or with butt hinges, at the option of the architect. All hinges are so designed as to have 100% bronze to steel contact on all pivot points. Windows shall be provided for friction or stay-bar adjustor where free swinging hinges are specified.

4 *Painting*—(a) Windows after fabrication shall be given one protective coat of standard Truscon paint.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

5 *Erection*—(a) All windows shall be set plumb and true in their respective openings and properly adjusted.

(b) Mastic in sufficient quantity shall be used in setting and bedding frames when they come in contact with mullions or wall construction.

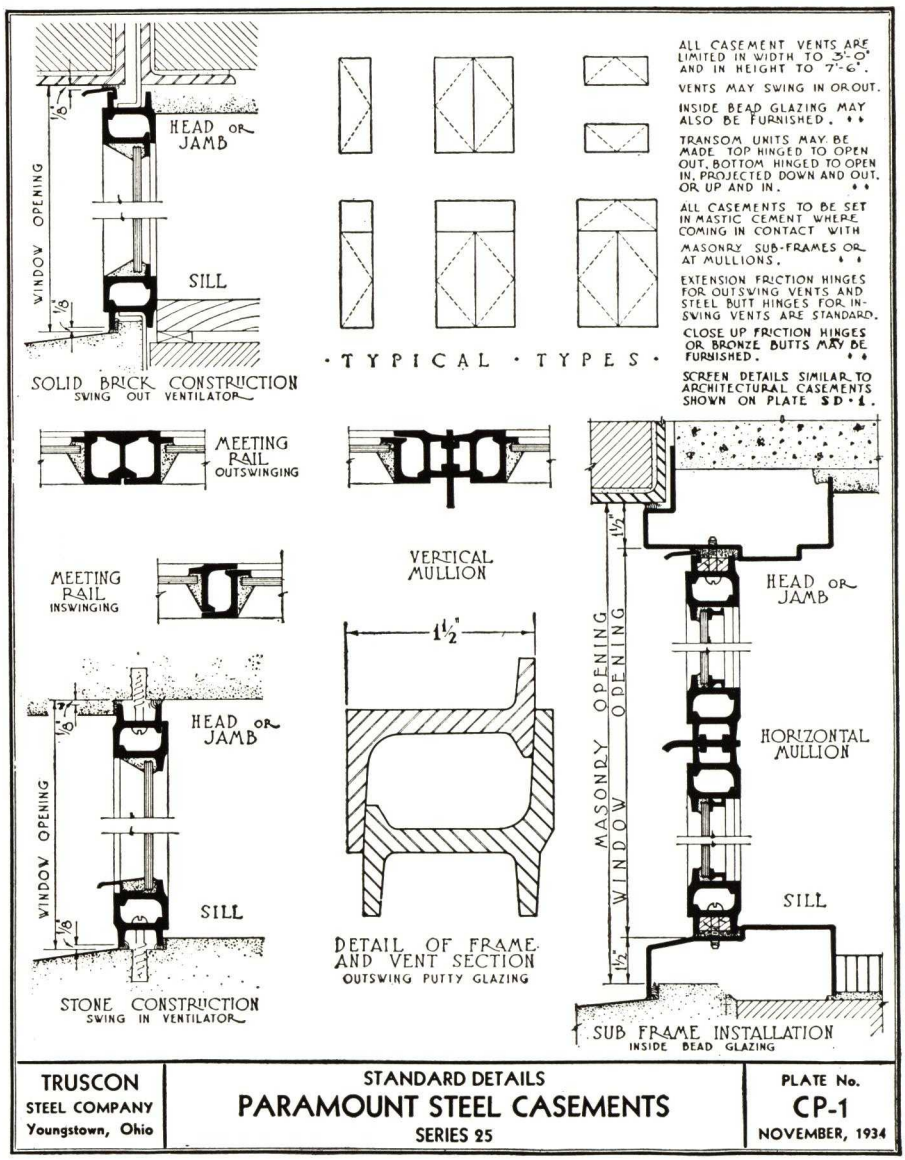
All hardware shall be applied in accordance with manufacturer's instructions. (It is recommended that the manufacturer shall erect and adjust the windows. The Erection Division of the TRUSCON STEEL COMPANY will contract to furnish this service.)

Frame members of windows shall be so designed that they can be readily installed in Truscon standard design steel sub frames erected by others. Frame members shall also be prepared to accept standard fins so that windows may be built-in with the construction.

6 *Glazing* —(To be done by glazing contractor.) Windows shall be furnished with glazing clips for outside putty glazing. When specified, windows shall be fitted with a solid moulded steel glazing stop for inside glazing. Glazing stops shall be carefully fitted to each light and attached with bronze screws.

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 5 ft. 0 in. in width and 10 ft. 0 in. in height. Mullions not permitted. Side hinged (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 350 sq. in., exposed area, and 155 sq. in. exposed area if inside bead glazing is used.



TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS PARAMOUNT STEEL CASEMENTS SERIES 25	PLATE No. CP-1 NOVEMBER, 1934

PROJECTED WINDOWS ARCHITECTURAL TYPE

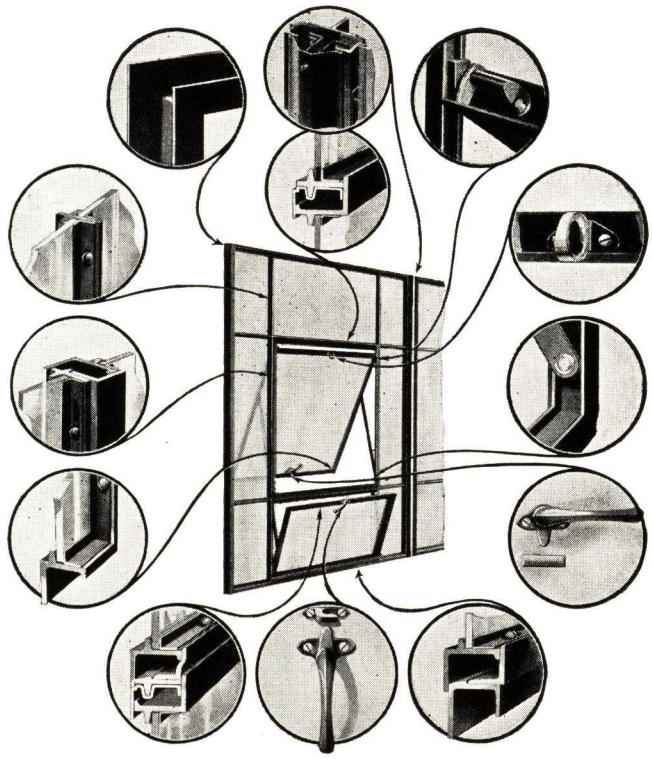
DESIGNED for appearance as well as practicability. The architect has a wide range of types to choose from, thereby enabling him to use standard types and take advantage of their economy.

The outside frame is a solid heavy channel, giving great strength. Rigidity in the ventilator is secured by the use of a heavy solid angle section mortised and tenoned and also welded at the corners. The ventilator frame is rolled with integral baffle, similar in design used on highest quality casements.

Solid bronze hardware is standard for these windows and the quality and design are in keeping with the word "Architectural."

Windows with inside glazing angles are standard. Windows arranged for outside glazing with putty can be furnished at a saving in cost. Projecting ventilators permit easy cleaning from the inside. Weather-tightness is assured by the rigid construction of the window and the Truscon double contact weathering.

Screens and underscreen operating hardware are available for all ventilators.



SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Architectural Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specifications, hot rolled, new billet steel.

3. All joints shall be mortised and tenoned, and air hammer riveted, and in addition all ventilator corners and frame corners shall be welded.

4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.

5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.

9. The outside section of the window shall be a heavy, solid rolled steel channel.

10. Uniform tension to hold ventilator in any desired position shall be obtained by a sliding friction shoe.

11. The sliding friction shoe shall be constructed of forged brass with compression spring enclosed in steel tubing.

12. The side of the window frame shall act as a guide for the sliding friction shoe.

13. There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass flanged bushings.

Outward Projecting or Inward Projecting Ventilators

14. Outward projecting ventilators when opened shall have no part of the ventilator extending inside the normal plane of the window.

15. Inward projecting ventilators shall not extend outside the normal plane of the window.

Vertical Mullions

16. Where two or more window units, less than 6 ft. 0 in. in height are used in the same opening, they shall be connected together with Truscon Standard Plate Mullions (Type T-1).

PROJECTED WINDOWS Architectural Type

SPECIFICATIONS (Continued)

17. For windows over 6 ft. 0 in. high, and up to and including 10 ft. 0 in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

18. For all window openings over 10 ft. 0 in. high, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

19. All mullions shall be 2½ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

20. Mullions shall extend 1⅛ in. below the leg of window at sill to provide a firm anchorage in sill construction.

21. All mullions shall have standard Truscon interior mullion covers.

Unattached Hardware

22. All hardware shall be solid bronze.

23. All outward projecting ventilators within reach of the floor, shall be equipped with a solid bronze cam handle and strike.

24. All outward projecting ventilators not easily accessible, shall be equipped with solid bronze cam handle, (ring type), strike and pole hook ring.

25. All inward projecting ventilators shall be equipped with solid bronze cam handle and keeper.

Underscreen Hardware

(When Underscreen Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

26. Underscreen Push Bar operating through the window section shall open and close the ventilator without moving the screen. Underscreen Push Bar shall have cam locking action to draw ventilator tight when closed.

Shade Bracket Clips

(Include only when required.)

27. Shade bracket clips shall be pressed steel, located at upper corners of frame. Two slotted holes for attachment of shade brackets shall be provided 1¼ in. on centers. Shade brackets to be furnished by shade contractor.

Structural Support

28. All structural work for the support of steel windows shall be provided by another contractor.

Shop Painting

29. (a) All window units shall be given a dip coat of protective paint before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Erection

30. Window units shall be trued in all directions and set plumb in the masonry.

31. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

32. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

33. The erection of the windows shall be performed by the manufacturer of same.

Glazing

(To be done by glazing contractor.)

Architect to specify either one of the following methods of glazing:

Specification for Angle Glazing

34. All windows shall be glazed on the INSIDE. Glass shall be bedded in steel window putty and held in place with continuous glazing angles attached to the window with brass screws.

Specification for Spring Clip Glazing

35. All windows shall be glazed on the OUTSIDE. Glass shall be bed and face puttied and held in place by Truscon copper clad wire glazing clips.

Screens

36. Screens shall be of the following types:

(a) Fixed screen on outside of inward projecting ventilators.

(b) Top hinged screen for outward projecting ventilators with standard hardware.

(c) Fixed screen for use with underscreen push bar for outward projecting ventilators.

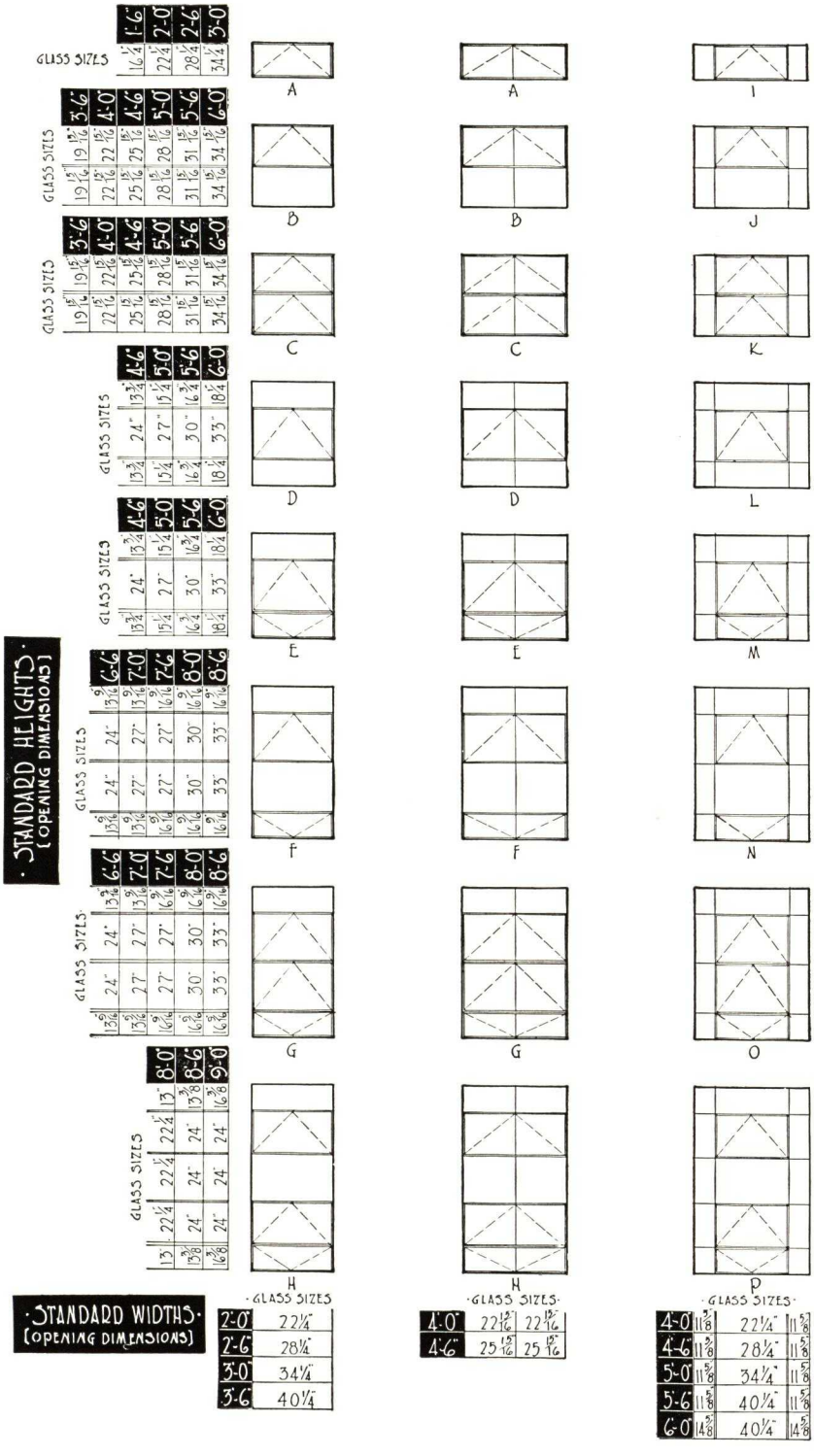
37. Screens shall have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat baked enamel for inside screens and two coats for outside screens.

Underwriters' Label

(National Board of Fire Underwriters)

38. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

TYPES AND SIZES



· STANDARD WIDTHS ·
(OPENING DIMENSIONS)

	H GLASS SIZES
2'-0"	22¼"
2'-6"	28¼"
3'-0"	34¼"
3'-6"	40¼"

	H GLASS SIZES	
4'-0"	22 1/16"	22 15/16"
4'-6"	25 1/16"	25 15/16"

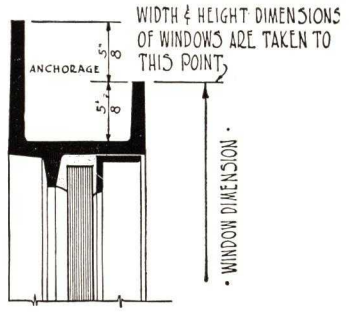
	P GLASS SIZES		
4'-0"	11 3/8"	22¼"	11 5/8"
4'-6"	11 3/8"	28¼"	11 5/8"
5'-0"	11 5/8"	34¼"	11 5/8"
5'-6"	11 5/8"	40¼"	11 5/8"
6'-0"	14 3/8"	40¼"	14 5/8"

· SYMBOLS ·

STANDARD WINDOW UNITS MAY BE COMBINED WITH MULLIONS SHOWN ON PLATE NO. 23. ADD 2" TO BAY OPENING WIDTH FOR EACH MULLION USED.

WINDOWS CAN BE FURNISHED WITH GLAZING ANGLES FOR INSIDE GLAZING OR CAN BE FURNISHED FOR PUTTY GLAZING INSIDE OR OUTSIDE.

GLASS SIZES SHOWN ARE FOR FIXED LIGHTS — VENTILATOR GLASS IS CUT 1" SMALLER AT ALL EDGES



WIDTHS

HEIGHTS	3'0"	3'6"	4'0"	4'6"	5'0"
4'6"	D	D	L	L	L
5'0"	E	E	M	M	M
5'6"	E	E	M	M	M
6'0"	E	E	M	M	M
6'6"	F	F	N	N	N
7'0"	F	F	N	N	N
7'6"	F	F	N	N	N
8'0"	F	F	N	N	N
8'6"	F	F	N	N	N
9'0"	H	H	P	P	P

The above schedule shows standard types. All other types are listed specials.

TRUSCON STEEL COMPANY
Youngstown, Ohio

ARCHITECTURAL TYPE » » TYPES AND SIZES

PROJECTED STEEL WINDOWS

PLATE No.
B-21
APRIL, 1936

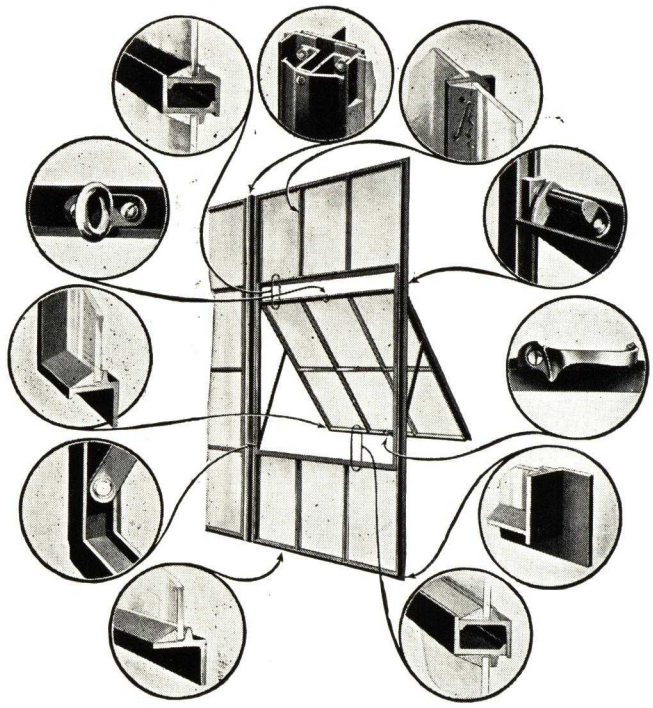
PROJECTED WINDOWS COMMERCIAL TYPE

WHERE neat design and economy are the keynote of the construction, architects will appreciate the quality, appearance, performance and low cost of these windows.

They are widely used in buildings where low cost is essential. The projected feature is especially valuable when ventilation depends upon the natural clearing off of vapor, smoke and stale air. The tilted ventilator acts as a deflector of the elements and can be kept open in all kinds of weather. Direct drafts are eliminated and a continuous change of air is obtained. Projecting ventilators make possible ready cleaning from the inside.

Because of the similarity between the appearance of the Commercial Projected and Pivoted Windows, the Projected Windows can be used in the office section of an industrial plant with complete conformity to the general design.

Thirty-two standard types of Commercial Projected Windows, as shown on page 45, are available in 12x18 in. or 14x20 in. glass size, many of which are carried in warehouse stocks.



SCREENS

Ventilators projecting inwardly with fixed flat screens on outside are the most practicable and economical.

However, top hinged screens can be furnished for ventilators projecting outwardly or fixed screens can be used in connection with under-screen push bar hardware.

EXPLOSION HARDWARE

Explosion type hardware conforming to specifications of Associated Factory Mutual Fire Insurance Companies can be furnished at increased cost over standard hardware for outwardly opening projected ventilators. This hardware operated either by pole or chain allows the ventilator to open automatically in case of explosion.

SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Commercial Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specification, hot-rolled, new billet steel.

3. All joints shall be mortised and tenoned, and air hammer riveted.

4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.

5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.

9. Uniform tension to hold ventilator in any desired position shall be obtained by a sliding friction shoe.

10. The sliding friction shoe shall be constructed of forged brass with compression spring enclosed in steel tubing.

11. The side of the window frame shall act as a guide for the sliding friction shoe.

12. There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass flanged bushings.

Outward Projecting or Inward Projecting Ventilators

13. Outward Projecting Ventilators when open shall have no part of the ventilator extending inside the normal plane of the window.

14. Inward Projecting Ventilators shall not extend outside the normal plane of the window.

PROJECTED WINDOWS, Commercial Type

SPECIFICATIONS (Continued)

Vertical Mullions

15. Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).

16. For window units over 6 ft. 3 in. high and up to and including 10 ft. 3⅛ in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

17. For all window openings over 10 ft. 3⅛ in. high Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

18. All mullions shall be 2½ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

19. Mullions shall extend 1⅜ in. below the leg of window at sill to provide a firm anchorage in sill construction.

Pressed steel mullion covers for interior use are available at extra cost.

Unattached Hardware

20. All hardware shall be malleable iron, cadmium plated, unless otherwise specified.

21. All outward projecting ventilators within reach of the floor, shall be equipped with a malleable iron cam handle.

22. All outward projecting ventilators not easily accessible, shall be equipped with malleable iron cam handle and pole hook ring.

(Truscon automatic chain operated latch may be substituted for cam latch pole hook where so required.)

23. All inward projecting ventilators shall be equipped with spring latch and keeper.

Underscreen Hardware

(When Underscreen Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

24. Underscreen Push Bar operating through the window section shall open and close the ventilator without moving the screen. Underscreen Push Bar shall have cam locking action to draw ventilator tight when closed.

Explosion Type Hardware

(When Explosion Type Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

25. Explosion Type Hardware shall conform to specifications of Associated Factory Mutual Fire Insurance Companies. Hardware shall be designed for hand, pole or chain operation. *(State which type is desired).*

Shade Bracket Clips

(Include only when required).

26. Shade bracket clips shall be pressed steel, located at upper corners of frame. Two slotted holes for attachment of shade brackets shall be provided 1¼ in. on centers. Shade brackets to be furnished by shade contractor.

Mechanical Operator

(Include only when required).

27. All runs of ventilators, shown on drawings as "mechanically controlled," shall be equipped with rack and pinion operator, as manufactured by the TRUSCON STEEL COMPANY.

Structural Support

28. All structural work for the support of steel windows and mechanical operators shall be provided by another contractor.

Shop Painting

29. (a) All window units shall be given a dip coat of protective paint before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Erection

30. Window units shall be trued in all directions and set plumb in the masonry.

31. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

32. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

Glazing

(To be done by glazing contractor)

33. All standard windows shall be glazed on the inside.

34. Glass shall be held in place by Truscon copper clad steel wire glazing clips, four per light.

35. Glass shall be bed and face puttied with steel window putty.

Screens

36. Screens shall be of the following types:

(a) Fixed screen on outside of inward projecting ventilators.

(b) Top hinged screen for outward projecting ventilators with standard hardware.

(c) Fixed screen for use with underscreen push bar for outward projecting ventilators.

37. Screens shall have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat baked enamel for inside screens and two coats for outside screens.

Underwriters' Label

(National Board of Fire Underwriters).

38. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

PIVOTED WINDOWS

ADAPTABLE to all types of industrial and manufacturing buildings including warehouse, factory and storage buildings, garages, filling stations, etc., and especially desirable when a great deal of light is needed. The slender but strong and rigid steel muntin bars admit the maximum of light to the interior. They are permanent, fireproof, never stick or warp and open or close easily regardless of climatic conditions.

SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Horizontally Pivoted type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specification, hot-rolled, new billet steel.

3. All joints shall be mortised and tenoned, and air hammer riveted.

4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.

5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.

9. Unless otherwise specified the ventilators shall be horizontally pivoted 2 in. above the center line.

10. The pivots shall be solid steel securely welded to the ventilator and side bar of window, and equipped with $\frac{3}{8}$ in. steel removable pins held in place with washers and cotter pins.

11. Top and bottom rails of ventilators shall be cambered in shop before being fitted to windows, so, when closed, the corners shall engage first, allowing the ventilator to be evenly drawn up to the weather-tight bearing by means of standard locking device.

Vertical Mullions

12. Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).

13. For window units over 6 ft. 3 in. high, and up to and including 10 ft. $3\frac{1}{8}$ in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

14. For all window openings over 10 ft. $3\frac{1}{8}$ in. high, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

15. All mullions shall be $2\frac{1}{2}$ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

16. Mullions shall extend $1\frac{3}{8}$ in. below the leg of window at sill to provide a firm anchorage in sill construction.

Unattached Hardware

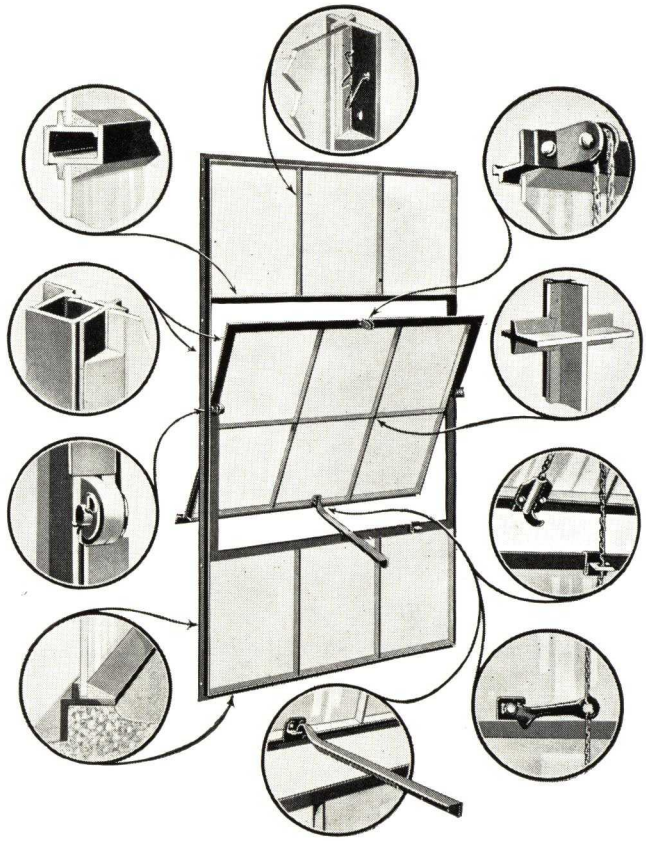
17. All ventilators shall be equipped with either push bar, gravity cam latch or spring latch and chain, as marked on drawings or as hereinafter specifically called for; all iron and steel hardware except push bars shall be cadmium plated before shipment. Push bars are painted.

(Schedule of proper hardware for windows to be inserted here.)

Mechanical Operator

18. All runs of ventilators, shown on drawings as "mechanically controlled", shall be equipped with worm and gear or with rack and pinion operator, as manufactured by the TRUSCON STEEL COMPANY.

(Insert specifications for proper type of mechanical operator.)



Structural Support

19. All structural work for the support of steel windows and operators shall be provided by another contractor.

Shop Painting

20. (a) All window units shall be given a dip coat of protective paint before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Erection

21. Window units shall be trued in all directions and set plumb in the masonry.

22. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

23. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

Glazing *(To be done by glazing contractor.)*

24. All standard windows shall be glazed on the INSIDE.

25. Glass shall be held in place by Truscon copper clad steel wire glazing clips, four per light.

26. Glass hall be bed and face puttied with metal window putty.

Screens

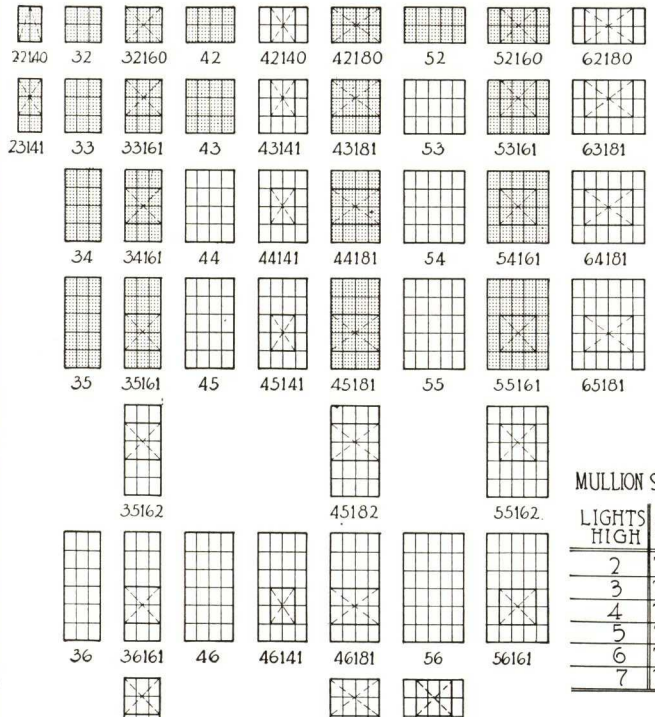
27. Standardized metal screens are available for Truscon Pivoted Steel Windows. However, for economy, when screens are required, we recommend commercial projected ventilators opening inwardly. See Truscon Commercial Projected Window catalog.

Underwriters' Label

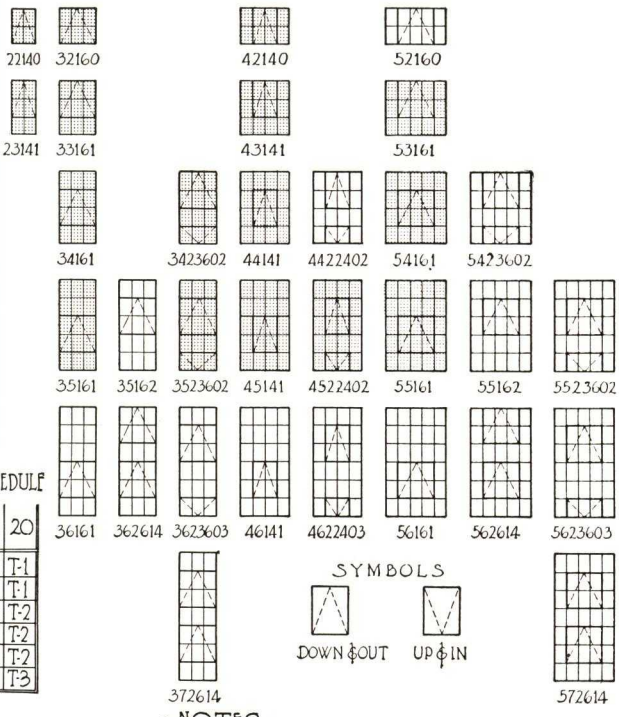
(National Board of Fire Underwriters.)

28. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

PIVOTED TYPE
12"×18" AND 14"×20" GLASS SIZE



PROJECTED TYPE
12"×18" AND 14"×20" GLASS SIZE



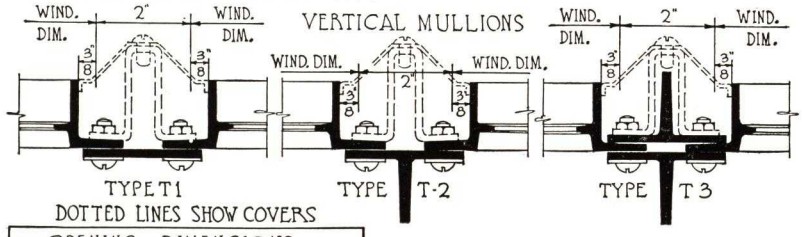
MULLION SCHEDULE

LIGHTS HIGH	18	20
2	T-1	T-1
3	T-1	T-1
4	T-1	T-2
5	T-2	T-2
6	T-2	T-2
7	T-3	T-3

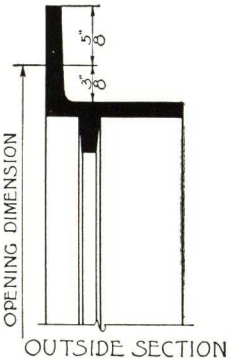
SYMBOLS

• NOTES •

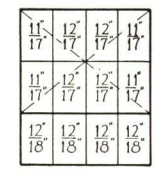
SHADED UNITS ARE WAREHOUSE STOCK TYPES. PIVOTED VENTS ARE HORIZONTALLY PIVOTED 2" ABOVE CENTER. PROJECTED VENTS MAY BE SPECIFIED TO PROJECT DOWN AND OUT OR UP AND IN. VENTS OF WINDOWS CARRIED IN STOCK PROJECT ONLY AS SHOWN. GLASS SIZES INDICATED ARE FOR FIXED LIGHTS ONLY. GLASS LIGHTS IN VENTILATORS MUST BE CUT AS SHOWN IN GLASS SIZE DIAGRAMS BELOW. WINDOWS MAY BE COMBINED TO FILL OPENINGS OF ANY WIDTH BY MEANS OF MULLIONS, THE WIDTH OF THE OPENING BEING THE SUM OF THE INDIVIDUAL SASH DIMENSIONS PLUS 2" FOR EACH MULLION ADDED. ALL TYPES SHOWN ARE PUNCHED FOR MULLION BARS.

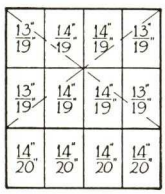


DOTTED LINES SHOW COVERS

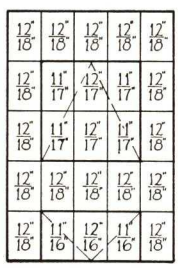


OPENING DIMENSIONS					
LIGHTS WIDE	GLASS WIDTH 12"	GLASS WIDTH 14"	LIGHTS HIGH	GLASS HEIGHT 18"	GLASS HEIGHT 20"
2	2'-1 5/8"	2'-5 5/8"	2	3'-1 5/8"	3'-5 5/8"
3	3'-2"	3'-8"	3	4'-8"	5'-2"
4	4'-2 3/8"	4'-10 3/8"	4	6'-2 3/8"	6'-10 3/8"
5	5'-2 3/4"	6'-0 3/4"	5	7'-8 3/4"	8'-6 3/4"
6	6'-3 1/8"	7'-3 1/8"	6	9'-3 1/8"	10'-3 1/8"
			7	10'-9 1/2"	11'-11 1/2"

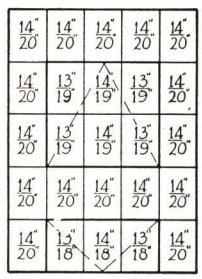




GLASS SIZES FOR STANDARD PIVOTED WINDOWS

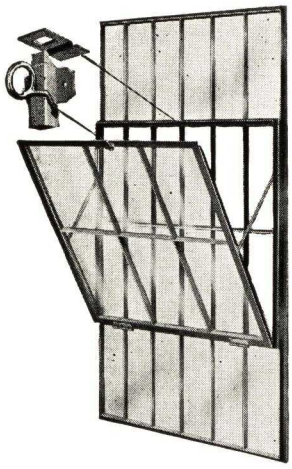


GLASS SIZES FOR STANDARD COMMERCIAL PROJECTED WINDOWS



TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES **PIVOTED AND COMMERCIAL PROJECTED STEEL WINDOWS**	PLATE No. **A-1-B** OCTOBER, 1937

SECURITY STEEL WINDOWS



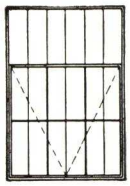
TRUSCON Security Windows are used in store buildings, warehouses and other buildings where adequate ventilation and at the same time protection from prowlers is required. The Truscon Security Window is a ventilated window and guard combined in one complete unit. The ventilator is bottom hinged and is equipped with friction side arms to hold the ventilator in any open position up to a maximum opening of 30° to 35°.

The nominal glass size of the main frame lights is only 6 in. x 18 in. which prevents entrance even if the glass is removed. The ventilator lights are 12 in. x 18 in. In glazing, glass is placed in the ventilator lights and the fixed lights above and below the ventilators but glass is not installed in the guard portion, which then forms a grille over the ventilator opening. Windows are prepared for INSIDE putty glazing. Nine sizes of Security Windows are carried in stock. Mullions for joining two or more Security Windows side by side in one opening are also carried in stock.

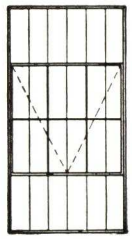
42-1-4-0

43-1-8-0

62-1-6-0

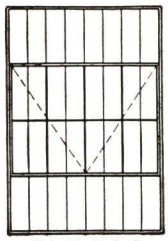


63-1-12-0



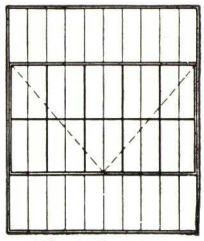
64-1-12-1

83-1-16-0



84-1-16-1

10-3-1-20-0



10-4-1-20-1

SCREENS

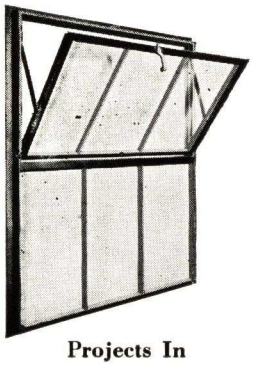
Screens, when required, shall be attached to the outside of the main frame opposite ventilator opening.

Screens have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given two coats of baked enamel before shipment.

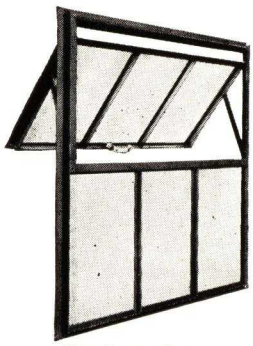
SIZES

Type	Width ft.—in.	Height ft.—in.
42-1-4-0	2—1⅝	3—1⅝
43-1-8-0	2—1⅝	4—8
62-1-6-0	3—2	3—1⅝
63-1-12-0	3—2	4—8
64-1-12-1	3—2	6—2⅜
83-1-16-0	4—2⅜	4—8
84-1-16-1	4—2⅜	6—2⅜
10-3-1-20-0	5—2¾	4—8
10-4-1-20-1	5—2¾	6—2¾

UTILITY STEEL WINDOWS PROJECTED TYPE



Projects In



Projects Out

TRUSCON Utility Steel Windows are ideal for use in buildings, such as garages, stores, shops, basements, area-ways, etc. The ventilator is a balanced projecting type which in opening swings outwardly, leaving the interior entirely unobstructed, or with ventilator projecting inwardly when it is desired to have no part of the window extending beyond the outside face of the building and for economical screening.

Utility Steel Windows are furnished with ventilator projecting out or projecting in and in only one size—3 ft. 4 in. wide by 3 ft. 7⅝ in. high. Glass size in fixed portion of sash is 13 by 20 in. in the two outside lights, and 12 by 20 in. in center fixed light. The glass size of lights in the ventilator is 12 by 20 in.

SCREENS

For Utility Windows with inward projecting ventilators, a fixed screen attached to the outside is the more practical. The ventilator can be opened or closed without opening or disturbing the screen. Screens are easily removed or installed from the inside. When conditions do not permit the use of inward projecting ventilators, top hinged screens are used. This screen must be opened before operating the ventilator. Screens shall have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Screen frames have baked enamel finish.

STEEL BASEMENT WINDOWS

TRUSCON Steel Basement Windows are manufactured of heavy hot-rolled sections; cannot warp, swell nor stick; always operate easily under all conditions. The continuous double overlapping weathering around Truscon Windows is an exclusive feature that makes them weather-proof.

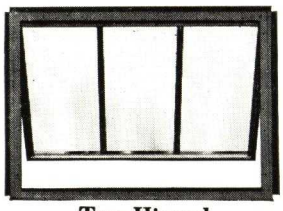
Basement Windows are made either with the hinge at the top or at the bottom, both types having the same sizes and both opening in. The bottom-hinged window has an arm to limit the opening. Furnished complete with hardware.

Steel frame screens with 16 mesh bronze cloth and clips, are available if required.

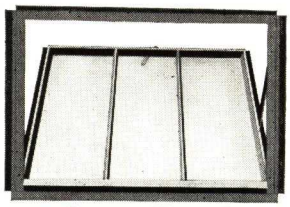
FIVE STANDARD SIZES

Glass Size, in.	No. of Lights Wide	Window Opening, ft.—in.
*10 x 12	2	1-11¼ x 1- 3
10 x 12	3	2-9½ x 1- 3
10 x 20	3	2-9½ x 1-11
14 x 20	2	2-7¼ x 1-11
12 x 18	3	3-3½ x 1- 9

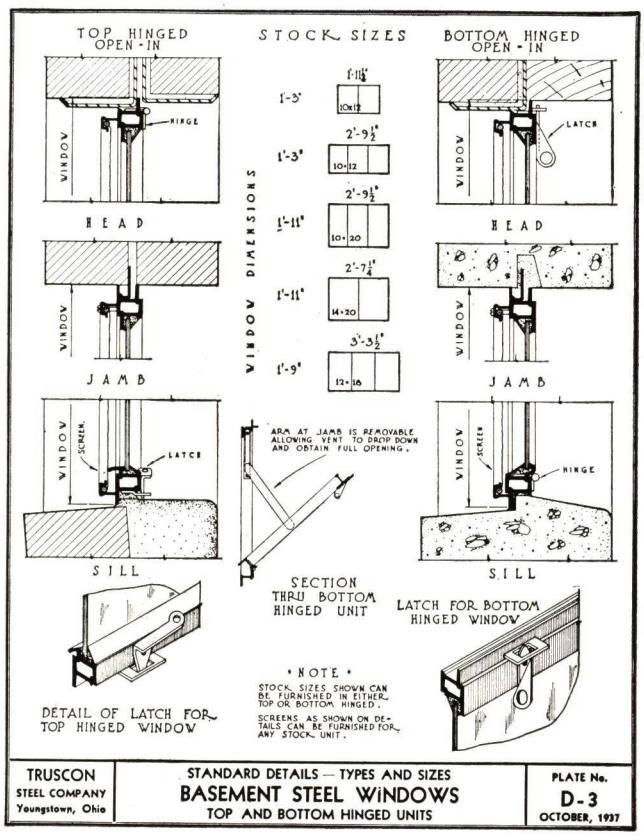
*Furnished in top hinged only.



Top Hinged

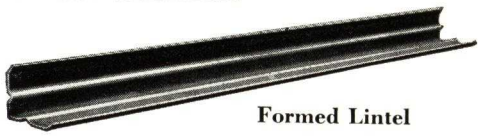


Bottom Hinged



LINTELS

FORMED STEEL



Formed Lintel

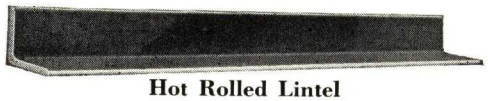
THE continuous horizontal ribs and the turned edges of Truscon formed lintels provide much greater strength than plain formed angles of the same size. The horizontal ribs and turned edges provide a more proper bed for the brick and mortar. The 3½-in. horizontal leg does not extend beyond the face of the brick. All lintels receive a shop coat of paint before shipment. Lintels are stocked in all Truscon warehouses for immediate delivery. Truscon formed Steel Lintels can be used for any opening up to 6 ft. 3 in. not having concentrated loads occurring directly above the lintel. They are stocked in eleven sizes, as follows:

3½ in. x 3½ in. x 11 gauge—2 ft., 2 ft. 6 in., 3 ft., 3 ft. 6 in., 4 ft. and 4 ft. 6 in. lengths.

4½ in. x 3½ in. x 9 gauge—5 ft., 5 ft. 6 in., 6 ft., 6 ft. 6 in., and 7 ft. lengths.

HOT ROLLED

TRUSCON Hot Rolled Lintels are made from new stock; no reclaimed material is used. These lintels are carried in stock, cut to standard lengths. 3½ in. x 3½ in. x ¼ in. Angle; 11 sizes, 2 ft. 0 in. to 7 ft. 0 in. (multiples of 6 in.); 4 in x 3½ in. x $\frac{5}{16}$ in. Angle; 8 sizes, 5 ft. 6 in. to 9 ft. 0 in. (multiples of 6 in.).



Hot Rolled Lintel

COAL CHUTES

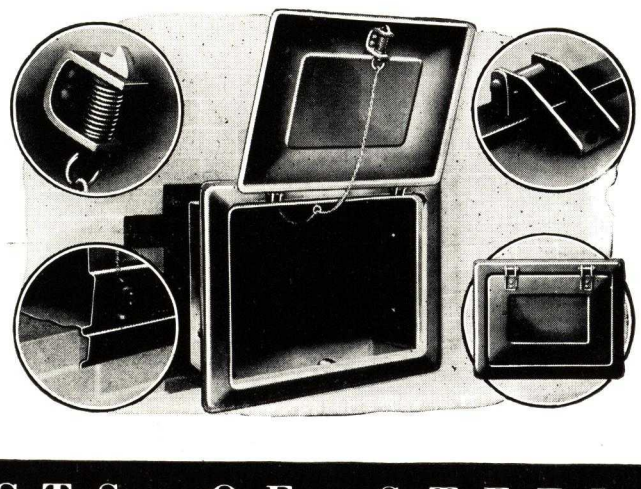
PRESSED STEEL

TRUSCON Coal Chute is break-proof, weather-tight, thief-proof and simple. No castings are used . . . the door and frame being made entirely of heavy, rust-resisting copper-bearing pressed steel.

The neat, trim appearance adds considerably to the attractiveness of the exterior of the house, and the sturdy door which closes into a deep recess in the frame excludes drafts.

The Truscon Coal Chute is complete with positive spring latch, slotted hinges which hold the door open when desired, and formed lugs which act as anchors for cementing in masonry openings. Every detail has been developed to afford the maximum utility in keeping with the proper architectural style.

Two standard sizes—Frame 27 x 21¼ in. Door opening, 22½ x 16¾ in. Depths, 8 or 12 in.

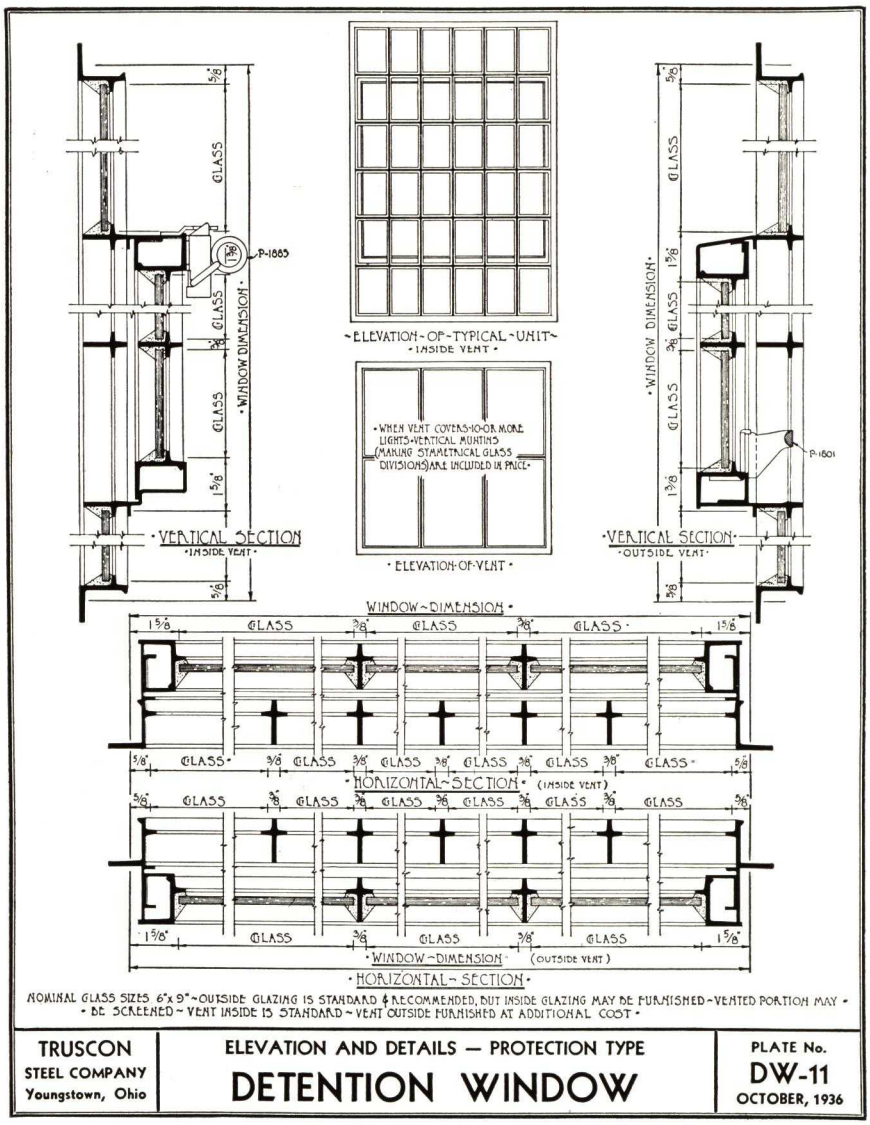


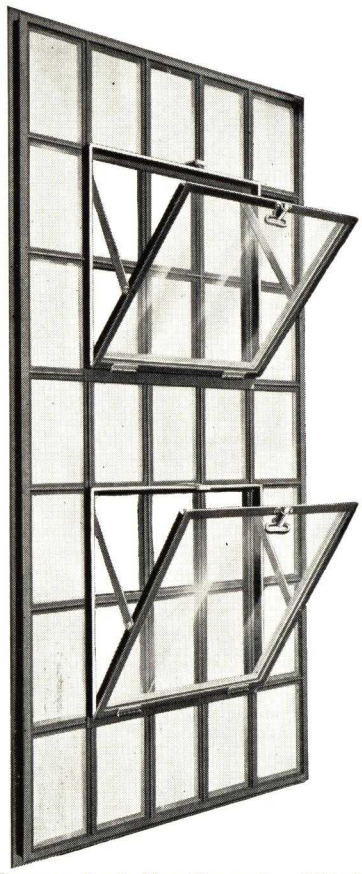
DETENTION WINDOWS

MODERN penology definitely recognizes that light and ventilation are among the most certain incentives to the good behavior and health of the inmates. In selecting windows for detention institutions such as prisons, reformatories and psychopathic hospitals, the designs require a variety of types to conform to the different conditions found within an institution.

Security is the first consideration, but it is obvious that what might be adequate security for one class of inmates is totally inadequate for a more desperate class. It is with the object of providing maximum efficiencies consistent with the degree of detention-security desired that the various types of Truscon Detention Windows were developed.

Included in the full line of Truscon Detention Windows are types which will meet all requirements for such institutions. Each type offers particular advantages—in some cases, maximum security; in others maximum lighting and ventilation. The individual needs will, in each case, govern the selection. Only a few of the many types of these detention windows can be portrayed on these pages. Information on other types may be secured upon request.





Truscon Lock Bar Detention Window

LOCK BAR WINDOW

This window can be furnished with sections of various weights, depth and thickness. All windows, however, incorporate the maximum in detention and ventilating features.

DOUBLE HUNG WINDOW

This type of detention window is the Truscon solid steel, plate type, galvanized and weather-stripped, double-hung window. A steel bar grille is welded securely to the exterior frame providing a positive barrier when window is open. Where desired, these windows can be equipped with a combination fly screen and protective wire guard to be installed on the inside.

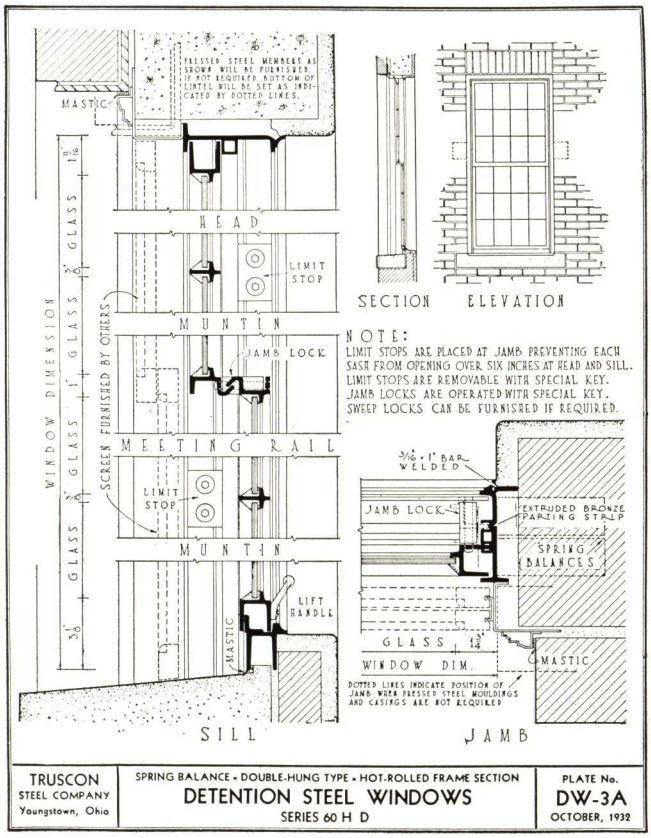
OTHER DETENTION WINDOWS

Donovan Windows and Casement Windows can be designed to incorporate detention features and still retain the salient features peculiar to their design.

DETENTION WINDOWS (Continued)

WHERE the exterior and interior simplicity of ordinary institutional construction is the desirable feature the Spring Balanced Detention Window fulfills those requirements admirably. In this type of window ventilation may be obtained at top and bottom.

Truscon Spring Balanced Detention Window Series 60HD



SPECIFICATIONS
Series 60HD

1 *General*—All windows so indicated on the plans and elevations and called for in these specifications shall be Heavy Detention Spring Balance Double-Hung windows as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 *Material*—Frames and Sash: Shall be constructed of hot-rolled new billet steel; sub-frames, if required, shall be of 14-gauge material; exterior moulding, if required, of 18-gauge.

3 *Construction*—(a) *Frame Members* — Head and jamb members shall be of a special rolled section, depth of section to be not less than 4½ in., including cove moulding, which is an integral part of the frame section. Intersection of sections to be welded and ground smooth where necessary. When required, an exterior sub-frame and moulding may be applied to frame section. (*See detail.*)

(b) *Sash*—Shall be constructed of channel sections not less than $1\frac{7}{16}$ in. deep, the corners to be welded.

(c) *Muntins*—Where required, shall be hot-rolled sections. At intersections, there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

4 *Weathering*—A specially designed combination weathering and parting strip of extruded bronze shall be provided at the jambs. *(See detail.)* There shall be a weathering block provided at the meeting rail.

5 *Hardware*—(a) All units shall be equipped with one pair of malleable lift handles and sweep lock at meeting rail. Special jamb detention locking device, key operated, can be furnished in place of sweep lock at option of customer.

(b) Each sash shall be suspended on two enclosed spring balances as furnished by TRUSCON STEEL COMPANY. Spring balances shall be enclosed in a metal housing and securely attached to frame. Metal tapes shall be properly attached to sash and shall hang vertically and run freely at all times.

(c) Limit stops shall be provided to prevent upper or lower sash from opening more than 6 in. and shall be removable only by a special key. Upon removal, top or bottom sash can slide full height of opening.

6 *Anchors* —Units shall be equipped with strap anchors at jamb for attaching to building construction.

7 *Painting*—(a) All windows shall be given one coat of protective paint, before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Note: Screen guides can be furnished and applied to exterior sub-frame of Series 60HD windows to permit application of vertical sliding screen. (See detail.)

CONTINUOUS WINDOWS

IDEALLY suited for use in industrial plants where the nature of the work requires frequent and rapid ventilation of the building. They are also most practical for any buildings having monitors or saw-tooth faces, or where banks of windows reach considerable heights, necessitating remote control for operation. Particularly valuable where large areas are enclosed which cannot be satisfactorily lighted through the side walls.

The scientific application of Continuous Windows to a building insures maximum daylight and gives absolute control of temperature and ventilation, resulting in a marked effect on increased efficiency and reduction of production costs. The quick opening and closing of glass areas by mechanical operation is invaluable to clear out gases, smoke and excessive heat and to protect against sudden change in weather.

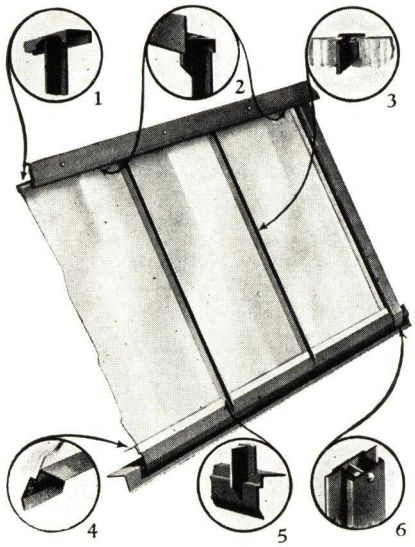
PRESSED STEEL FRAMES

Particularly well adapted for use in modern structures, especially powerhouses, where the effect of massive strength must be accurately met. Made of heavy gauge steel, absolutely uniform and economical. Details furnished on request.

1 ***Welded Mortise and Tenon Joint***—Prevents twisting.

2 ***Hinge Member***—With hot rolled top rail channel provides continuous bearing and weathering without use of flashing.

3 ***Glazing Clips***—Of heavy brass on vertical muntin bars.



4 ***Bottom Rail***—Hot rolled bottom rail wide flange adds lateral stiffness to window. For the attachment of mechanical operator.

5 ***Welded Mortise and Tenon Joint***—

6 ***Vertical Mullion***—Provides for expansion.

MECHANICAL OPERATORS

TRUSCON is confident that its many years' experience in solving the problems of daylighting and ventilation through the medium of a complete line of steel windows has placed it in an enviable position to design and manufacture efficient and dependable mechanical window operators.

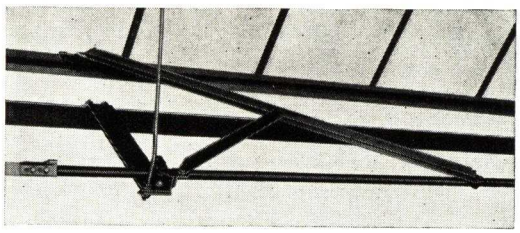
Operators for opening and closing Continuous, Pivoted and Projected types of windows are available in either hand or motor operated units. They are made in various designs and capacities to meet the requirements of any job. On this and the following page are illustrated a few representative types of operators designed and manufactured by TRUSCON STEEL COMPANY.

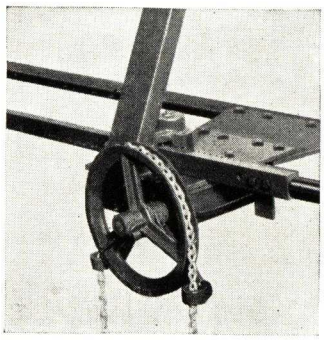
We offer the services of our Engineering Department to assist you in working out problems of operator design or installation. Truscon maintains offices in all key cities for your convenience.

CONTINUOUS WINDOW OPERATOR TENSION TOGGLE TYPE

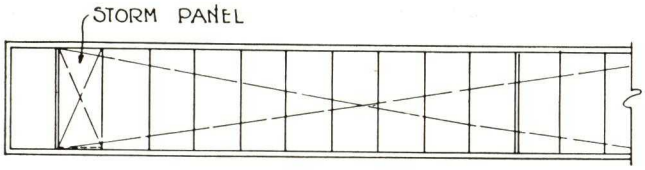
THE operator illustrated below is of the Tension Toggle Type and is used to operate long runs of Continuous windows. For short runs, Rack and Pinion type may be used due to lighter loads.

Tension Toggle Arms as illustrated below are made in four sizes to suit the different standard heights of continuous windows.



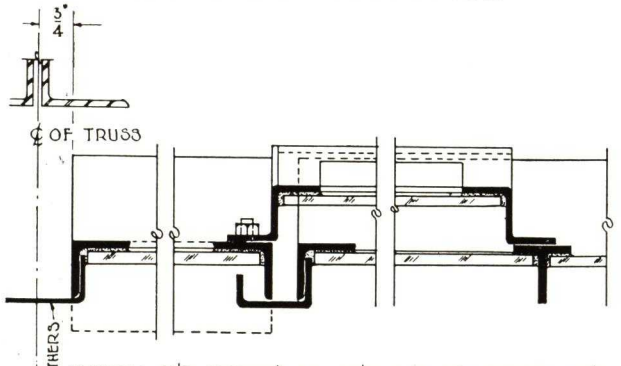


At the left is illustrated P-750 Hand Chain Operated Power for tension toggle operation of medium length runs. This power can be motorized conveniently when electrical control is desired. For longer runs, CP-69 Light Duplex Power, or CP-83 Heavy Duplex Power is recommended. Powers CP-69 and CP-83 must be motorized.

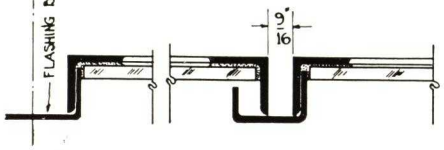


OUTSIDE ELEVATION

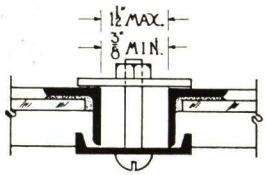
TABLE OF OPENING HEIGHTS, SASH HEIGHTS AND GLASS SIZES				
HEIGHT OF OPENINGS	HEIGHT OF SASH	GLASS SIZES		
		STANDARD PANELS	END PANELS	STORM PANELS
2'-10 1/2"	3'-0"	23 3/8" x 32 3/4"	22 5/8" x 32 3/4"	23 3/8" x 32 3/4"
3'-10 1/2"	4'-0"	23 3/8" x 44 3/4"	22 5/8" x 44 3/4"	23 3/8" x 44 3/4"
4'-10 1/2"	5'-0"	23 3/8" x 56 3/4"	22 5/8" x 56 3/4"	23 3/8" x 56 3/4"
5'-10 1/2"	6'-0"	23 3/8" x 68 3/4"	22 5/8" x 68 3/4"	23 3/8" x 68 3/4"



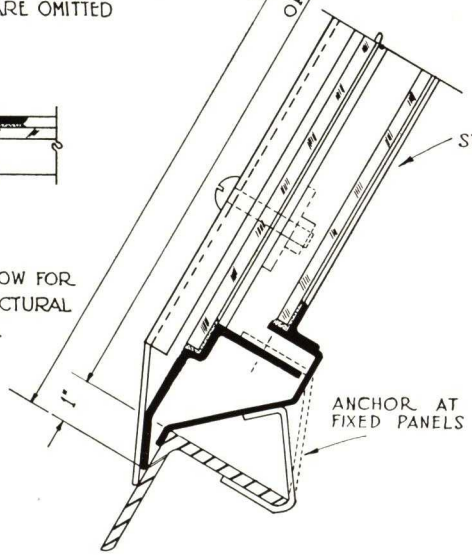
TYPICAL END SECTION SHOWING END AND STORM PANEL



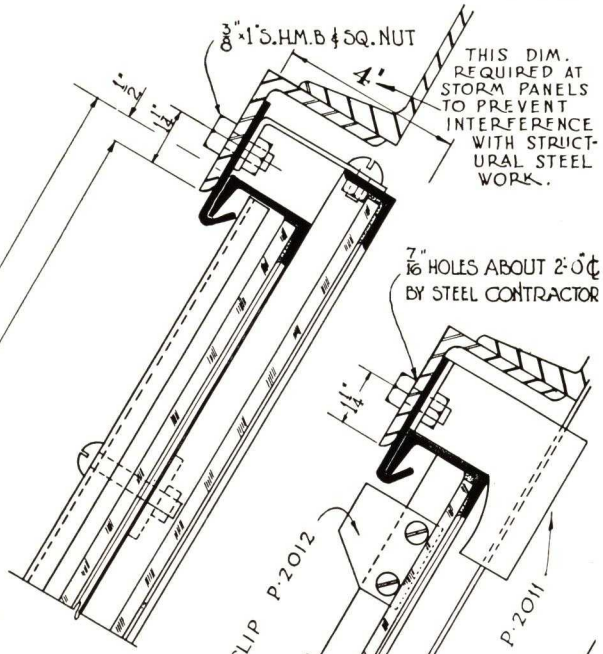
END CONDITION WHERE STORM PANELS ARE OMITTED



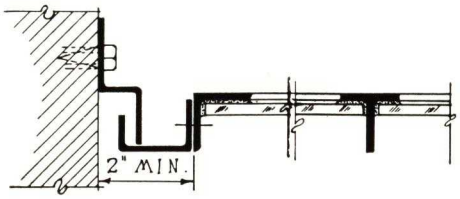
MULLION
ADJUSTABLE TO ALLOW FOR VARIATION IN STRUCTURAL STEEL WORK



SECTION SHOWING SWING SASH AND STORM PANEL.
SASH CAN BE HUNG IN EITHER VERTICAL OR SLANTED POSITION.



DETAIL SHOWING SAFETY CLIPS AT THE HEAD



TYPICAL END SECTION SHOWING SWING SASH EXTENDING TO JAMB

-NOTES-

STANDARD UNITS OF TRUSCON CONTINUOUS SASH ARE DESIGNED FOR TRUSS SPACING OF 20'-0" ON CENTER. HOWEVER THEY MAY BE COMBINED TO FILL OPENINGS ANY WIDTH OR HEIGHT.

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS CONTINUOUS STEEL WINDOWS	PLATE No. E-7 OCTOBER, 1937

WORM AND GEAR OPERATORS

Lever Arm

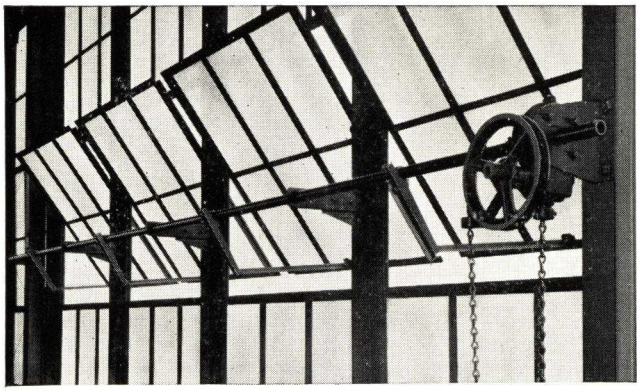
ILLUSTRATED below is lever arm operator, hand chain controlled, which operates a torsion shaft with lever arms to actuate one or more tiers of horizontal pivoted ventilators. Vertical shaft with mitre gear and hand wheel can be used instead of hand chain.

The worm and gear is fully enclosed and runs in oil tight housing.

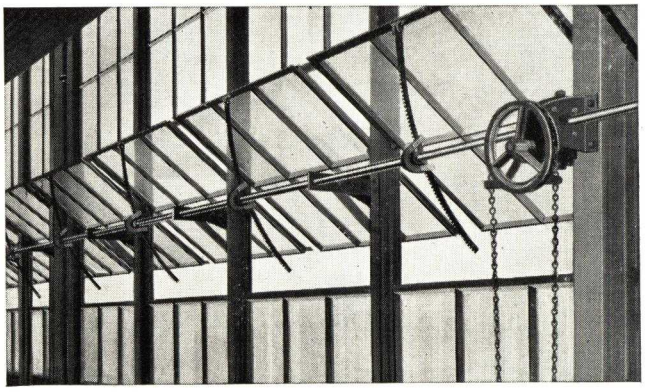
Rack and Pinion

RACK and pinion operator is practically the same as worm and gear, except that rack and pinion arms are used instead of lever arms, and the torsion shaft makes one or more complete rotations. This type is generally used for operating projected and top pivoted ventilators but may be used when it is desired to operate long lines of horizontal pivoted ventilators.

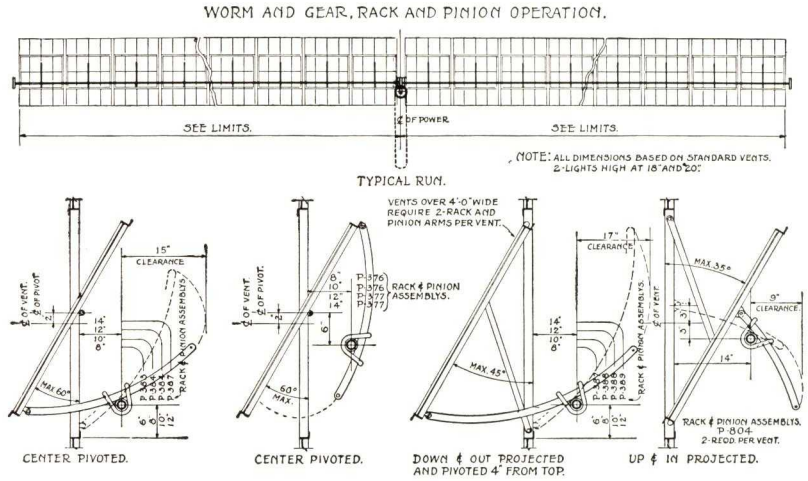
In addition to hand chain or vertical shaft with mitre gear and hand wheel control, rack and pinion operators can be electrically controlled.



Typical Illustration of Lever Arm Operation of Horizontally Pivoted Windows



Typical Illustration of Rack and Pinion Operation of Horizontally Pivoted Windows



STEEL DOORS

WALLS may be built of steel, reinforced concrete or other masonry construction but unless the doors in them are of steel construction the advantages are largely lost. Of equal importance is the ability of steel doors to withstand constant hard usage, to be unaffected by weather conditions and to last indefinitely.

These important factors have all had primary consideration in the design and manufacture of Truscon Steel Doors. The satisfaction these doors are giving in innumerable industrial, commercial and other buildings is the best testimonial to their efficiency. Steel doors are fire-resisting, long-lived and do not warp, swell or rot. They protect the contents against theft, trespass and the elements.

The best commercial grades of steel go into doors made by Truscon. This steel is formed into rectangular tubes and structural hot rolled shapes, which after many years of application have been accepted by outstanding engineers as the most practical for use in steel door construction.

Truscon, with its many years' experience in the design and manufacture of Steel Doors of all types and sizes, is in excellent position to work with architects and engineers in selecting the proper type of steel door to fit in perfectly with the design and construction details of any building.

DOORS DESIGNED AND MANUFACTURED BY TRUSCON

INDUSTRIAL STEEL DOORS—SERIES 31

Carried for immediate delivery in Truscon warehouses throughout the United States. Recommended for use in basements, furnace and boiler rooms, fire exits, service entrances, utility spaces and pent houses of hotels, residences, apartments, schools, hospitals, office buildings, and for general use in grain elevators, ramp enclosures, oil pump houses, freight and power houses, filling stations, public and private garages and factories.

INDUSTRIAL STEEL DOORS—SERIES 100

Designed for factory, mill, commercial and warehouse buildings where requirements make necessary heavier construction.

ACCORDION DOORS—SERIES 500

An extremely fast-operating door, especially designed to meet such conditions as are presented by railroad shops, fire stations, round houses, public garages and any structure where unobstructed openings for entrances are desirable. Can be designed for motor operation.

VERTICAL LIFT DOORS—SERIES 600

Because of their simplicity of operation, are used in warehouses, freight houses, garages and factories. This type of door can be furnished in practically any size. An outstanding feature is the unobstructed opening when the door is fully opened.

VERTICAL LIFT-SWING AND TURN-OVER DOORS

Heavy, rugged doors, especially desirable for pier and warehouse work. They operate easily, swing overhead and require a minimum of head room when opened.

OVERDOORS—SERIES 204 AND 386

They offer many advantages. They are light, fast doors, spring counter-balanced, giving economy of space both inside and outside, protection from the weather, neat appearance and ease of operation. Especially recommended for us in garages, service stations and repair shops where a minimum of head room is available.

BIFOLD DOORS—SERIES 700

Require a minimum amount of head room and medium sizes are hand operated. They are used principally in freight houses, warehouses, shipping and loading platforms. They are mechanically correct and require less head room than many other types that fold above the opening.

CANOPY DOORS—SERIES 800

An all purpose door. It fits in anywhere, from the small individual garage to the largest openings in bus or truck terminals. It requires a minimum amount of head room.

AIRPLANE HANGAR DOORS

Fabricated in several types to meet the requirements of any type of hangar. They are:

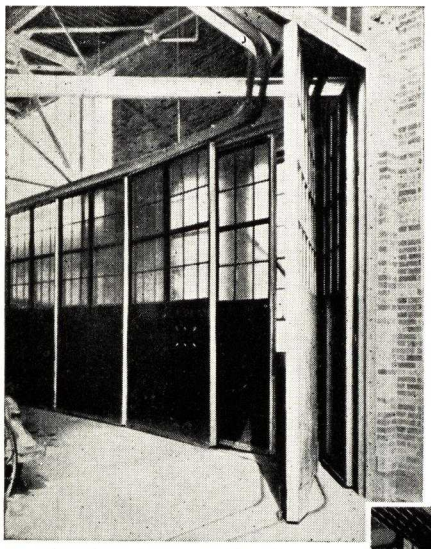
Straight Slide Type—The strongest, finest and most serviceable and economical door of this type on the market. There is no limit to either the height or width of opening that this type of door will meet.

Round the Corner Type—The door units operate on separate tracks which are curved at the ends of the openings and which parallel each other. When open, the doors lie against the inside wall of the hangar to allow maximum opening.

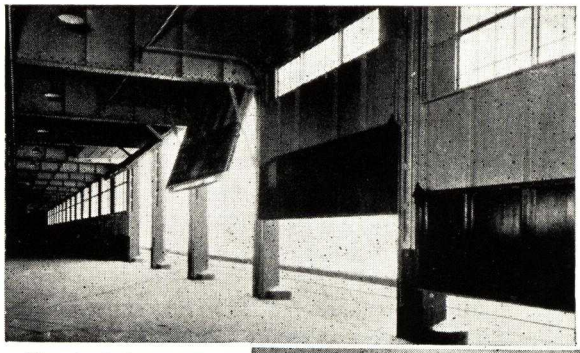
Morgan Type—Is the latest design of our electrically operated overhead hangar steel doors.

Telescopic Canopy Type—Is adaptable to buildings where it is desirable to keep the center of gravity of the door outside the front trusses and where a restricted canopy overhang is necessary.

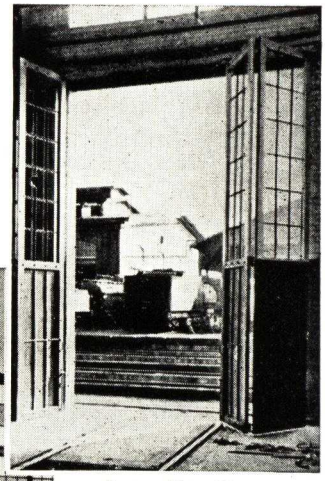
Original Canopy Type—Full canopy type. No telescoping or folding features and is not counterweighted. Each leaf is hinged at the top of the opening and swings upward, virtually increasing the area of the building by the full height of the door. Especially adapted for hangar buildings.



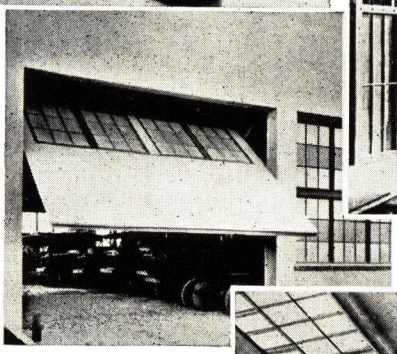
Airplane Hangar Doors
Round the Corner Type



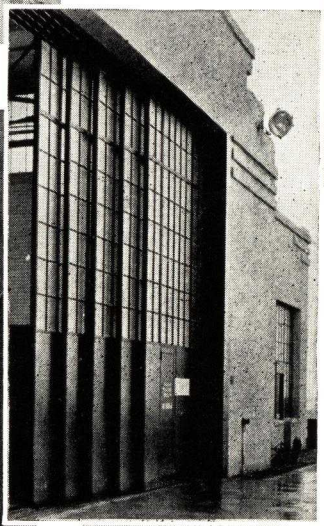
Vertical Lift-Swing Doors

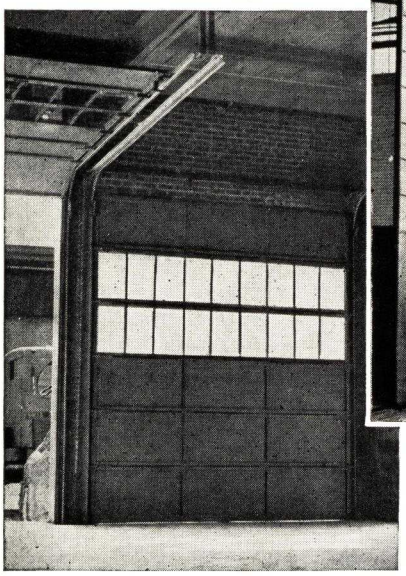


Accordion Doors

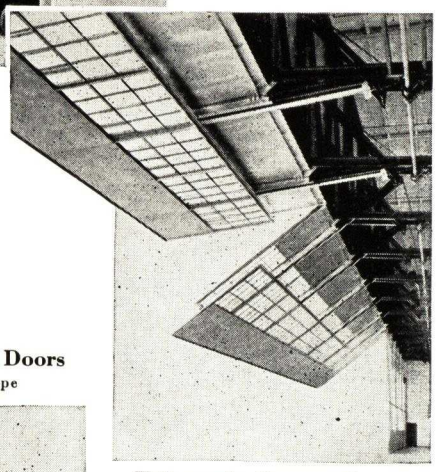


Canopy Doors



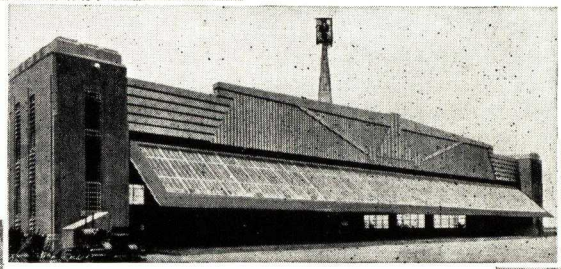


Overdoors
Operating Overhead

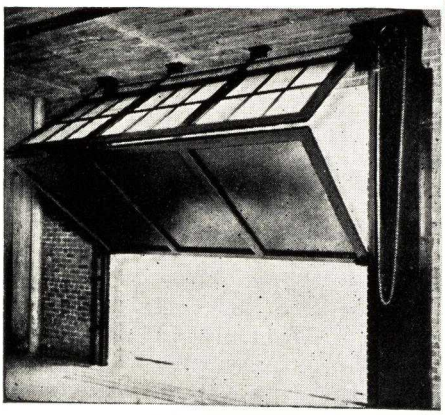


Telescopic Canopy Doors

Airplane Hangar Doors
Straight Track Type

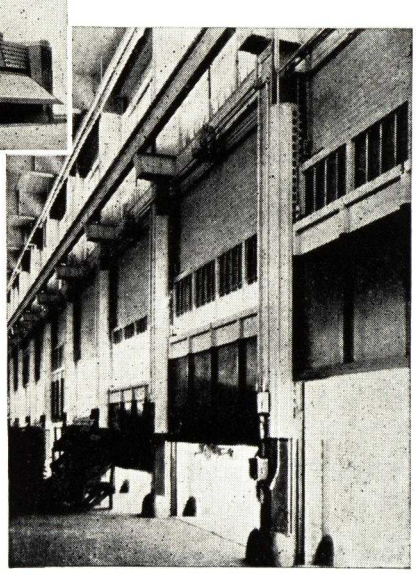


Airplane Hangar Doors
Original "Kanopy" Type



Bifold Doors

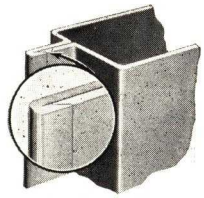
Industrial Doors
Swing and Slide Types



Vertical Lift Doors

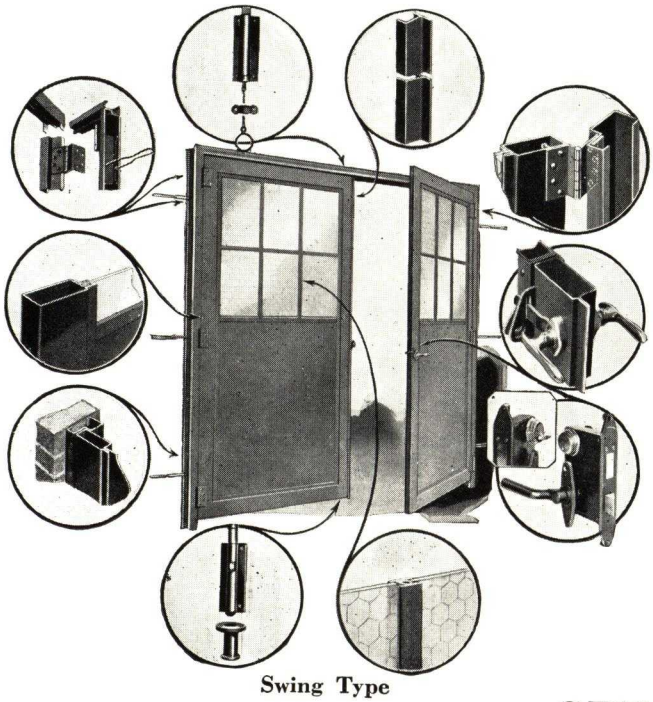
INDUSTRIAL STEEL DOORS, SERIES 31 SWING AND SLIDE TYPES

ADAPTABLE for use in basements, rear entrances, boiler rooms, fire exits and similar places in residences, hotels, apartments, schools, churches, shops, warehouses, filling stations and stores. Swing Type Doors can be furnished with heavily reinforced pressed steel door frames, prepared for standard hardware.

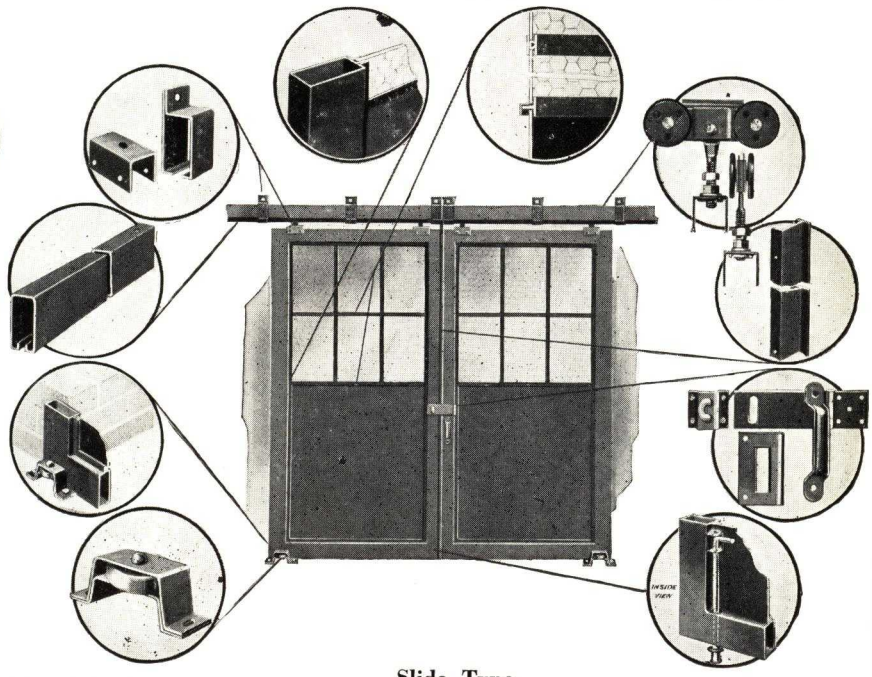


Lock Seam Tube

Stiles and rails are made of pressed steel tubing with lock seam. All corners are carefully fitted and welded solidly. The large size of the 14 gauge tube, 1¾x5 in., provides an ideal condition for welding. Practically 14 in. of weld at corners.



Swing Type



Slide Type

SPECIFICATIONS

1 *General*—All doors so indicated on the plans and elevations and called for in these specifications shall be Industrial Steel Doors, Series 31, either swing or slide type, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 *Material*—(a) The stiles, top rail and bottom rail of the Industrial Steel Door, Series 31, shall be constructed of 5x1¾ in. 14-gauge pressed steel tube.

(b) Sash panel shall be an integral part of the door leaf securely welded to the door rails.

(c) The steel panels shall be constructed from annealed and patent leveled sheets.

3 *Construction*—(a) The corners shall be of welded construction with all joints face welded and ground smooth.

(b) The upper portion of the door shall be fitted with a sash panel, all members of which shall be welded in place. The glass shall be held in place with putty and glazing angles.

Note: Upper portion of the door many be fitted with solid steel panel at no extra charge.

(c) The lower portion of the door shall be equipped with patent level steel panels electrically spot-welded to the stiles and rails and shall not be less than 18-gauge in thickness.

4 *Hardware*—(a) Each swinging leaf shall be equipped with three (3) heavy steel half surface template butt hinges.

(b) All swing doors shall be equipped with Truscon standard mortise cylinder lock with solid bronze face, or lever latch and padlock brackets (specify which). Cylinder lock to be equipped with spring bolt operated by lever handles and dead bolt operated by thumb turn from inside and by key from outside.

(c) Where swing doors are hung in pairs one leaf shall be equipped with foot bolt and spring top bolt.

(d) Sliding leaves shall be hung from four (4) wheel roller-bearing trolleys and shall be provided with guides, handles, stops and hasp and staples as shown on the drawings.

(e) With all double swing or double slide doors, an astragal shall be provided by door manufacturer.

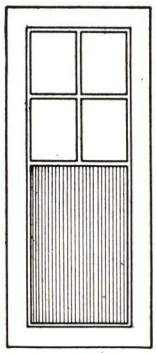
5 *Pressed Steel Door Frame*—(a) All Industrial Doors shall be provided with a pressed steel door frame made of 14-gauge steel. Unless otherwise specified, these frames shall be supplied by the door manufacturer.

(b) Frame shall be either fastened directly to the structural steel or shall have anchors built into the masonry. The frame, regardless of jamb anchorage, shall extend 3 in. below finished floor line.

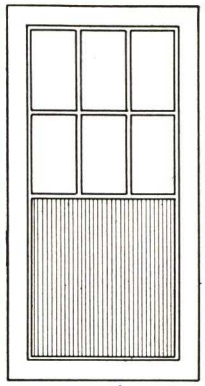
6 *Painting*—All doors and frames shall receive one coat of protective paint before shipment.

7 *Erection*—The erection of all doors shall be performed by the door manufacturer.

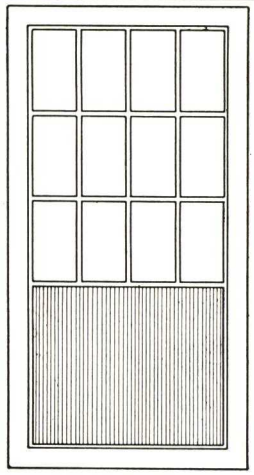
SINGLE DOORS SHOWN ARE COMBINED TO MAKE DOUBLE DOORS LISTED ON CHART BELOW



NO'S 26-70 & 30-70



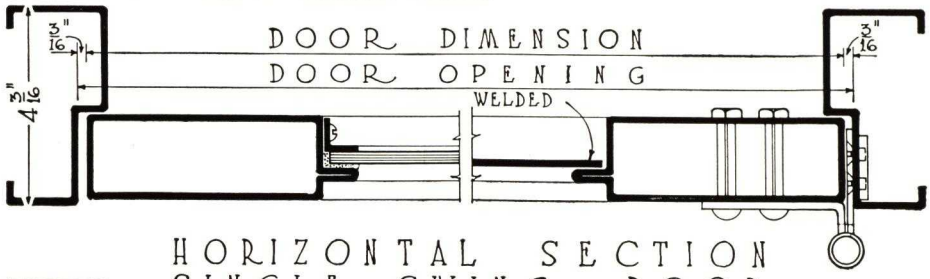
NO'S 36-76 & 40-80



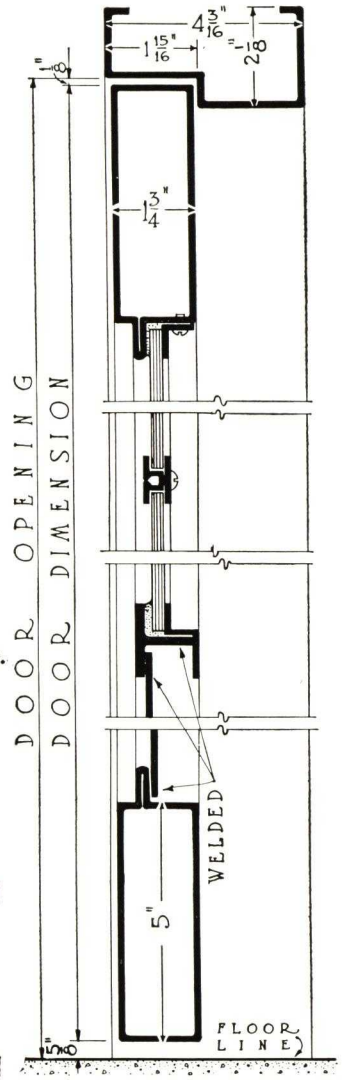
NO 50-100

STOCK SIZES					
DOOR NO.	SIZE OF DOOR WIDTH	HEIGHT	SIZE OF OPG. WIDTH	HEIGHT	GLASS SIZE
SINGLE SWING					
26-70	2'-5 5/8"	6' 11 1/4	2'-6"	7'-0"	9 7/16" × 16"
30-70	2'-11 5/8"	6'-11 1/4	3'-0"	7'-0"	12 7/16" × 16"
36-76	3'-5 5/8"	7'-5 1/4	3'-6"	7'-6"	10 1/8" × 19"
40-80	3'-11 5/8"	7'-11 1/4	4'-0"	8'-0"	12 1/8" × 22"
50-100	4'-11 5/8"	9'-11 1/4	5'-0"	10'-0"	12" × 22 1/2"
DOUBLE SWING					
50-70	4'-11 5/8"	6'-11 1/4	5'-0"	7'-0"	9 7/16" × 16"
60-70	5'-11 5/8"	6'-11 1/4	6'-0"	7'-0"	12 7/16" × 16"
70-76	6'-11 5/8"	7'-5 1/4	7'-0"	7'-6"	10 1/8" × 19"
80-80	7'-11 5/8"	7'-11 1/4	8'-0"	8'-0"	12 1/8" × 22"
100-100	9' 11 5/8"	9'-11 1/4	10'-0"	10'-0"	12" × 22 1/2"

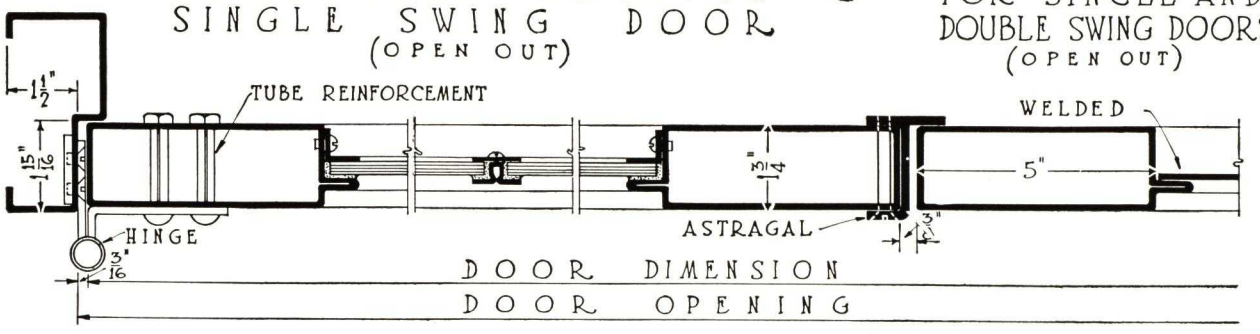
NOTES:
ALL DOORS ARE FURNISHED WITHOUT GLASS. GLAZING ANGLES HOWEVER ARE FURNISHED FOR ALL LIGHTS. DOORS MAY BE FURNISHED WITH SOLID STEEL PANELS IF DESIRED.



HORIZONTAL SECTION
SINGLE SWING DOOR
(OPEN OUT)



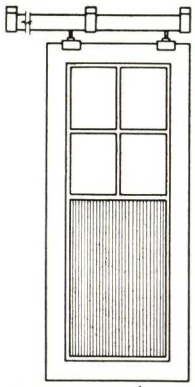
VERTICAL SECTION
FOR SINGLE AND
DOUBLE SWING DOORS
(OPEN OUT)



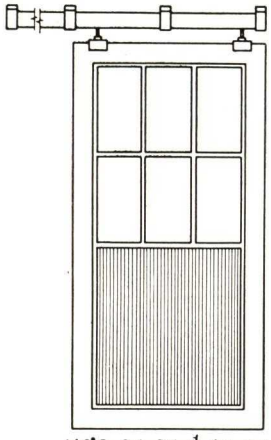
HORIZONTAL SECTION THRU DOUBLE SWING DOOR
(OPEN OUT)

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS - SWING UNITS **INDUSTRIAL STEEL DOORS** SERIES 31	PLATE No. **J-1** OCTOBER, 1934

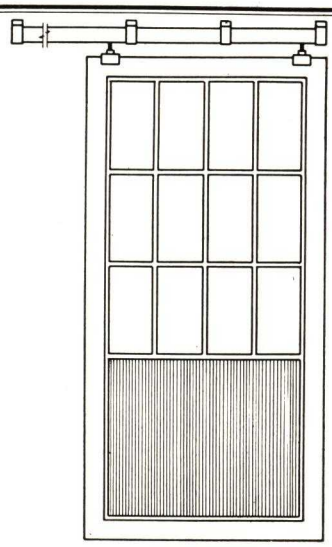
SINGLE DOORS SHOWN ARE COMBINED TO MAKE DOUBLE DOORS LISTED ON CHART BELOW



NO'S 26-70 & 30-70



NO'S 36-76 & 40-80

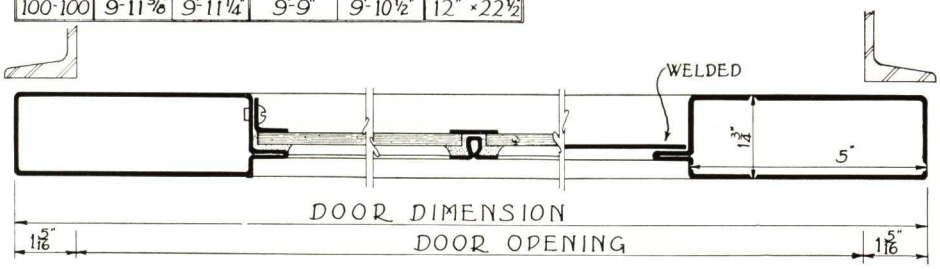


NO 50-100

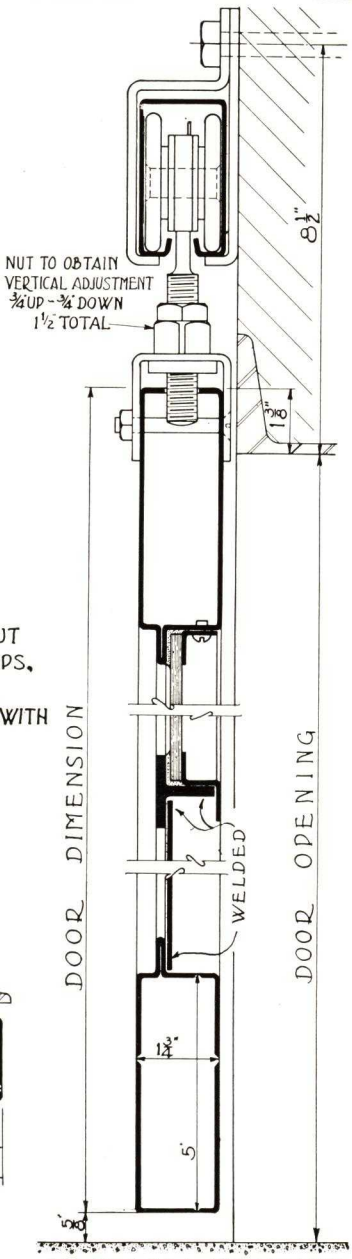
STOCK SIZES					
DOOR NO.	SIZE OF DOOR WIDTH	HEIGHT	SIZE OF OPENING WIDTH	HEIGHT	GLASS SIZE
SINGLE SLIDE					
26-70	2'-5 5/8"	6'-11 1/4"	2'-3"	6'-10 1/2"	9 7/16" × 16"
30-70	2'-11 5/8"	6'-11 1/4"	2'-9"	6'-10 1/2"	12 7/16" × 16"
36-76	3'-5 5/8"	7'-5 1/4"	3'-3"	7'-4 1/2"	10 1/8" × 19"
40-80	3'-11 5/8"	7'-11 1/4"	3'-9"	7'-10 1/2"	12 1/8" × 22"
50-100	4'-11 5/8"	9'-11 1/4"	4'-9"	9'-10 1/2"	12" × 22 1/2"
DOUBLE SLIDE					
50-70	4'-11 5/8"	6'-11 1/4"	4'-9"	6'-10 1/2"	9 7/16" × 16"
60-70	5'-11 5/8"	6'-11 1/4"	5'-9"	6'-10 1/2"	12 7/16" × 16"
70-76	6'-11 5/8"	7'-5 1/4"	6'-9"	7'-4 1/2"	10 1/8" × 19"
80-80	7'-11 5/8"	7'-11 1/4"	7'-9"	7'-10 1/2"	12 1/8" × 22"
100-100	9'-11 5/8"	9'-11 1/4"	9'-9"	9'-10 1/2"	12" × 22 1/2"

NOTES:

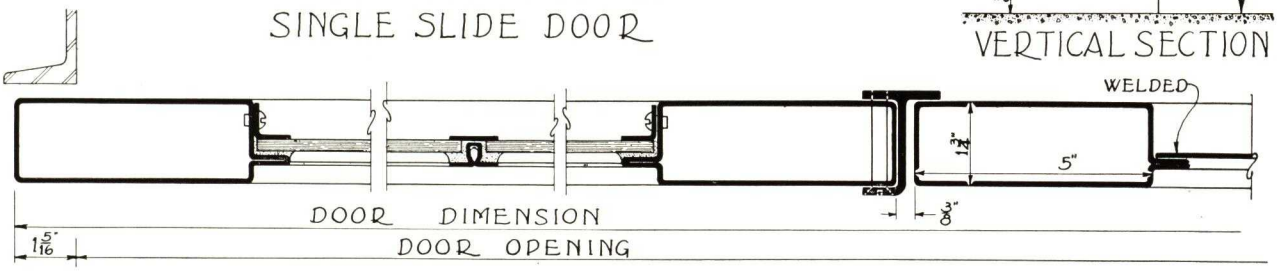
ALL DOORS ARE FURNISHED WITHOUT GLASS. GLAZING ANGLES AND STRIPS, HOWEVER, ARE FURNISHED FOR ALL LIGHTS. DOORS MAY BE FURNISHED WITH SOLID STEEL PANELS IF DESIRED.



HORIZONTAL SECTION
SINGLE SLIDE DOOR



VERTICAL SECTION



HORIZONTAL SECTION ~ DOUBLE SLIDE DOOR

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS - SLIDE UNITS INDUSTRIAL STEEL DOORS SERIES 31	PLATE No. J-2 OCTOBER, 1934

INDUSTRIAL DOORS FOR LARGE OPENINGS

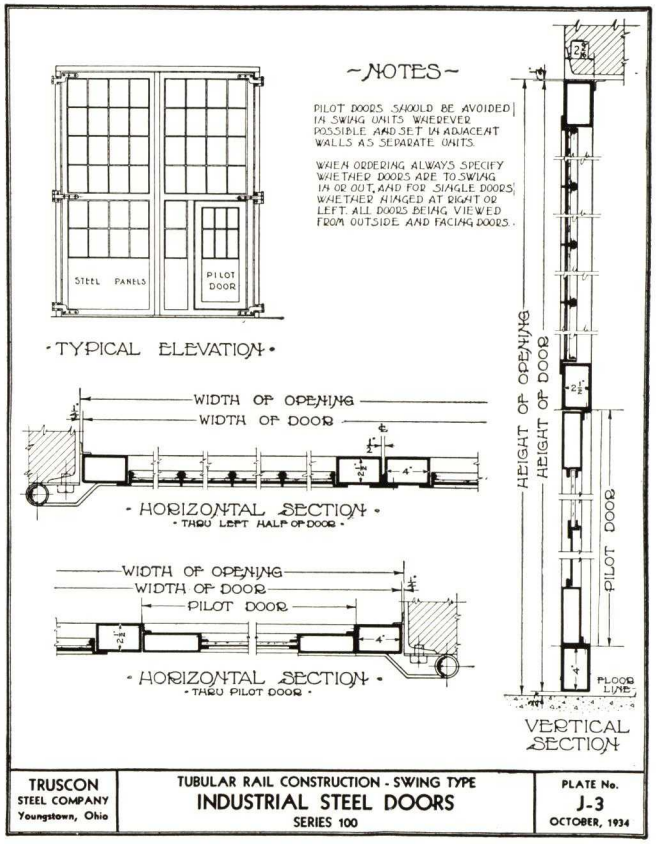
SERIES 100

Heavy Tubular Rail, Swing and Slide Types

INDUSTRIAL Doors for large openings meet every requirement of practical use and protection and are designed to fit the conditions of industry. They have been perfected through extensive use in industrial buildings of all kinds and are furnished in practically any size and arrangement.

These Doors are made of the best grade of commercial steel. Stiles and rails of tubular steel, mitred, internally reinforced and solidly welded at all corners, give maximum strength.

Primarily designed for large openings, but they are also economical in smaller openings where the doors are subjected to extremely hard and rough usage. Suggestions on types of Industrial Doors to meet special conditions will be furnished without obligation.



SPECIFICATIONS

1 ***General***—All doors so indicated on the plans and elevations and called for in these specifications shall be Industrial Steel Doors, Series 100, either swing or slide type, as manufactured by TRUSCON STEEL COMPANY, Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 ***Material***—(a) The stiles, top rail, cross rails and bottom rail, shall be constructed of 13-gauge cold-rolled welded steel tubing, 4x2½ in.

(b) All Sash panels included in doors shall be constructed from hot-rolled new billet steel.

3 ***Construction***—(a) The corners and intersections shall be welded and ground smooth. Welds must develop the full strength of the section. Corners shall be mitred.

(b) The upper portion of the door shall be fitted with a window built up of Truscon Standard members, welded in place and glazed with glass lights as shown on the drawings. The glass shall be held in place with putty and continuous steel glazing angles.

(c) The lower portion of the doors shall be fitted with not less than 13-gauge patent leveled steel panel welded in place.

4 ***Frames***—Where shown on the drawings, steel channel frames for all door openings shall be furnished by this contractor.

5 ***Hardware***—(a) Swinging doors shall be equipped with Truscon Standard heavy steel strap hinges. (Ball bearing butt hinges can be furnished if specified.)

(b) All swing doors shall be equipped with Truscon Standard mortise cylinder locks, or lever latch and padlock brackets (specify which) and heavy handles inside and out. (Cylinder lock not furnished on leaves larger in area than 60 sq. ft.)

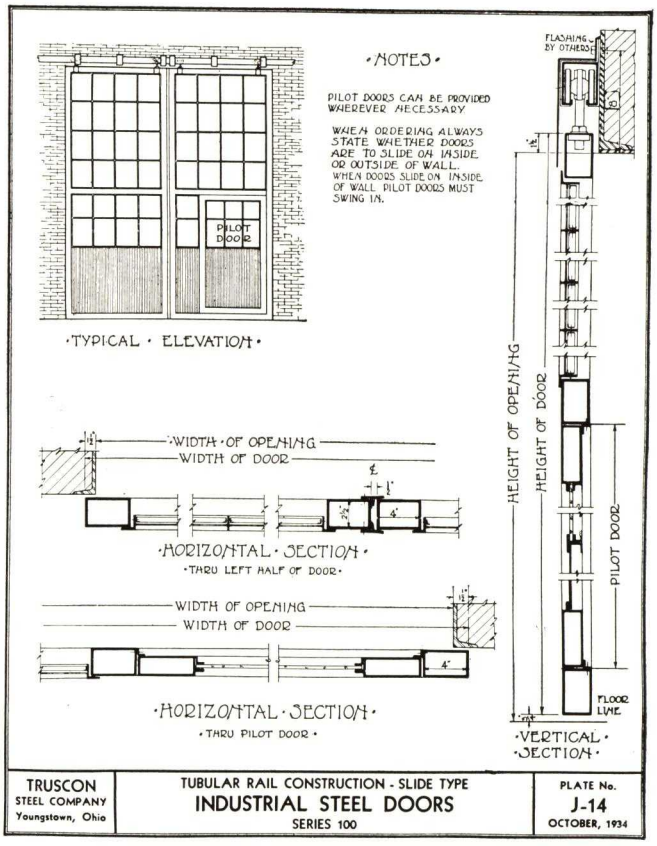
(c) Where swing doors are hung in pairs, one leaf shall be equipped with Truscon Standard cane bolt at bottom and spring bolt at top.

(d) Sliding doors shall be hung from Truscon Standard four-wheel trolleys and heavy channel track and shall be equipped with back stops, binders and complete hardware as shown on the drawings.

(e) An astragal shall be provided by door manufacturer with all double swing or double slide doors.

6 ***Painting***—All doors and frames shall receive one coat of protective paint before shipment.

7 ***Erection***—The erection of doors shall be performed by the door manufacturer.



OVERDOORS OPERATING OVERHEAD—SERIES 204 AND 386

THIS type of door offers many advantages; economy of space, protection from the weather, neat appearance, ease of operation and great practicability.

The spring balances used in Truscon Overdoors are considerably oversize, as are all the other operating parts. The doors are sure to provide a long time of satisfactory service. Overdoors require no drilling, cutting or fitting—all operations, including a coat of paint, are completed in the shop, so that field assembly is reduced to a minimum. The sturdy steel sections are of the finest quality material and workmanship.

Ball-bearing rollers, positive weathering at jambs and high quality cylinder lock are provided on every door.

SPECIFICATIONS

SERIES 204, OVERDOORS FOR SMALL OPENINGS

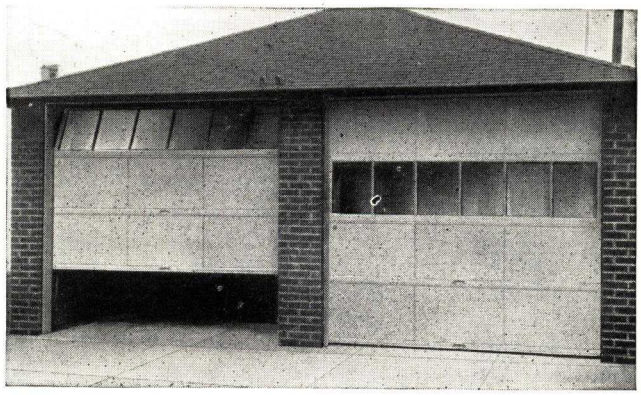
1 ***General***—All doors so indicated on the plans and elevations and called for in these specifications shall be Overdoors, Series 204, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 ***Material***—The stiles and rails of all leaves shall be constructed from hot-rolled new billet steel. The steel panels shall be constructed from cold-rolled sheets full pickled, reannealed and patent leveled and not less than 18 gauge thickness.

3 ***Construction***—All joints shall be mortised and tenoned and air-hammer riveted. One leaf shall be open for glass to be held in place with continuous glazing angles. The balance of the leaves shall be fitted with steel panels held in place with continuous glazing angles and weatherproofed with mastic.

An astragal shall be spot-welded to the top member of each meeting rail to insure weathering between each leaf.

4 ***Hardware***—Doors shall be complete with Truscon Standard Hardware for Spring Operation. Hardware shall consist of all necessary rollers, track, weathering for jambs, lift handles and cylinder lock. A pull-down cord shall be provided.



5 ***Painting***—All doors shall be given one coat of protective paint before shipment.

6 ***Erection***—The erection of all doors shall be performed by the door manufacturer.

SERIES 386, OVERDOORS FOR LARGE OPENINGS

1 ***General***—All doors so indicated on the plans and elevations and called for in these specifications shall be Overdoors, Series 386, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No. substitution shall be made without the written approval of the architect.

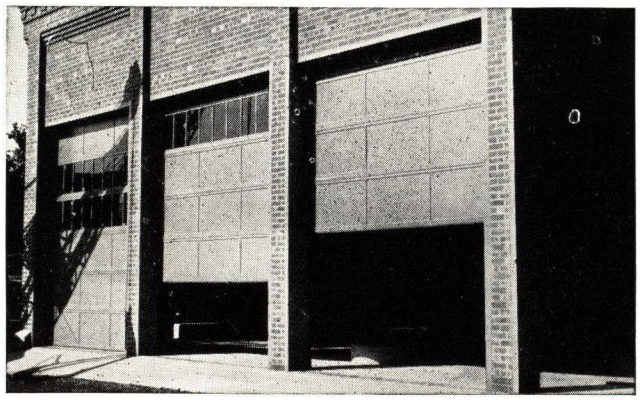
2 ***Material***—The stiles and rails of all leaves shall be constructed from hot-rolled new billet steel. The steel panels shall be constructed from cold-rolled sheets full pickled, reannealed and patent leveled and not less than 18 gauge thickness.

3 ***Construction***—(a) Outside frame members shall be made of special channel sections, with mitred corners welded and ground smooth. An astragal shall be spot welded to top member of each meeting rail to insure weathering between leaves.

(b) Glass panels shall be arranged for inside putty glazing with continuous glazing angles.

(c) Solid steel panels shall be held in place with continuous glazing angles and weatherproofed with mastic.

4 ***Hardware***—All doors shall be counter-balanced by a torsion spring placed above the lintel. In addition, a geared hand chain operator shall be provided on all doors. Locking shall be by means of a throw bolt placed on inside at one jamb.



5 ***Painting***—All doors shall receive one coat of protective paint before shipment.

6 ***Erection***—Erection of all doors shall be performed by the door manufacturer.

ACCORDION DOORS SERIES 500HT AND 500LT

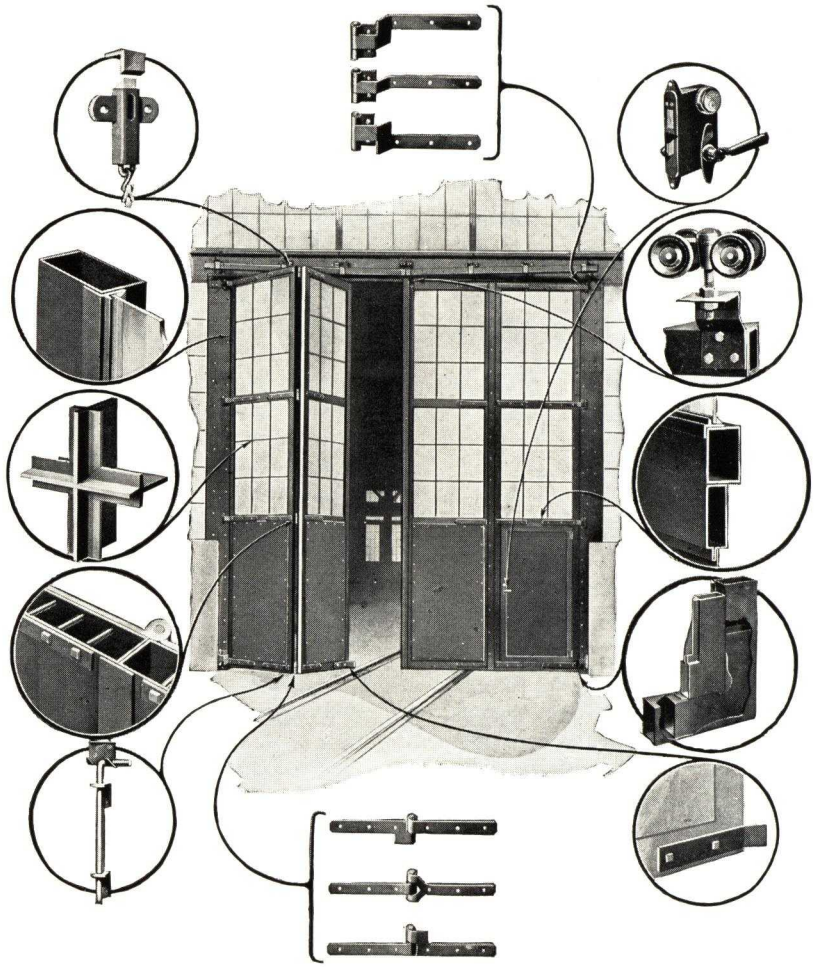
THESE doors are used extensively in railroad structures and other buildings requiring maximum height of door opening with minimum obstruction. They are particularly adaptable in extremely wide or high openings where a swing door would ordinarily be used.

In operation, the leaves fold against one another and since they cannot bind or jam, one person can open or close them easily. They are hung at the top from heavy four-wheel roller and ball-bearing swivel trolleys, running in a heavy channel track placed above the opening. They are shipped with complete hardware, such as track, brackets, trolleys, hinges, cane bolts and binders.

Stiles and rails are made from tubing. For Series 500HT, 4x2½ in. 13-gauge tube is standard; for Series 500LT, standard industrial tube 1¾x5 in. 14-gauge is used. The large tube is used when doors are for extremely large openings or for smaller doors subject to unusually rough and hard treatment. For openings receiving ordinary usage, the lighter tube will give years of uninterrupted service.

These doors are furnished with steel windows in the upper portion, although, if desired, they can be furnished with solid steel panels throughout.

Besides adding permanently good appearance to a building, Truscon Accordion Steel Doors afford greatly improved weather protection and long life. Maintenance has proved remarkably low because of their rigid construction and inherent permanent qualities.



SPECIFICATIONS, SERIES 500HT AND 500LT

1 ***General***—All doors so indicated on the plans and elevations and called for in these specifications shall be Accordion Doors, either Series 500HT or Series 500LT, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 ***Material***—(a) For Series 500HT, all stiles and rails shall be constructed of 13-gauge cold-rolled welded steel tubing 4x2½ in.

(b) For Series 500LT, all stiles and rails shall be constructed of 14-gauge, pressed steel tube 5x1¾ in.

(c) Sash panels shall be of Truscon standard design and made from Truscon specification new billet steel.

3 ***Construction***—(a) All corners and intersections shall be welded and ground smooth. The weld must develop the full strength of the section.

(b) The upper portion shall be fitted with sash panels according to Truscon standard design.

(c) Series 500HT—The lower portion of the doors shall be fitted with 13-gauge patent leveled steel sheets.

(d) Series 500LT—The steel panels shall not be less than 18-gauge patent leveled steel sheets.

4 ***Frames***—As shown on the drawings, steel channel frames for all door openings shall be furnished and installed by the contractor furnishing structural steel.

5 ***Hardware***—(a) Doors shall be equipped with Truscon standard heavy steel hinges, track, brackets, trolleys and complete hardware.

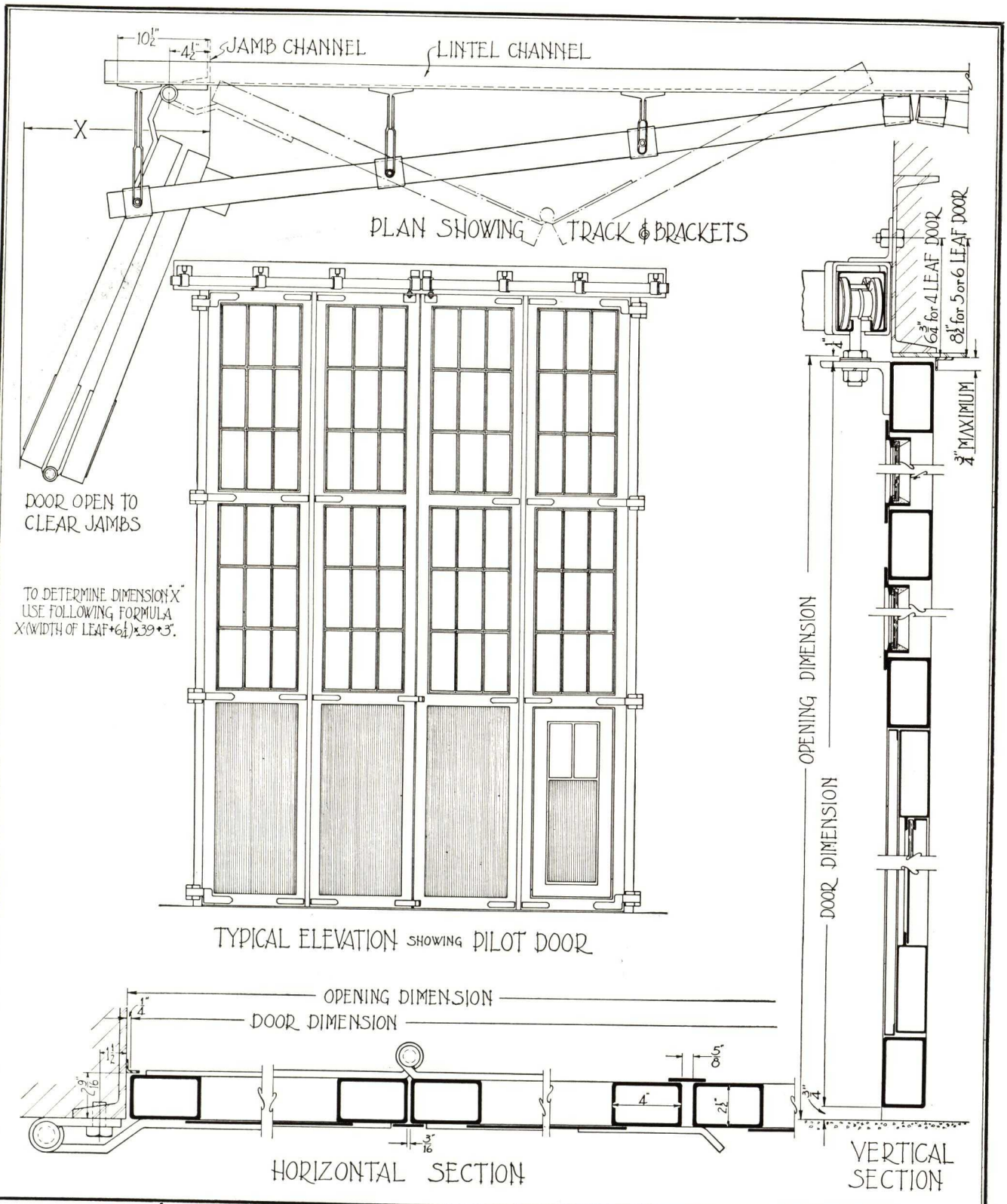
(b) Pilot doors, where shown, shall be fitted with cylinder spring latch and dead bolt heavy mortise cylinder lock or lever latch with padlock brackets (specify which) and heavy steel handles.

(c) Each opening having four leaves, two of which fold to each jamb, shall have two (2) cane bolts at the bottom and two (2) spring bolts at the top, one set for each pair of leaves.

(d) Standard astragals shall be furnished as weathering between all leaves.

6 ***Painting***—All doors shall receive one coat of protective paint before shipment.

7 ***Erection***—The erection of doors shall be performed by the door manufacturer.



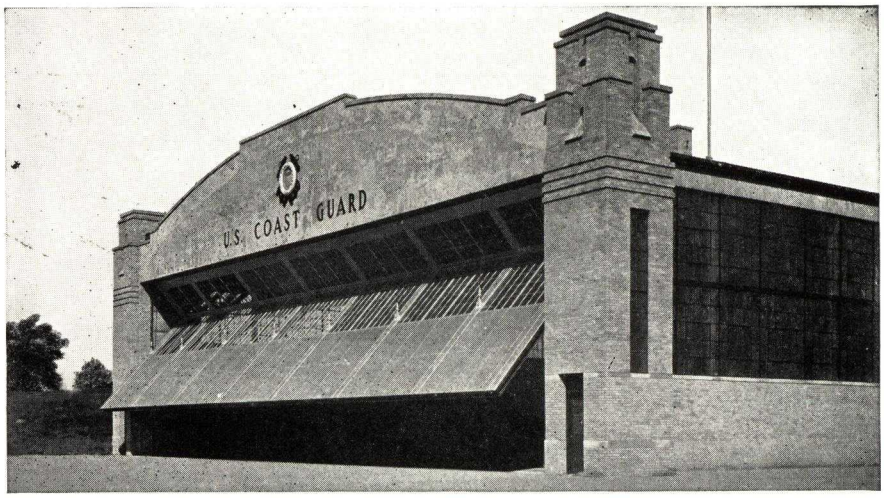
TRUSCON STEEL COMPANY Youngstown, Ohio	TUBULAR RAIL CONSTRUCTION ACCORDION STEEL DOORS SERIES 500 H. T	PLATE No. J-4 OCTOBER, 1934

OVERHEAD HANGAR STEEL DOORS

MORGAN TYPES

THE Overhead Morgan Type of hangar doors manufactured by TRUSCON STEEL COMPANY represent the latest design of a mechanically operated door for small, medium and large openings. This door is designed in three types, each covering a specific range of openings and built to operate most efficiently in the opening for which it is designed. All Morgan doors are perfectly counterbalanced in any operating position. Doors are usually electrically operated but in an emergency can be manually operated.

The three types of Overhead Morgan Doors are described below and detailed on pages 63, 64 and 65.



MORGAN TYPE NO. 1 DOOR

For the Smaller Openings

The Morgan Type No. 1 Door is designed especially for all openings not exceeding 26 ft. high. The horizontal components of the wind load, upon the door when it is operating, are carried by a built-up girder across the bottom of the door through rollers to the jambs of the opening. The door is divided horizontally into two leaves, the top leaf being hinged to the lintel and the bottom one hinged to the top leaf. As the door is lifted by the cables the door-leaves fold together, the top leaf inside the building behind the lintel and the bottom leaf partly inside and partly outside to form a canopy over the opening. The top leaf serves as a baffle to prevent the wind blowing in over the top of the door to damage the roof covering and to prevent the heat from escaping from the top of the hangar if the door is partially opened.

This door requires a minimum of head room and can be easily installed in hangars constructed with bow string trusses.

MORGAN TYPE NO. 2 DOOR

For Medium Size Openings

The Morgan Type No. 2 Door is practically the same design as the No. 1 Door but can be used in openings up to and including 36 ft. high. With this door the clear opening width can be unlimited by dividing the door into sections, each of which is independently operated and recommended not over 100 ft. in width. This door is designed to withstand a 20-pound wind load in any operating position. The system of bracing used on the inside of the door transmits the wind load from the face of the moving door to the structural frame overhead.

MORGAN TYPE NO. 3 DOOR

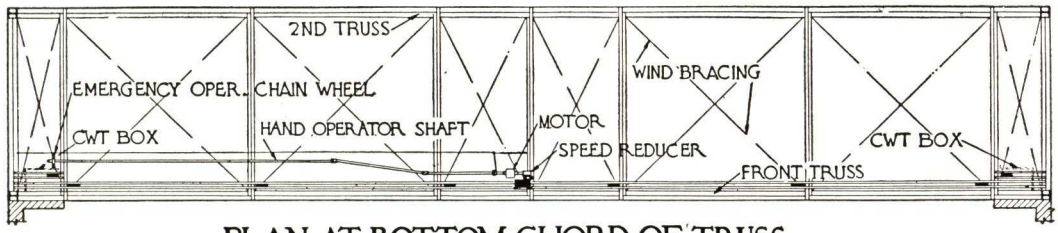
For Extremely Large Openings

Morgan Type No. 3 is designed and developed for hangars where the door opening is extremely high and wide. This type of door has no practical limits in height and offers many important advantages through its ingenious construction.

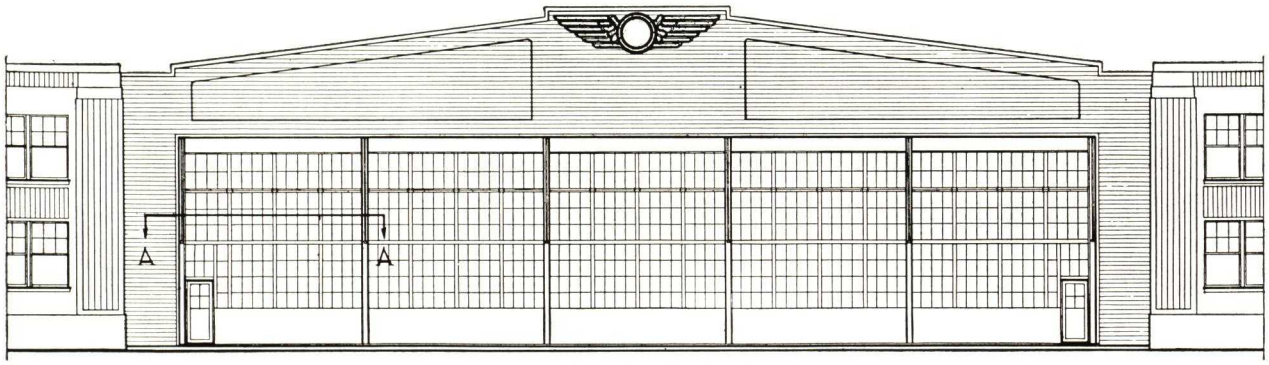
The operation of this door is a vertical lift swing movement. The bottom leaf rises vertically until it clears one half of the opening height and then both leaves swing out and up to form a canopy and leave the entire opening unobstructed. The operation of this door can be stopped completely at any stage of its opening, thus permitting the entrance or exit of small planes without opening the door to its extreme height. This not only saves time but prevents complete heat loss during inclement weather. The lower leaf moving upward in a vertical position permits the placing of planes closer to the opening on the apron than is possible with types No. 1 and No. 2.

The clearance lines are close to the door and no part of the door even in operation extends inside the hangar, making space available for the storage of planes close to the door. All operating mechanism is on the inside of the hangar.

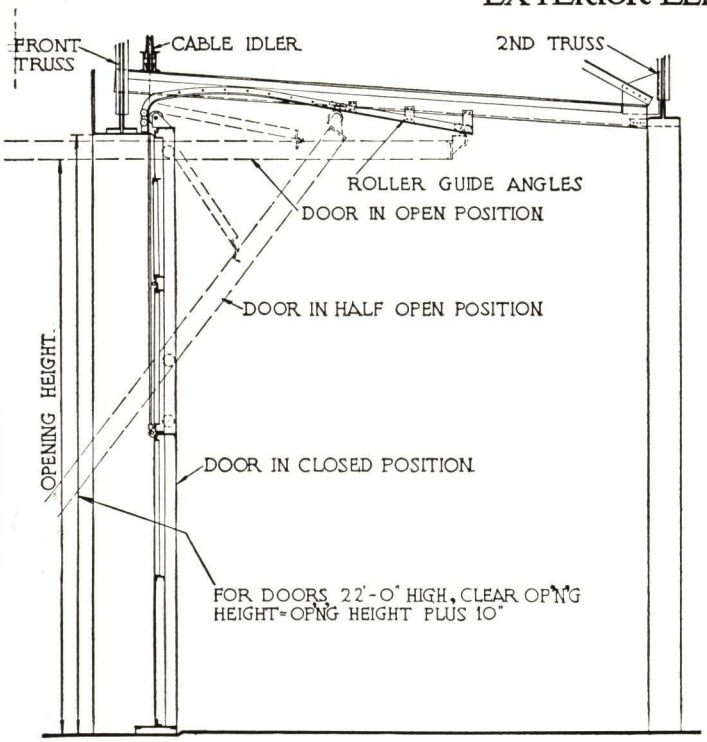
BOTTOM CHORD BRACING ARRANGED
TO SUIT VERTICAL MEMBERS OF TRUSS



PLAN AT BOTTOM CHORD OF TRUSS

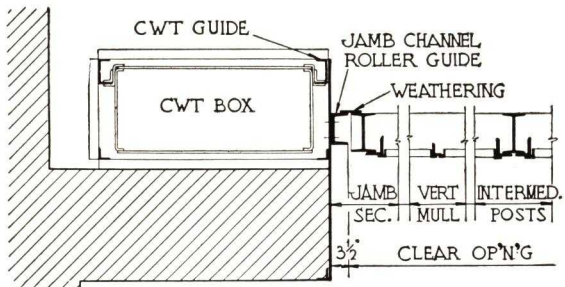


EXTERIOR ELEVATION



VERTICAL SECTION

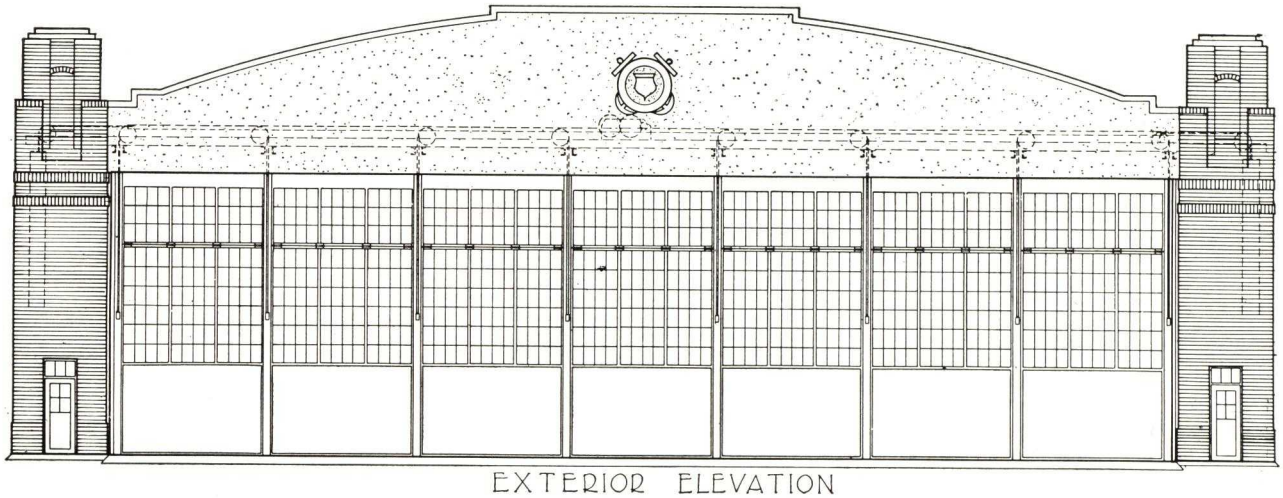
NOTE: DOOR MOVEMENT IS CONTROLLED BY LIMIT SWITCHES. ~ THREE BUTTON CONTROL STATION AND REVERSING RELAY PANEL ARE LOCATED ON SIDEWALL ADJACENT TO JAMB OF OPENING, EXACT LOCATION TO BE DETERMINED BY ARCHITECT



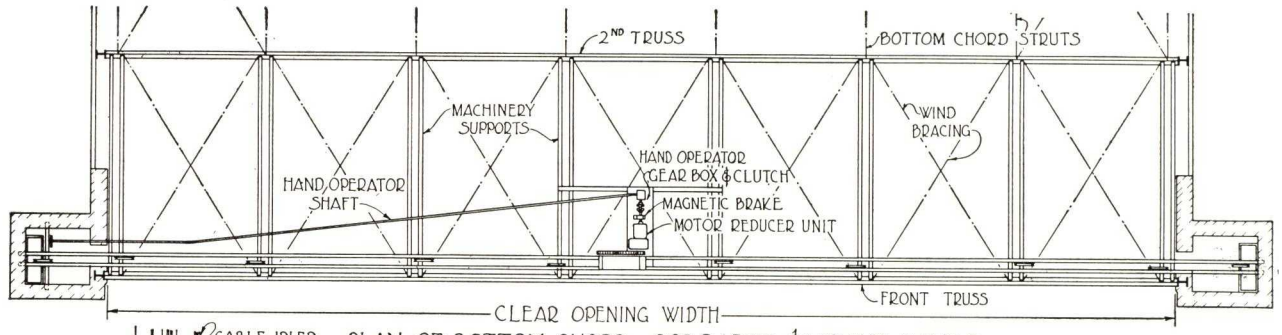
HORIZONTAL SECTION AT A-A

NOTE: ROLLER GUIDE CHANNELS AT THE JAMBS OF THE DOOR ARE NECESSARY TO KEEP THE LEAF IN ITS PROPER POSITION WHEN OPENING OR CLOSING ~ IF IT IS DESIRED TO DIVIDE THE OPENING INTO TWO OR MORE OPERATING UNITS, MOVABLE POSTS OR SOME OTHER MEANS MUST BE PROVIDED AT THE JAMBS OF THE UNITS TO MAINTAIN THEIR PROPER POSITION IN THE OPENING ~ THE DOOR SHOWN ON THIS PLATE DOES NOT REQUIRE THESE POSTS.

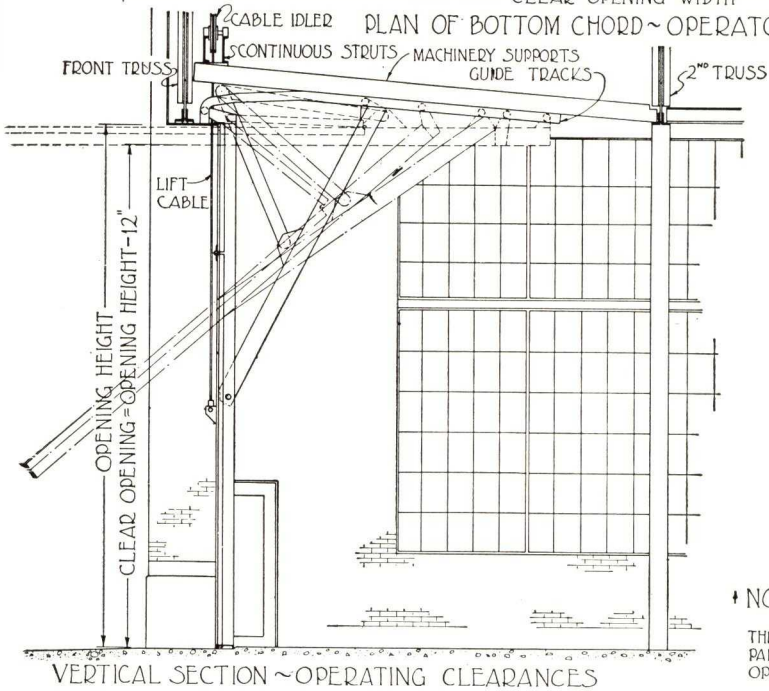
TRUSCON STEEL COMPANY Youngstown, Ohio	ELEVATION AND CONSTRUCTION DETAILS **OVERHEAD HANGAR STEEL DOORS** MORGAN TYPE No. 1	PLATE No. **J-40** OCTOBER, 1937



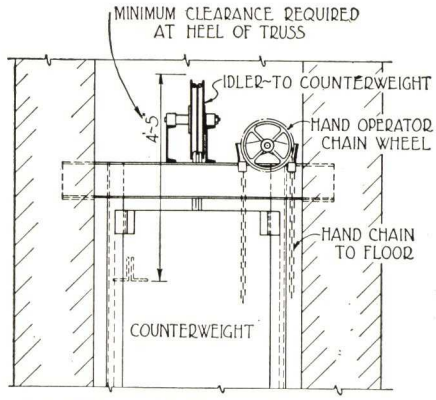
EXTERIOR ELEVATION



PLAN OF BOTTOM CHORD ~ OPERATOR & WEIGHT BOXES



VERTICAL SECTION ~ OPERATING CLEARANCES

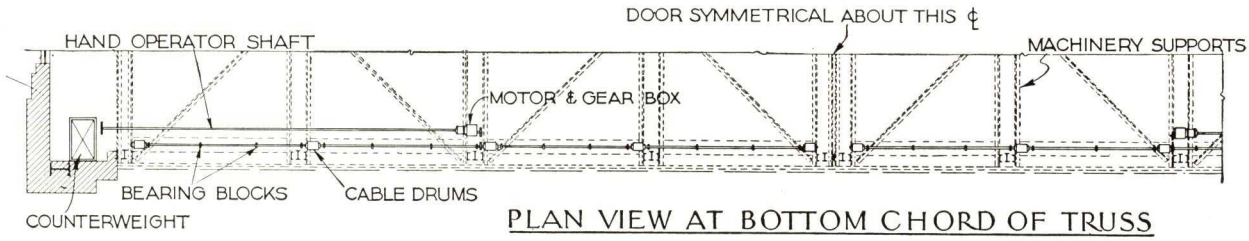


VERTICAL SECTION THRU TOWER
SHOWING WEIGHT BOX

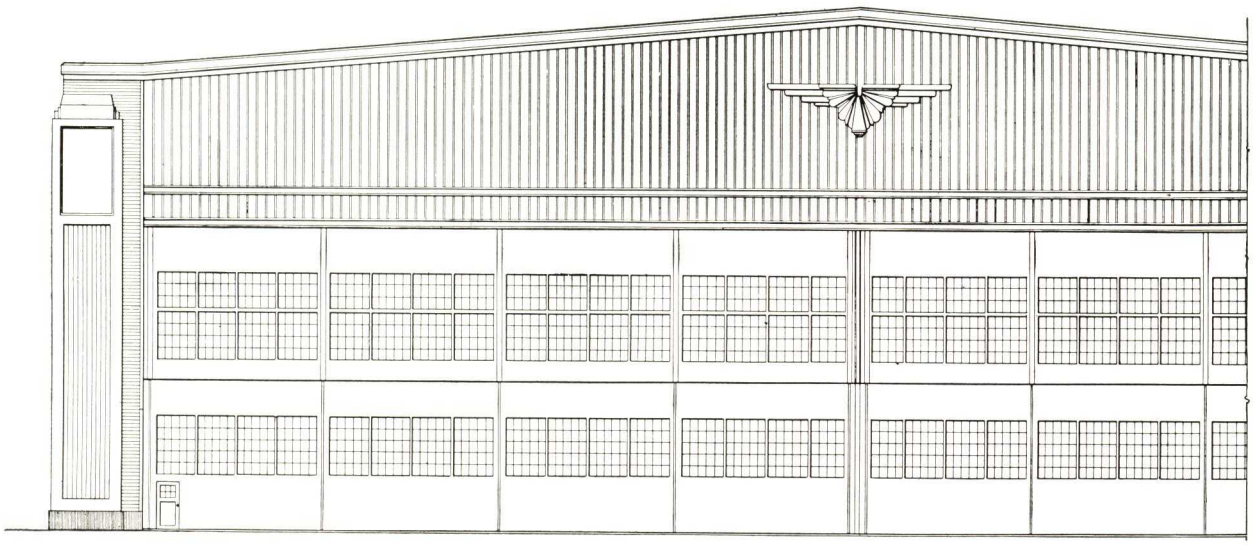
NOTE

DOOR MOVEMENT IS CONTROLLED BY LIMIT SWITCHES. THREE BUTTON CONTROL STATION AND REVERSING RELAY PANEL ARE LOCATED ON SIDEWALL ADJACENT TO JAMB OF OPENING. EXACT LOCATION TO BE DETERMINED BY ARCHITECT.

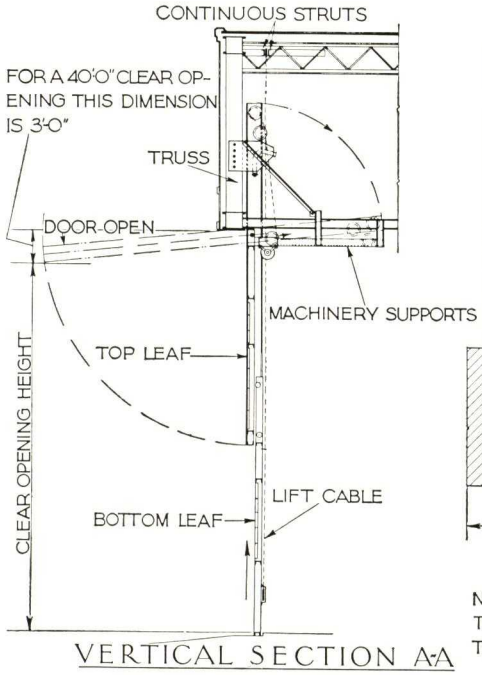
TRUSCON STEEL COMPANY Youngstown, Ohio	ELEVATION AND CONSTRUCTION DETAILS OVERHEAD HANGAR STEEL DOORS MORGAN TYPE No. 2	PLATE No. J-42 OCTOBER, 1937



PLAN VIEW AT BOTTOM CHORD OF TRUSS

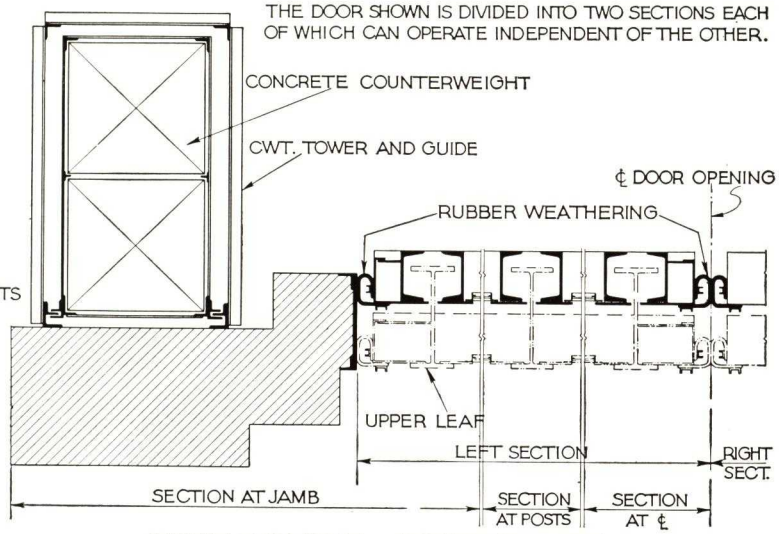


OUTSIDE ELEVATION



VERTICAL SECTION A-A

THE DOOR SHOWN IS DIVIDED INTO TWO SECTIONS EACH OF WHICH CAN OPERATE INDEPENDENT OF THE OTHER.



HORIZONTAL SECTION 'B-B'

NOTE: DOOR MOVEMENT IS CONTROLLED BY LIMIT SWITCHES. THREE BUTTON CONTROL STATION AND REVERSING RELAY PANEL ARE LOCATED ON SIDEWALL ADJACENT TO JAMB OF OPENING, EXACT LOCATION TO BE DETERMINED BY THE ARCHITECT.

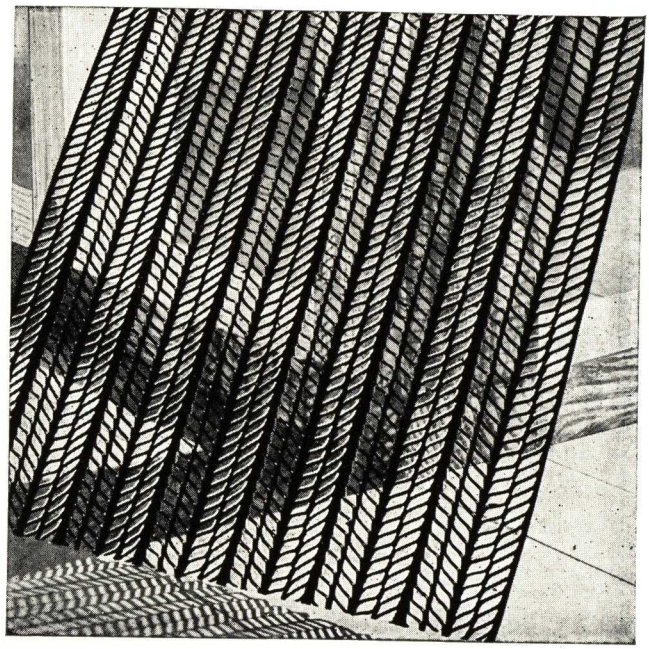
TRUSCON STEEL COMPANY Youngstown, Ohio	ELEVATION AND CONSTRUCTION DETAILS **OVERHEAD HANGAR STEEL DOORS** MORGAN TYPE No. 3	PLATE No. **J-43** OCTOBER, 1937

METAL LATH PRODUCTS AND ACCESSORIES FOR

HERRINGBONE DOUBLEMESH LATH

The Most Rigid, Yet Smallest Mesh of Any Expanded Lath Made

Doublemesh has the smallest mesh of any expanded lath and at the same time is the most rigid. This rigidity is obtained by a series of parallel reinforcing ribs that run lengthwise of the sheet. The sheets require no stretching and do not sag between supports so that studs may be placed further apart without sacrifice to the strength of the walls.



Because of the design and of the care used in manufacture, Herringbone Doublemesh presents a smooth, even surface with no rough edges to cut the lather's hands or tear his clothes. A trowel of scratch coat goes on easier and reaches further.

Weight per square yard				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galvanized	Copper-bearing	Toncan or Armco Iron			
2.75	...	...	...	24x96	9	16
3.0	...	3.0	...	24x96	9	16
3.4	3.4	3.4	3.4	24x96	9	16
4.0	...	...	...	24x96	9	16

TRUSCON HOLLOW PARTITION STUDS

Truscon Hollow Partition Studs are fire-safe, provide excellent heat insulation, sound resistance and are rodent and termite proof. They will not swell nor warp and will resist impact, vibration or plaster cracking much more effectively than partitions of masonry or gypsum block.

When metal lath is attached to both sides of these studs, an ideal base for plaster is obtained. There is no necessity for cutting expensive chases for electrical conduits or pipes as the design of these studs provides maximum room for their passage without sacrificing the strength of the studs.

Due to the simplification and light weight of units, labor costs are materially reduced. The adaptability of Truscon Studs permits uninterrupted operation of all trades. After the studs are set, plumbing and electrical work can be started immediately. The partition is then lathed and plastered.

Truscon Hollow Partition Studs when plastered, weigh sixteen to twenty pounds per square foot, depending on the thickness of plaster grounds and consequently permit economical structural design without decreasing strength.

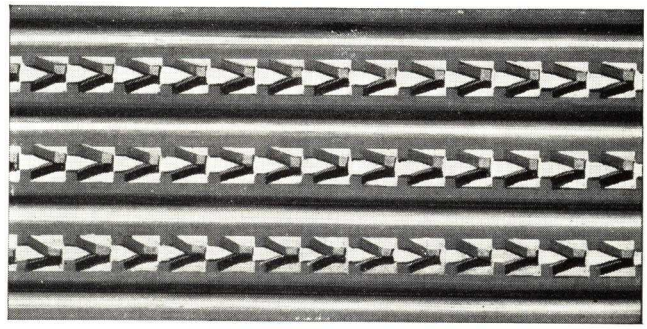
"A" METAL LATH

This Rigid, Smooth-Surfaced Sheet Served as Both Plaster Base and Reinforcing

Truscon "A" Metal Lath is a rigid, smooth surfaced sheet which serves as both plaster base and reinforcing. The mechanical key on "A" Lath is so ingeniously devised that it provides perfect reinforcement and effects a rigidity superior to ordinary types of flat rib lath.

The results of this perfected mechanical key and strong parallel rib of Truscon "A" Metal Lath assures a positive bond which makes it ideal for interior work of all kinds. The mechanical key actually provides for such a quick initial key that the economy of this lath becomes apparent at once.

Although rigid, Truscon "A" Metal Lath is also excellent for most types of form work.



Weight per square yard, lbs.	Sheets, in.	Sheets per bundle	Sq. yds. per Bundle
3.0	24 x96	9	16
3.4	22 7/8 x96	10	17

Furnished in black or copper bearing steel, painted.

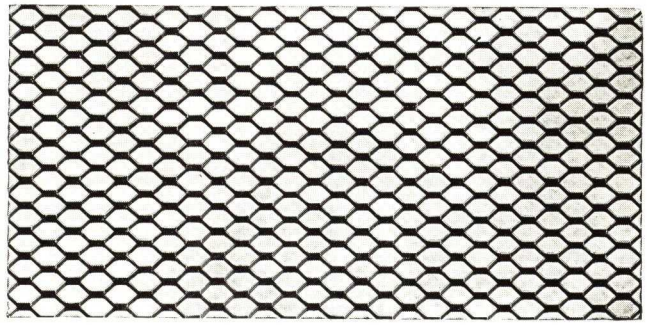
SMALL MESH DIAMOND LATH

The Most Practical Diamond Lath

PROPERTIES, DIAMOND LATH AND SMALL MESH DIAMOND LATH

Weight yard lbs.	Length sheet, in.	Width sheet, in.	Sq. yds. sheet	Sheets bundle	Sq. yds. bundle	Weight bundle, lbs.
2.2	96	27	2	10	20	44
2.5	96	27	2	10	20	50
3.0	96	27	2	10	20	60
3.4	96	27	2	10	20	68
		Galvanized				
2.5	96	27	2	10	20	50
3.4	96	27	2	10	20	68

Can be furnished in either open hearth or copper-bearing steel. All material excepting galvanized is painted.



Truscon Diamond Laths are considered the most practical types of diamond lath on the market. Sheets are trimmed exactly 8 ft. 1 in. in length, with edges absolutely straight. The diamonds are small size, preventing workmen from wasting materials due to excessive pressure forcing plaster through on back side.

HERRINGBONE RIGID LATH

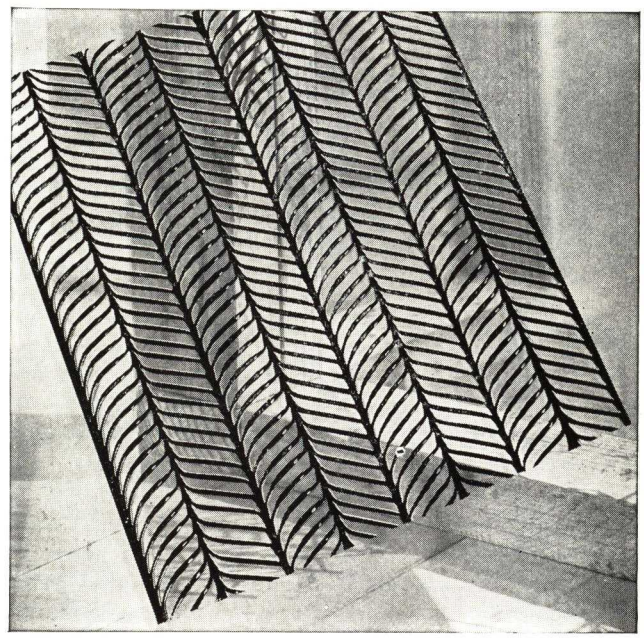
Same as Herringbone Doublemesh Except Having Longer Corrugations

This lath has the same general advantages as "Doublemesh," the difference being in the size of the mesh. It has the same rigidity, the same interlocking edges and forms the same remarkable key.

The ribs form "shelves" which hold the plaster from falling in back, so that every bit applied is held in place. There is no waste with this lath. Because of its rigidity it does not sag or "belly" between supports but presents an unyielding surface to the trowel with no depressions.

When used for partitions, either solid or hollow, Herringbone Rigid Lath offers the same construction and erection economies as when used for ceilings. The spacing of the studs may be increased from 16 in. for the 2.5 lb. flat lath to 19½ in. for the 3-lb. Herringbone.

Weight per square yard, lbs.				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galvanized	Copper-bearing	Toncan or Armco Iron			
2.2	.....	....	....	20¼x96	15	22½
2.5	2.5	....	....	20¼x96	15	22½
3.0	.....	3.0	....	20¼x96	15	22½
3.4	3.4	3.4	3.4	20¼x96	15	22½

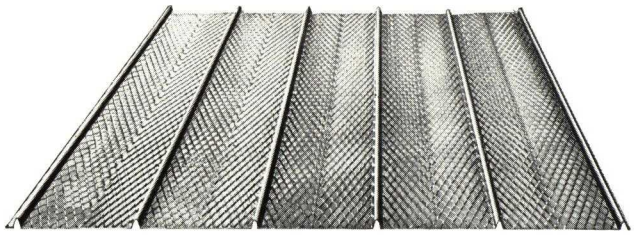


METAL LATH PRODUCTS AND ACCESSORIES (Continued)

3/8" DIAMOND RIB LATH A Self-Furring Lath That Permits Wide Spacing of Supports

PROPERTIES, 3/8" DIAMOND RIB LATH

Weights per sq. yd.		Size of sheets, in.	Ribs spaced c-c, in.	Area of sheets per sq. yd.	Sheets per bundle	Yards per bundle
Painted	Copper bearing					
3.0	3.0	24x96	4.8	1-7/9	9	16
3.4	3.4	24x96	4.8	1-7/9	9	16
4.0	4.0	24x96	4.8	1-7/9	9	16



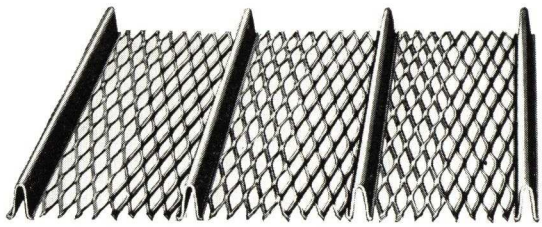
A self-furring lath with 3/8 in. deep ribs, which permits wide spacing of supports. Used principally as a base for plaster on ceilings, straight-away partition work with channels and for exterior stucco. It is particularly recommended as a base for plaster under steel joists and as a reinforcement for concrete slabs over steel joists. 3/8 in. Diamond Lath is manufactured with the rib integral with the mesh. 3/8 in. deep ribs spaced 4 3/4 in. on centers run full length of the sheet with the distance between the ribs spanned by rows of small size diamonds.

SELF-SENTERING RIB EXPANSION METAL LATH

WEIGHTS AND SECTIONAL AREAS

Painted steel weight, per sq. ft.	Effective sectional area, per ft. of width	Standard lengths, ft.
.50 lbs.	.1440 sq. in.	8, 10 and 12
.60 lbs.	.1688 sq. in.	8, 10 and 12
.75 lbs.	.2150 sq. in.	8, 10 and 12

Galvanized, Copper-bearing, or Armco Self-Sentering on mill shipment, minimum of five tons one weight and length.



Self-Sentering is a ribbed expansion metal for concrete reinforcing and miscellaneous firesafe construction. It serves as both form and reinforcement for concrete floor work and as a combined steel lath and studding for walls and partitions.

3/4" HY-RIB CONCRETE REINFORCEMENT FOR FLOORS

Truscon 3/4 in. Hy-Rib is a concrete reinforcement for floors, roofs, tanks, arches and other construction, where expensive wood forming is usually required.

PROPERTIES

Weight per sq. ft., lbs.	Height of ribs, in.	Ribs spaced c-c, in.	No. Ribs per sheet	Width of sheet, in.	Effective sectional area per ft. of width, sq. in.
.50	3/4	4	8	28	.1407
.60	3/4	4	8	28	.1648
.75	3/4	4	8	28	.2100

Can be furnished in either Copper-Bearing or Open Hearth Steel—all painted.

TRUSSIT—A SPECIALIZED BUILDING PRODUCT

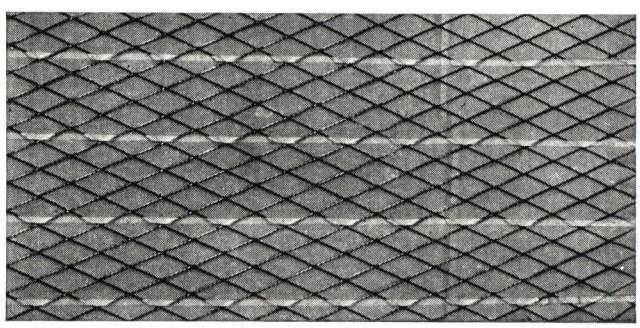
A specialized building product, designed for the purpose of reinforcing and forming fire-resistive concrete walls and partitions. The use of Trussit as a reinforcement for solid exterior walls gives a construction in which the reinforcing is centrally located in the wall, producing a slab of uniform strength throughout. Walls are quickly erected without forms, cement plaster being applied to the Trussit. equally on both sides. Form marks are eliminated and a pleasing effect is produced on each face of wall.

	Length, ft.	Width, in.	Weight per sq. ft.
Painted.....	8, 10, 12	19	.57, .62 and .83 lbs.
Galvanized.....	8, 10, 12	19	.68, .88 lbs.
Toncan or Armco	8, 10, 12	19	.57, .62 and .83 lbs.

TRUSCON *INSULMESH*

An exclusive plaster base, consisting of expanded metal which is firmly fastened to a specially treated, 3/8-in. thick waterproofed backing that insulates against heat, cold and sound. Adhesive strips hold the mesh in place until the sheets are erected, then the nails or staples used to attach the Insulmesh to the studs or joists carry the load.

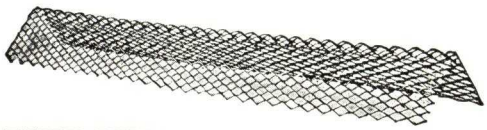
Insulmesh sheets are 27x48 in., equal to one square yard per sheet.



METAL LATH ACCESSORIES

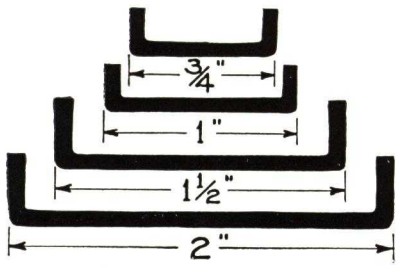
EXPANDED CORNER BEAD

Expanded corner bead weighs 0.21 pounds per lin. ft. furnished in 6, 7, 8, 9, 10 and 12-ft. lengths, bundled 10 pieces to the bundle. It can be furnished cut from zinc strip if desired.



CORNERITE

Cornerites are used for plaster base at inside corners. Flanges are 4 in. wide, sheets 8 ft. 1 in. long, bundled in lots of 25 pieces or 400 ft. Protected with a coat of black asphalt paint.

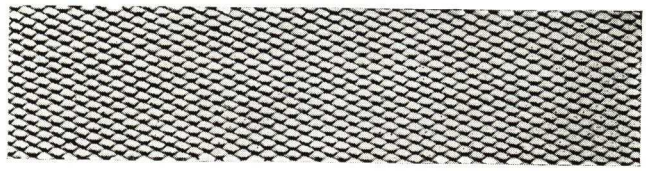


COLD ROLLED CHANNELS

Sizes, ¾, 1, 1½ and 2 in.
Weight per lineal foot, .276, .332, .442 and .553 lb.
No. 16 gauge (thickness .065 in.).
¾ and 1 in. shipped packed in bundles of 25 channels, and 1½ and 2 in., 10 in a bundle.
¾-in. square channel manufactured from 18 gauge steel.

TRUSCON TIE WIRE

Truscon Tie Wire is furnished in 16 or 18-gauge galvanized or black wire. Comes in rolls 20 in. in diameter. Also furnished in hanks.

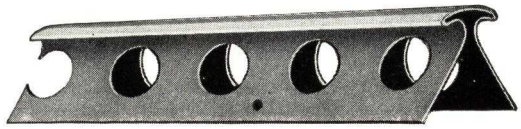


TRUSCON STRIP-ITE

Manufactured from 2.2 lb. Diamond Lath, furnished in 3 and 6 inch widths, 8 ft. 1 in. long. Shipped in bundles of 50 pieces or 400 linear feet. 3 in. Strip-ite weighs 50 lbs. to the bundle.

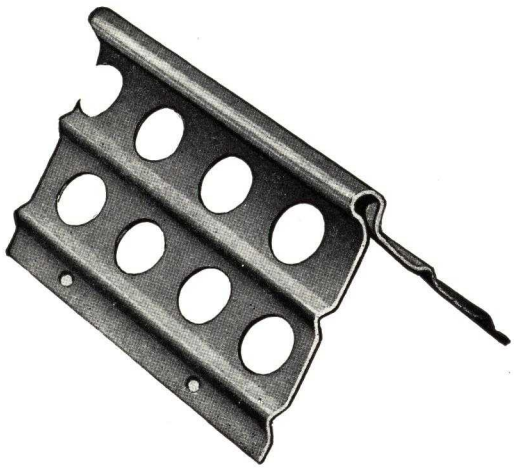
RIB STEEL CORNER BEAD

Lengths, 6, 8, 9, 10 and 12 ft.
Packed 10 pieces to bundle—10 bundles to crate.
Crate weight, 20 lbs. per 1000 ft. Manufactured from 26 gauge high grade steel.



BULL NOSE CORNER BEAD

¾-in. radius. Medium length flange. 24 Gauge. Shipping weight, approximately 420 lbs. per 1000 ft.
Standard lengths, 6, 7, 8, 9, 10, 11 and 12 ft.



TRUSCON WIDE FLANGED CORNER BEAD

Weight, 330 lbs. per 1000 ft. Manufactured from 26-gauge best grade steel and furnished in standard lengths 6, 7, 8, 9, 10 and 12 ft., packed 10 pieces to the bundle.

"O-T" OPEN TRUSS STEEL JOISTS

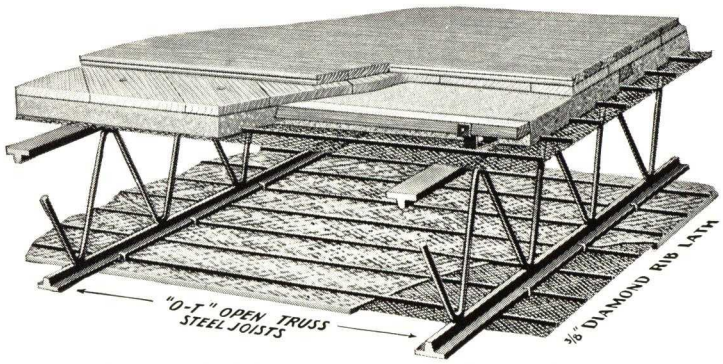
FOR ECONOMICAL AND FIRE RESISTANT FLOORS

DESIGNED and manufactured in accordance with the specifications of the Steel Joist Institute and the Simplified Practice Recommendations (S.P.R. 94-30) on Open Web Steel Joists as issued by the U. S. Department of Commerce, Bureau of Standards.

To meet the demand for economical, light weight and fire resistant floors, Truscon has developed the "O-T" Open Truss Steel Joist which is designed according to the best engineering practice and offers many advantageous and distinctive features. In effect, the entire design is unusually efficient as well as exceptionally economical of materials.

Fundamentally, the Truscon "O-T" Open Truss Steel Joist is a Warren truss having top and bottom chords of wide tee-shaped members to provide the greatest resistance to buckling strains. The bottom tee is continuous to the bearings, where it is welded with the web member and the top chord. Web members are continuous from end to end so that stresses are transmitted perfectly. High pressure electric welding is used to make positive connections at all joints.

The underslung design of the bearing permits maximum headroom under the supporting girders. The open web allows the passage of pipes and conduits.



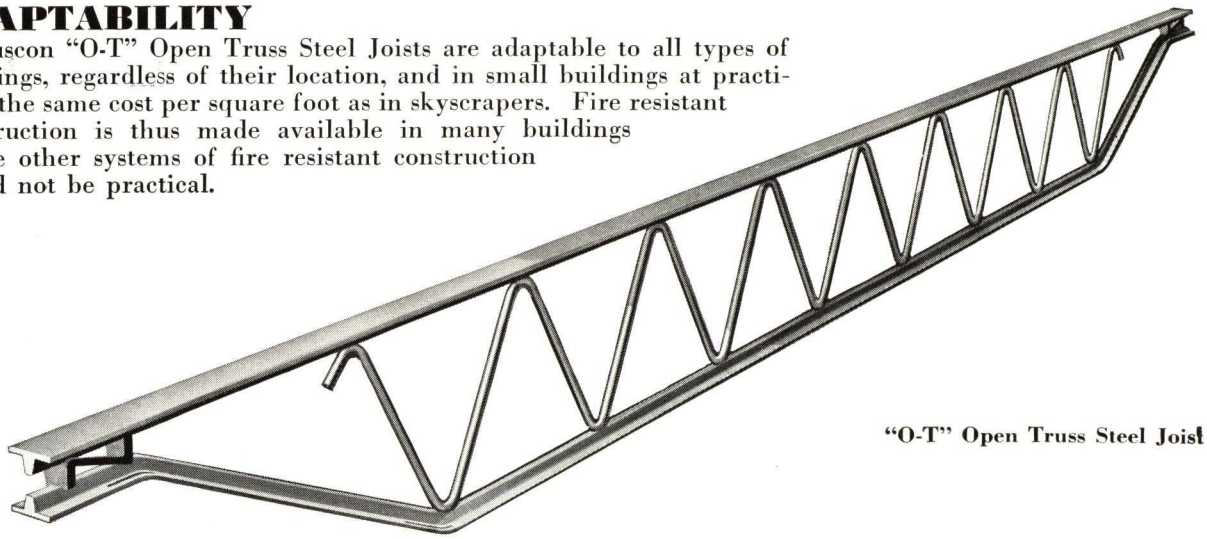
Truscon "O-T" Open Truss Steel Joist Construction

With concrete slab and wood sub and finished floors secured by means of Screeds placed at right angles to the Joists and elevated to provide for concrete underneath.

In practical use Truscon "O-T" Open Truss Steel Joists are very simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is marked to correspond with the erection diagram, thus greatly simplifying and speeding construction work. Only the highest quality open hearth steel is used. Thorough tests under extreme loadings have demonstrated their all-around dependability.

ADAPTABILITY

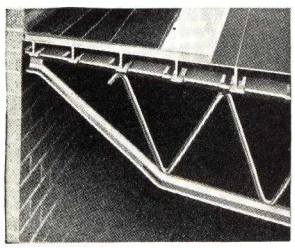
Truscon "O-T" Open Truss Steel Joists are adaptable to all types of buildings, regardless of their location, and in small buildings at practically the same cost per square foot as in skyscrapers. Fire resistant construction is thus made available in many buildings where other systems of fire resistant construction would not be practical.



"O-T" Open Truss Steel Joist

DETAILS OF CONSTRUCTION "O-T" JOISTS

Roof Purlins

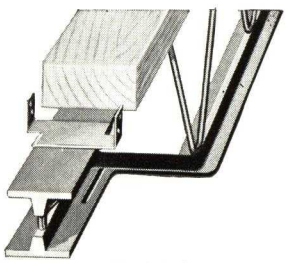


Roof Purlins

Open Truss Steel Joists have proved to be very economical and practical for use as roof purlins supporting steel deck roofs. The method of attaching the roof to the steel joists is very simple and positive, as shown in illustration.

Nailing Screed

Occasionally, it is desired to attach a wood roof deck to Truscon "O-T" Open Truss Steel Joists used as roof purlins. Nailing screeds are required in this construction and they may be attached directly over the joists by means of screed clip as shown in illustration.



Screed Clip

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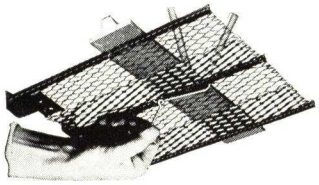
"O-T" STEEL JOIST ACCESSORIES

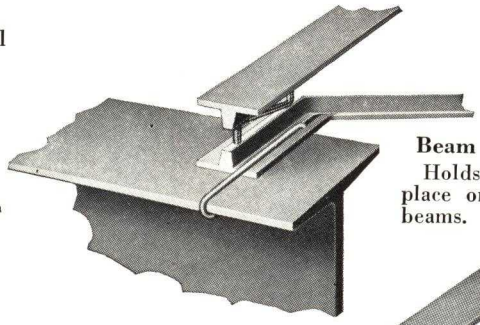
Bottom Chord Extension

Easily attached after the steel joists are in place.



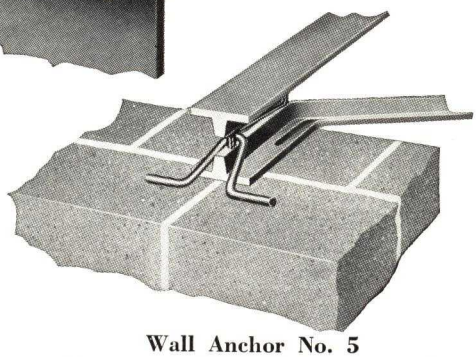
Lath Clips

Made in different sizes to meet the different sizes of joist members. When attaching the ceiling lath, the clips should straddle the lath rib.



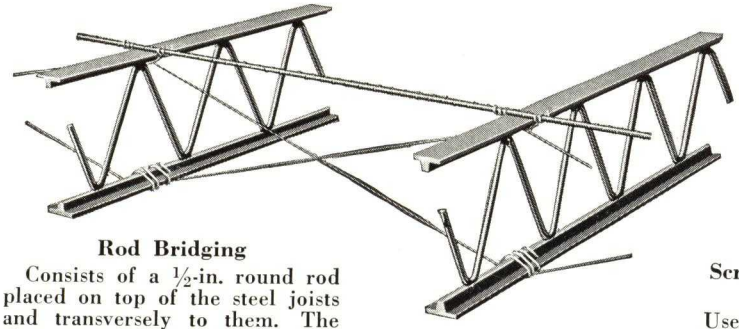
Beam Anchor No. 3

Holds the joists in place on structural steel beams.



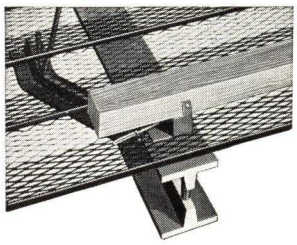
Wall Anchor No. 5

Affords additional bond between floor and wall construction when wall is of such a height or nature as to be not self-sustaining.



Rod Bridging

Consists of a ½-in. round rod placed on top of the steel joists and transversely to them. The $\frac{3}{16}$-in. diagonal members are then applied and wound tightly around the transverse rod and the bottom chords of joists by means of a bridging tool provided for this purpose. This bridging is very efficient and is easily installed.



Screed Clips Nos. 5, 6, 7 and 8

Used when it is desired to elevate the screeds so that concrete can be poured beneath them. A lath clip of proper size is used to hold the screed clip in place.

SPECIFICATIONS

For "O-T" Open Truss Steel Joist Floor and Roof Construction with Concrete Slab

General—Where Steel Joist floor construction is specified, it shall be understood to mean Truscon "O-T" Steel Joists of the size and spacing as shown on the drawings, together with a structural concrete slab over the joists supported by metal lath firmly attached to the joists.

The Steel Joists shall be made of hot rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The chords shall be tee-shaped sections, the top chord being straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joists Institute Specifications.

Painting—All steel joists shall be spray painted with one shop coat of good metal protective paint.

Slab Reinforcement—The top concrete slab shall be reinforced and supported by ⅜ in.* Rib Lath weighing not less than 4.0 lbs. per square yard; the lath to be placed with the ribs up and at right angles to the joists. The lath shall be attached to the top of the joists by means of lath clips spaced 8 in. apart. Where the floor finish is other than wood, the structural slab shall be reinforced with a 10-gauge 6x6 in. welded steel fabric.

*For joists spaced over 24 in. apart ¾ in. .50 lb. Hyrib must be used.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and 2½ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged, with a tension type of bridging consisting of a ½-in. rod placed on top of the joists and transversely to them and supplemented by $\frac{3}{16}$ in. diagonally placed rods securely wound to both the transversely placed rod and the bottom chords of joists. For spans up to 14 ft. 0 in. one row of bridging is required, two rows between 14 ft. 0 in. and 21 ft. 0 in., and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Wood Floors—Where wood floors are specified, screed clips shall be secured to the joists to receive 2x1 in. screeds placed at right angles to the joists and spaced 16 in. apart. The clip shall raise the screed 1 in. above the joists.

Note: The Steel Joists Institute Specification limits the spacing of joists to 24 in. for floors, 30 in. for roofs having a poured concrete slab and 7 ft. for roofs having a steel deck or wood roof.

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"O-T" STEEL JOIST LOADING TABLE TABLE ONE BELOW

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Steel Joists at various spacings.

Clear Span	Joist Type	Total Safe Load Pounds	Total Safe Loads in Pounds Per Square Foot for Various Joist Spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
6′-0″	81	3200	530	457	400	376	356	337	320	305	291	278	267	213	178	153	134	106	89	76
7′-0″	81	2810	402	344	301	283	268	254	241	229	219	209	202	160	134	115	101	80	67	57
8′-0″	81	2460	308	264	231	217	205	194	184	176	168	160	154	123	103	88	77	61	51	44
	82	3800	475	407	356	335	316	300	285	271	259	248	238	190	158	136	119	95	79	68
9′-0″	81	2180	243	208	182	171	162	153	145	138	132	127	121	97	81	69	61	48	40	34
	82	3800	422	362	316	298	282	266	254	242	230	220	211	169	141	121	106	84	70	60
10′-0″	81	1970	197	169	148	139	131	125	118	113	108	103	99	79	66	57	50	39	33	28
	82	3500	350	300	263	247	233	221	210	200	191	183	175	140	117	100	88	70	58	50
	102	3800	380	326	285	268	253	240	228	217	207	198	190	152	127	109	95	76	63	54
	103	3900	390	334	292	275	260	246	234	223	213	203	195	156	130	112	98	78	65	56
	104	4400	440	377	330	312	293	278	264	252	240	230	220	176	147	126	110	88	73	63
11′-0″	81	1780	162	139	121	114	108	102	97	92	89	85	81	65	54	46	41	32	.....	.....
	82	3180	289	248	217	205	193	183	174	165	158	151	145	116	97	83	73	58	48	41
	102	3800	346	297	259	244	230	218	208	197	189	180	173	138	115	99	87	69	57	49
	103	3900	355	304	266	250	236	224	213	202	194	185	178	142	118	101	89	71	59	50
	104	4400	400	343	300	283	267	253	240	228	218	208	200	160	134	114	100	80	67	57
12′-0″	81	1635	137	117	102	96	91	86	82	78	74	71	68	55	46	39	34	28	.....	.....
	82	2920	243	208	183	172	162	154	146	139	133	127	122	98	81	70	61	49	40	35
	102	3500	292	250	219	206	194	184	175	167	159	152	146	117	97	84	73	58	48	42
	103	3900	325	279	244	230	217	205	195	186	177	170	163	130	109	93	82	65	54	46
	104	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	123	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	124	4600	384	329	288	271	256	242	230	219	209	200	192	153	128	110	96	76	64	55
	125	5000	417	358	312	294	278	263	250	238	228	218	208	167	139	119	104	83	69	59
	126	5400	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64
13′-0″	81	1510	116	100	87	82	78	73	70	66	63	61	58	46	39	33	29	.....	.....	.....
	82	2690	207	177	155	146	138	131	124	118	113	108	103	83	69	59	52	41	34	29
	102	3230	248	213	187	176	166	157	149	142	136	130	124	99	83	71	62	49	41	35
	103	3900	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43
	104	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	123	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	124	4600	354	303	265	250	236	224	212	202	193	185	177	142	118	101	89	71	59	50
	125	5000	384	330	288	272	256	243	231	220	210	201	192	154	129	110	96	77	64	55
	126	5400	415	356	312	293	277	262	249	237	226	217	208	166	139	119	104	83	69	59
14′-0″	81	1400	100	86	75	71	67	63	60	57	55	52	50	40	34	29	.....	.....	.....	.....
	82	2500	178	153	134	126	119	113	107	102	98	93	89	71	60	51	45	35	30	.....
	102	3000	214	184	161	152	143	135	129	123	117	112	107	86	72	62	54	43	36	31
	103	3900	278	239	209	197	186	176	167	159	152	145	139	111	93	80	70	55	46	40
	104	4400	314	270	236	222	210	199	189	180	172	164	157	126	105	90	79	63	52	45
	123	4380	313	268	235	221	209	198	188	179	171	163	156	125	105	90	78	62	52	45
	124	4600	328	282	246	232	219	208	197	188	179	171	164	131	110	94	82	65	55	47
	125	5000	357	306	268	252	238	226	214	204	195	187	179	143	119	102	90	71	59	51
	126	5400	386	331	289	272	257	244	232	220	210	201	193	154	129	110	97	77	64	55
	145	5800	414	355	311	292	276	262	248	237	226	216	207	166	138	119	104	83	69	59
	146	6200	443	380	332	313	296	280	266	253	242	231	222	177	148	127	111	88	74	63
	147	6800	486	416	364	343	324	307	292	278	265	254	243	194	162	139	122	97	81	69
15′-0″	81	1310	87	75	66	62	58	55	52	50	48	46	44	35	.....	.....	.....	.....	.....	.....
	82	2330	155	133	116	110	104	98	93	89	85	81	78	62	52	44	39	31	.....	.....
	102	2810	187	161	141	132	125	118	112	107	102	98	94	75	63	54	47	38	31	.....
	103	3640	243	208	182	172	162	153	146	139	133	127	122	97	81	69	61	49	41	35
	104	4400	293	252	220	207	196	185	176	168	160	153	147	117	98	84	73	59	49	42
	123	4090	272	234	204	192	182	172	163	156	148	142	136	109	91	78	68	55	46	39
	124	4600	307	263	230	217	204	194	184	175	167	160	153	123	102	88	77	61	51	44
	125	5000	333	286	250	235	222	210	200	191	182	174	167	133	111	96	84	67	56	48
	126	5400	360	308	270	254	240	227	216	206	196	188	180	144	120	103	90	72	60	52
	145	5800	387	332	290	273	258	244	232	221	211	202	193	155	129	111	97	78	64	56
	146	6200	413	354	310	292	276	261	248	236	225	216	207	165	138	118	104	83	69	59
	147	6800	454	389	340	320	302	286	272	259	248	237	227	181	151	130	114	91	75	65

For floor construction, joists should not be spaced over 24 in. o. c.

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COVERING PAGES 72, 73 AND 74.

The weight of DEAD loads must in all cases be deducted to determinee the LIVE load carrying capacities of the Joists.

Clear Span	Joist Type	Total Safe Load Pounds	Total Safe Loads in Pounds Per Square Foot for Various Joist Spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
16′-0″	81	1230	77	66	58	54	51	49	46	44	42	40	38	31	.....	.....	.....	.....	.....	.....
	82	2190	137	117	103	97	91	86	82	78	75	71	68	55	46	39	34	.....	.....	.....
	102	2630	164	141	123	116	110	104	99	94	90	86	82	66	55	47	41	33	.....	.....
	103	3420	213	182	160	150	142	134	128	122	116	111	106	85	71	61	53	43	35	30
	104	4170	260	223	195	184	173	164	156	149	142	136	130	104	87	74	65	52	43	37
	123	3840	240	206	180	170	160	152	144	137	131	125	120	96	80	69	60	48	40	34
	124	4600	287	246	216	203	192	182	172	164	157	150	144	115	96	82	72	58	48	41
	125	5000	312	268	234	221	208	197	187	178	170	163	156	125	104	89	78	63	52	44
	126	5400	337	289	253	238	225	213	202	193	184	176	169	135	113	97	85	68	57	48
	145	5800	363	311	272	256	242	229	218	208	198	189	182	145	121	104	91	73	61	52
	146	6200	387	332	290	274	258	245	233	222	212	202	194	155	129	111	97	78	64	56
	147	6800	425	364	319	300	283	268	255	243	232	222	213	170	142	122	107	85	71	61
	166	6400	400	343	300	282	266	253	240	228	218	208	200	160	133	114	100	80	67	57
	167	7200	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64
17′-0″	102	2470	145	125	109	103	97	92	87	83	79	76	73	58	48	42	36	29	.....	.....
	103	3220	189	162	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	.....
	104	3920	230	197	173	162	153	145	138	132	126	120	115	92	77	66	58	46	38	33
	123	3610	212	182	159	150	142	134	127	121	116	111	106	85	71	61	53	43	35	30
	124	4510	265	227	199	187	177	168	159	152	145	139	133	106	88	76	66	53	44	38
	125	5000	294	252	220	208	196	186	177	168	161	154	147	118	98	84	74	59	49	42
	126	5400	318	272	238	224	212	201	191	182	173	166	159	127	106	91	80	64	53	45
	145	5800	342	292	256	241	228	215	205	195	186	178	171	137	114	98	86	69	57	49
	146	6200	365	313	273	258	243	230	219	209	199	191	183	146	122	105	92	73	61	52
	147	6800	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57
	166	6400	376	323	282	266	251	238	226	215	205	197	188	151	126	108	94	76	63	54
	167	7200	424	363	318	299	283	268	255	242	231	221	212	170	142	121	106	85	71	60
18′-0″	102	2330	129	111	97	92	86	82	78	74	71	68	65	52	43	37	32	.....	.....	.....
	103	3040	169	145	127	119	113	107	101	97	92	88	85	68	56	48	42	34	.....	.....
	104	3710	205	177	155	146	138	130	124	118	113	108	103	83	69	59	52	41	34	30
	123	3410	189	163	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	27
	124	4260	236	203	178	167	158	150	142	135	129	124	119	95	79	68	59	47	39	34
	125	5000	278	238	208	196	185	175	167	159	152	145	139	111	93	79	70	56	46	40
	126	5400	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43
	145	5780	321	275	240	227	214	203	193	184	175	168	161	129	107	92	81	65	54	46
	146	6200	344	295	259	243	230	218	207	197	188	180	172	138	115	99	86	69	58	49
	147	6800	378	324	284	267	252	239	227	216	206	197	189	151	126	108	95	76	63	54
	166	6400	356	305	267	251	237	225	213	203	194	186	178	143	119	102	89	72	60	51
	167	7200	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57
19′-0″	102	2210	116	100	87	82	78	74	70	66	63	61	58	47	39	33	29	.....	.....	.....
	103	2880	151	130	114	107	101	96	91	87	83	79	76	61	51	43	38	30	.....	.....
	104	3510	184	159	139	131	123	117	111	106	101	97	93	74	62	53	46	37	31	.....
	123	3230	170	146	128	120	113	107	102	97	93	89	85	68	57	49	42	34	28	.....
	124	4040	212	183	160	150	142	135	128	122	116	111	106	85	71	61	53	43	35	.....
	125	4990	263	225	197	186	175	166	158	150	143	137	132	105	88	75	66	53	44	38
	126	5400	284	244	214	201	190	180	171	162	155	148	142	114	95	81	71	57	47	41
	145	5480	288	247	217	204	193	183	173	165	158	151	145	115	96	83	72	58	48	41
	146	6200	326	280	245	230	218	206	196	187	178	170	163	131	109	93	82	65	55	47
	147	6800	358	307	269	253	239	226	215	205	195	187	179	143	120	102	90	72	60	51
	166	6400	337	289	253	238	225	213	202	193	184	176	168	135	112	97	84	68	56	49
	167	7200	379	325	284	268	253	239	227	217	207	198	190	152	127	108	95	76	64	54
20′-0″	102	2100	105	90	79	74	70	66	63	60	57	55	53	42	35	30	.....	.....	.....	.....
	103	2730	137	117	102	96	91	86	82	78	75	71	68	55	46	39	34	.....	.....	.....
	104	3340	167	143	125	118	111	105	100	95	91	87	84	67	56	48	42	33	.....	.....
	123	3060	153	131	115	108	102	97	92	88	84	80	77	61	51	44	38	31	.....	.....
	124	3830	192	164	144	135	128	121	115	109	104	100	96	77	64	55	48	38	32	.....
	125	4740	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34
	126	5400	270	232	203	191	180	171	162	154	148	141	135	108	90	77	68	54	45	39
	145	5200	260	223	195	184	174	164	156	149	142	136	130	104	87	74	65	52	43	37
	146	6200	310	266	232	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44
	147	6800	340	292	255	240	227	215	204	195	186	178	170	136	113	97	85	68	56	49
	166	6400	320	275	240	226	213	202	192	183	175	167	160	128	106	92	80	64	53	46
	167	7200	360	309	270	254	240	228	216	206	197	188	180	144	120	103	90	72	60	52

For floor construction, joists should not be spaced over 24 in. o. c.

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"O-T" STEEL JOIST LOADING TABLE TABLE ONE (CONTINUED)

Clear Span	Joist Type	Total Safe Load Pounds	Total Safe Loads in Pounds Per Square Foot for Various Joist Spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
21′-0″	123	2920	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35	.....	.....	.....
	124	3650	174	149	130	123	116	110	104	99	95	91	87	70	58	50	43	35	29	.....
	125	4510	215	184	161	152	143	136	129	123	117	112	107	86	72	61	54	43	36	31
	126	5400	257	220	193	182	172	162	154	147	140	134	129	103	86	73	64	52	43	37
	145	4950	236	202	177	166	157	149	142	135	129	123	118	94	79	67	59	47	39	34
	146	6200	295	253	222	209	197	187	177	169	161	154	148	118	99	84	74	59	49	42
	147	6800	324	277	243	229	216	205	194	185	177	169	162	129	108	93	81	65	54	46
	166	6400	305	261	229	215	203	193	183	174	166	159	153	122	102	87	77	61	51	44
	167	7200	343	294	257	242	229	217	206	196	187	179	172	137	115	98	86	69	58	49
22′-0″	123	2790	127	109	95	90	85	80	76	73	69	66	63	51	42	36	32	.....	.....	.....
	124	3480	158	136	119	112	105	100	95	91	86	83	79	63	53	45	40	32	.....	.....
	125	4300	196	168	147	138	130	124	117	112	107	102	98	78	65	56	49	39	32	.....
	126	5300	241	207	181	170	161	152	145	138	132	126	121	97	80	69	60	48	40	34
	145	4730	215	185	162	152	144	136	129	123	117	112	108	86	72	61	54	43	36	31
	146	6200	282	242	212	199	188	178	169	161	154	147	141	111	94	80	70	56	47	40
	147	6800	309	265	232	218	206	195	185	177	168	161	154	123	103	88	77	62	52	44
	166	6400	291	250	218	206	194	184	175	166	159	152	146	116	97	83	73	58	48	42
	167	7200	327	280	245	231	218	206	196	187	178	171	164	131	109	93	82	65	54	47
23′-0″	123	2670	116	100	87	82	77	73	70	66	63	61	58	46	39	33	29	.....	.....	.....
	124	3330	145	124	109	102	97	92	87	83	79	76	72	58	48	41	36	29	.....	.....
	125	4120	179	154	134	126	119	113	107	102	98	94	90	72	60	51	45	36	30	.....
	126	5060	221	189	165	155	147	139	132	126	120	115	110	88	74	63	55	44	37	31
	145	4520	197	169	147	139	131	124	118	112	107	103	98	79	66	56	49	39	33	28
	146	5940	258	221	194	182	172	163	155	147	141	135	129	103	86	74	65	52	43	37
	147	6800	296	254	222	209	197	187	178	169	161	154	148	118	99	84	74	59	49	42
	166	6400	278	238	209	197	186	176	167	159	152	145	139	111	93	80	70	56	46	40
	167	7200	313	268	235	221	209	198	188	179	171	163	157	125	104	90	79	62	53	45
24′-0″	123	2550	106	91	80	75	71	67	64	61	58	55	53	42	35	30	.....	.....	.....	.....
	124	3190	133	114	100	94	89	84	80	76	73	69	67	53	44	38	33	.....	.....	.....
	125	3950	164	141	124	116	110	104	99	94	90	86	82	66	55	47	41	33	.....	.....
	126	4860	202	174	152	143	135	128	121	116	110	105	101	81	68	58	51	41	34	.....
	145	4340	180	155	135	127	120	114	108	103	99	94	90	72	60	52	45	36	30	.....
	146	5690	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34
	147	6800	283	242	212	200	189	179	170	162	155	148	142	113	94	81	71	57	47	41
	166	6400	267	228	200	188	178	168	160	152	145	139	133	107	89	76	67	53	44	38
	167	7200	300	257	225	212	200	190	180	171	164	157	150	120	100	85	75	60	50	43
25′-0″	145	4160	166	142	125	117	111	105	100	95	91	87	83	66	56	48	42	33	.....	.....
	146	5450	218	187	163	154	145	137	131	125	119	114	109	87	73	62	55	44	36	31
	147	6560	262	225	197	185	175	166	157	150	143	137	131	105	88	75	66	53	44	38
	166	6180	247	212	186	175	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	167	7200	288	247	216	204	192	182	173	165	157	150	144	115	96	82	72	58	48	41
26′-0″	145	4000	154	132	115	108	102	97	92	88	84	80	77	61	51	44	38	31	.....	.....
	146	5250	202	173	152	143	135	128	121	115	110	105	101	81	67	58	51	40	34	.....
	147	6300	243	208	182	171	162	153	146	138	132	127	121	97	81	69	61	49	41	35
	166	5950	229	196	172	162	153	145	137	131	125	119	115	92	76	65	57	46	38	33
	167	7200	277	237	208	196	184	175	166	158	151	145	139	111	92	79	69	55	46	40
27′-0″	145	3850	143	122	107	101	95	90	86	82	78	75	71	57	48	41	36	29	.....	.....
	146	5050	187	160	140	132	125	118	112	107	102	98	94	75	62	53	47	37	31	.....
	147	6070	225	193	169	159	150	142	135	129	123	117	112	90	75	64	56	45	37	32
	166	5730	212	182	159	150	141	134	127	121	116	111	106	85	71	61	53	43	35	30
	167	6940	257	220	193	181	171	162	154	147	140	134	128	103	86	74	64	51	43	37
28′-0″	145	3720	133	114	100	94	89	84	80	76	72	69	66	53	44	38	33	.....	.....	.....
	146	4880	174	149	131	123	116	110	105	100	95	91	87	70	58	50	44	35	29	.....
	147	5850	209	179	157	147	139	132	125	120	114	109	105	84	70	60	52	42	35	30
	166	5520	197	169	148	139	131	124	118	113	107	103	99	79	66	56	49	39	33	28
	167	6690	239	205	179	169	159	151	143	137	130	125	119	96	80	68	60	48	40	34
29′-0″	166	5340	184	158	138	130	123	116	111	105	100	96	92	74	61	53	46	37	31	.....
	167	6460	223	191	167	157	148	141	134	127	122	116	111	89	74	64	56	45	37	32
30′-0″	166	5150	172	147	129	121	114	109	103	98	94	90	86	69	57	49	43	34	.....	.....
	167	6240	208	178	156	147	139	131	125	119	113	108	104	83	69	59	52	42	35	30
31′-0″	166	4990	161	138	121	114	107	102	97	92	88	84	81	64	54	46	40	32	.....	.....
	167	6050	195	167	146	138	130	123	117	111	106	102	98	78	65	56	49	39	32	.....
32′-0″	166	4840	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30	.....	.....
	167	5860	183	157	137	129	122	116	110	105	100	96	92	73	61	52	46	37	31	.....

For floor construction, joists should not be spaced over 24 in. o. c.

A MEMBER OF THE STEEL JOIST INSTITUTE

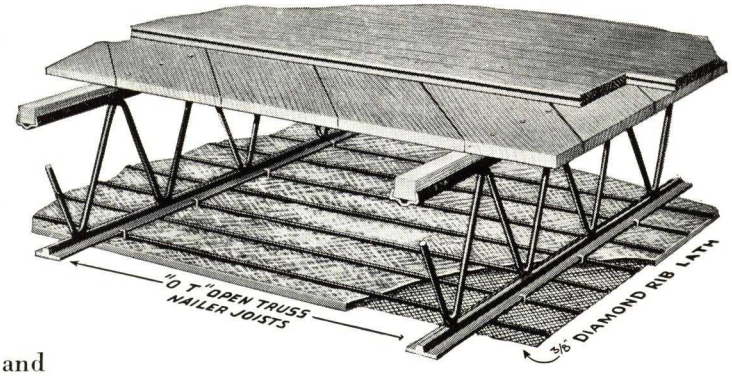
OPEN TRUSS NAILER JOISTS

TO make available for homes, apartments, stores and other light occupancy buildings the advantage of permanent construction at a cost comparable to wood has been the basic idea in the development of Nailer Joists.

In them are incorporated the basic features of Truscon "O-T" Open Truss Steel Joists, so extensively used in important buildings throughout the country. Unusual strength and rigidity result from their superior design and construction. Easy installation follows a complete and accurate fabrication in the Truscon plant.

Wide, specially formed members for top and bottom chords impart stiffness to the Nailer Joists and keep them true to line. The continuous steel web member is securely welded to the chords.

The end construction—a vital point in steel joist design—is unusually strong and rigid. Bearings for the joists are wide and ample. The underslung design at the supports not only insures stability of the joists during installation but provides additional head room under the supporting girders.



Their open web permits the passage of pipes and conduits in any direction through the floor construction without requiring the cutting of joists or a suspended ceiling. Steel Joists eliminate the settlement due to shrinkage and consequent separation of baseboard and floor, and its tendency to cause plaster cracking.

ADVANTAGES OF NAILER JOISTS

Truscon Nailer Joists reach the job ready for placing without cutting or fitting. The wood flooring is nailed directly to the wood nailing strips which are securely attached to the top chords of the joists.

The light weight of nailer joist construction lessens the time and labor required for erection and also saves materials in the supporting framework and foundations. Every detail of joists and attachments has been perfected by practical experience to simplify installation and assure dependable results.

With a metal lath plastered ceiling attached to the lower chord of the joists, the construction provides fire-safety to a substantial degree, preventing the spread of fire from below.

With Truscon Nailer Joists available it is no longer necessary, from either a practical or economical standpoint, to use wood joist construction in any building.

SPECIFICATIONS

General—Where Nailer Joist floor construction is specified, it is understood to mean Truscon "O-T" Nailer Joists of the size and spacing as shown on the drawings, together with a wooden floor over the joists and, unless otherwise specified, a metal lath and plaster ceiling directly beneath the joists.

The Nailer Joists shall be made of rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The top chord shall be straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joist Institute Specifications. The wood nailer strip shall not be considered in determining the carrying capacity of the joist.

Nailer Strip—The wood nailer strip shall be treated with a moisture-proofing solution to prevent its absorption of moisture. It shall be held securely on top of the top chord by pressure embedment of the flanges of the top chord into its sides.

Painting—All Nailer Joists shall be spray painted with one shop coat of good metal protective paint.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and 2½ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged with diagonal bridging. For spans up to 14 ft. 0 in. one row of bridging is required; two rows between 14 ft. 0 in. and 21 ft. 0 in.; and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Note: The spacing of the Nailer Joists must not be more than the safe span of the flooring over the joists.

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"O-T" NAILER JOIST LOADING TABLE TABLE TWO

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Nailer Joists at various spacings.

The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the joists.

Clear span	Joist type	Total safe load pounds	Total safe load in pounds per square foot for various joist spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0
8′-0″	80W	3100	388	332	291	274	258	245	233	221	211	202	194	155	129	111	97	78	65	55
9′-0″	80W	3100	344	295	258	243	230	218	207	197	188	180	172	138	115	98	86	69	57	49
10′-0″	80W	3100	310	266	233	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44
11′-0″	80W	2818	256	220	192	181	171	162	154	146	140	134	128	102	85	73	64	51	43	37
12′-0″	80W	2583	215	185	161	152	144	136	129	123	117	112	108	86	72	62	54	43	36	31
	100W	3111	259	222	194	183	173	164	156	148	141	135	130	104	86	74	65	52	43	37
	120W	4000	333	286	250	235	222	211	200	190	182	174	167	133	111	95	83	67	56	48
13′-0″	80W	2385	183	158	138	130	122	116	110	105	100	96	92	73	61	52	46	37	31	
	100W	2872	221	190	166	156	147	140	133	126	121	115	110	88	74	63	55	44	37	32
	120W	3744	288	247	216	203	192	182	173	165	157	150	144	115	96	82	72	58	48	41
14′-0″	80W	2214	158	136	119	112	105	100	95	90	86	83	79	63	53	45	40	32		
	100W	2667	190	163	143	135	127	120	114	109	104	99	95	76	64	54	48	38	32	
	120W	3476	248	213	186	175	166	157	149	142	135	130	124	99	83	71	62	50	41	35
	121W	4600	329	282	246	232	219	208	197	188	179	171	164	131	110	94	82	66	55	47
15′-0″	80W	2067	138	118	103	97	92	87	83	79	75	72	69	55	46	39	34			
	100W	2489	166	143	124	117	111	105	100	95	91	87	83	66	55	47	42	33		
	120W	3244	216	185	162	153	144	137	130	124	118	113	108	87	72	62	54	43	36	31
	121W	4600	307	263	230	216	204	194	184	175	167	160	153	123	102	88	77	61	51	44
16′-0″	80W	1938	121	104	91	85	81	76	73	69	66	63	61	48	40	35	31			
	100W	2333	146	125	109	103	97	92	87	83	80	76	73	58	49	42	37			
	120W	3042	190	163	143	134	127	120	114	109	104	99	95	76	63	55	48	38	32	
	121W	4600	288	246	216	203	192	182	173	164	157	150	144	115	96	82	72	58	48	41
17′-0″	100W	2196	129	111	97	91	86	81	77	74	71	68	65	52	43	37	32			
	120W	2863	168	144	126	119	112	106	101	96	92	88	84	67	56	48	42	34		
	121W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
	141W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
18′-0″	100W	2074	115	99	86	81	77	73	69	66	63	60	58	46	38	33				
	120W	2704	150	129	113	106	100	95	90	86	82	78	75	60	50	43	38	30		
	121W	4444	247	212	185	174	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	141W	4600	296	220	192	180	171	162	154	146	139	133	128	102	85	73	64	51	43	37
	161W	5481	305	261	228	215	203	192	183	174	166	159	152	122	102	87	76	61	51	44
19′-0″	100W	1965	103	89	78	73	69	65	62	59	56	54	52	41	34	30				
	120W	2561	135	116	101	95	90	85	81	77	74	70	67	54	45	39	34			
	121W	4211	222	191	166	156	148	140	133	127	121	116	111	89	74	64	56	44	37	32
	141W	4600	242	208	182	171	161	153	145	138	132	126	121	97	81	69	61	48	40	35
	161W	5193	273	234	205	193	182	173	164	156	149	143	137	109	91	78	68	55	46	39
20′-0″	100W	1867	93	80	70	66	62	59	56	53	51	49	47	37	31					
	120W	2433	122	105	91	86	81	77	73	70	67	64	61	49	41	35	30			
	121W	4000	200	171	150	141	133	126	120	114	109	104	100	80	67	57	50	40	33	
	141W	4567	228	196	171	161	152	144	137	130	124	119	114	91	76	65	57	46	38	33
	161W	4933	247	212	185	174	165	156	148	141	135	129	123	99	82	70	62	49	41	35
21′-0″	120W	2317	110	94	83	78	73	69	66	63	60	57	55	44	37	32				
	121W	3810	181	156	136	128	121	114	109	104	99	95	91	72	60	52	45	36	30	
	141W	4349	207	177	155	146	138	131	124	118	113	108	104	83	69	59	52	41	35	30
	161W	4698	224	192	168	158	149	141	134	128	122	117	112	90	75	64	56	45	37	32
22′-0″	120W	2212	101	86	75	71	67	64	60	57	55	52	50	40	34					
	121W	3636	165	142	124	117	110	104	99	94	90	86	83	66	55	47	41	33		
	141W	4152	189	162	142	133	126	119	113	108	103	99	94	76	63	54	47	38	32	
	161W	4485	204	175	153	144	136	129	122	117	111	106	102	82	68	58	51	41	34	
23′-0″	120W	2116	92	79	69	65	61	58	55	53	50	48	46	38	31					
	121W	3478	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30		
	141W	3971	173	148	130	122	115	109	104	99	94	90	86	69	58	49	43	35		
	161W	4290	187	160	140	132	124	118	112	107	102	97	93	75	62	53	47	37	31	
24′-0″	120W	2028	85	72	63	60	56	53	51	48	46	44	42	34						
	121W	3333	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35			
	141W	3806	159	136	119	112	106	100	95	91	87	83	79	63	53	45	40	32		
	161W	4111	171	147	128	121	114	108	103	98	93	89	86	69	57	49	43	34		
25′-0″	141W	3653	146	125	110	103	97	92	88	84	80	76	73	58	49	42	37			
	161W	3947	158	136	119	112	105	100	95	90	86	83	79	63	53	45	39	32		
26′-0″	141W	3513	135	116	101	95	90	85	81	77	74	71	68	54	45	39	34			
	161W	3795	146	125	110	103	97	92	88	83	80	76	73	58	49	42	37			
27′-0″	141W	3383	125	107	94	88	83	79	75	71	68	65	63	50	42	36	31			
	161W	3654	135	116	102	96	90	85	81	77	74	71	68	54	45	39	34			
28′-0″	141W	3262	117	100	88	82	78	74	70	67	64	61	58	47	39	33				
	161W	3524	126	108	95	89	84	80	76	72	69	66	63	50	42	36	32			
29′-0″	161W	3402	117	100	88	83	78	74	70	67	64	61	59	47	39	34				
30′-0″	161W	3289	110	94	83	77	73	70	66	63	60	57	55	44	37	32				
31′-0″	161W	3183	103	88	77	72	69	65	62	59	56	54	51	41	34	30				
32′-0″	161W	3083	96	82	72	68	64	61	58	55	53	50	48	39	32					

For floor construction, joists should not be spaced over 24 in. o. c.

A MEMBER OF THE STEEL JOIST INSTITUTE

"CLERESPAN" JOISTS

Truscon "Clerespan" Joists when employed in floor construction can be used advantageously in buildings for all types of occupancy regardless of their location. In many types of buildings their use will automatically eliminate all columns from the structure with the exception of those in the outer walls. Greater floor areas are thus provided without obstructing columns than has ever heretofore been accomplished. When used in roof construction "Clerespan" Joists meet every requirement of every type of building.

"Clerespan" Joists made of hot rolled structural steel shapes, are designed in accordance with standard engineering practice. Top chords are designed for bending between panel points as well as direct compression.

"Clerespan" Joists all have a camber built in them. They are fabricated by welding in a modern shop noted for its welding equipment and developments in automatic welding.

"Clerespan" Joists possess unusual lateral stiffness. This is due to the high radius of gyration about the vertical axis.

"Clerespan" accessories, such as anchors, lath clips, screed clips, bearing plates, etc., are similar to those used with open truss joists. Diagonal bracing or bridging is provided by hot-rolled angles. Lines of bracing are about 10 ft. apart.

Notes Regarding Table

The weight of dead loads must in all cases be deducted to determine the live load carrying capacities which must be reduced for concentrated loads.

When holes are required in top or bottom chords the carrying capacities must be reduced in proportion to reduction of chord areas.

Figures printed in columns to right of heavy vertical line are for roof construction only.

Loads below horizontal zig-zag line are eliminated by end reaction.

The carrying capacities of "Clerespan" with top chords pitched, is determined by the nominal depth of the "Clerespan" Joists at the center of the span.

TOTAL SAFE UNIFORM LOAD TABLE

The following tables give the total safe uniformly distributed load carrying capacities of Truscon "Clerespan" Joists in pounds per lineal foot of span.

	Joist Types	Weight Lbs./Ft.	Max. End Reaction	Clear Opening or Net Span											
				25′-0″	26′-0″	27′-0″	28′-0″	29′-0″	30′-0″	31′-0″	32′-0″	33′-0″	34′-0″	35′-0″	36′-0″
18″ Depths	181	11	3,775	302	285	269	252	236	221	208	196	184	174	165	156
	182	12	4,213	337	320	298	277	259	242	226	212	200	188	178	168
	183	13	4,700	376	356	337	319	302	283	265	248	234	220	208	196
	184	15	5,625	450	422	392	364	340	317	297	278	262	247	233	220
	185	17	6,113	489	462	437	414	392	366	343	322	303	285	269	254
	186	19	6,966	557	536	516	480	448	418	392	368	346	326	307	291
	187	21	7,279	582	560	539	520	502	470	442	415	391	369	349	330
	188	23	7,635	611	587	566	545	527	509	478	449	423	399	377	357
	189	25	8,144	650	626	603	582	561	542	525	509	479	452	426	404
	1810	27	8,531	682	656	632	609	588	568	550	533	517	487	460	434
	1811	29	8,768	701	674	649	626	605	584	566	548	531	516	501	473
	1812	32	9,288	743	714	688	663	640	619	598	580	563	546	531	516
				29′-0″	30′-0″	31′-0″	32′-0″	33′-0″	34′-0″	35′-0″	36′-0″	37′-0″	38′-0″	39′-0″	40′-0″
20″ Depths	201	11	3,625	250	238	226	215	203	192	182	172	163	155	148	141
	202	12	4,031	278	267	253	237	223	210	198	187	177	168	160	152
	203	13	4,510	311	296	282	269	257	246	232	219	208	197	187	178
	204	15	5,409	373	354	332	312	293	276	261	246	233	221	210	199
	205	17	5,858	404	385	367	350	334	319	301	284	269	255	242	230
	206	19	7,091	489	464	439	412	387	365	344	325	308	292	277	264
	207	21	7,560	521	504	479	456	433	409	387	366	347	330	314	299
	208	23	7,984	550	532	515	499	471	444	420	398	377	358	340	324
	209	25	8,517	587	568	549	532	516	501	474	449	426	404	385	366
	2010	27	8,995	619	598	580	562	544	528	514	487	462	438	416	395
	2011	29	9,306	642	620	600	582	564	547	532	517	503	477	453	431
	2012	32	9,880	681	658	637	617	598	581	564	549	534	520	493	469
	2013	34	10,023	691	668	647	626	607	590	573	557	542	528	514	489
	2014	36	10,660	735	710	688	665	646	627	608	592	576	561	547	533
				33′-0″	34′-0″	35′-0″	36′-0″	37′-0″	38′-0″	39′-0″	40′-0″	41′-0″	42′-0″	43′-0″	44′-0″
22″ Depths	221	11	3,498	212	203	194	186	178	169	161	154	147	140	134	128
	222	12	3,911	237	227	218	207	196	186	176	168	160	152	145	139
	223	13	4,340	263	252	242	232	223	214	206	196	187	178	170	162
	224	15	5,214	316	302	288	273	258	245	233	221	210	200	191	183
	225	17	5,643	342	328	315	302	290	279	268	255	242	231	220	210
	226	19	6,848	415	396	379	360	341	323	307	292	278	265	252	241
	227	21	7,442	451	431	412	394	378	361	344	327	312	298	285	272
	228	23	8,481	514	486	460	436	414	393	374	356	340	324	310	296
	229	25	8,855	537	521	506	484	464	443	421	401	383	365	349	334
	2210	27	9,380	568	552	536	521	507	481	458	436	416	397	379	362
	2211	29	9,750	590	574	557	542	527	513	500	476	454	433	413	395
	2212	32	10,360	628	609	592	575	560	545	531	518	494	471	450	429
	2213	34	10,558	640	621	603	587	571	556	541	528	515	491	468	447
	2214	36	10,987	666	646	625	610	594	578	563	549	536	523	511	488
				37′-0″	38′-0″	39′-0″	40′-0″	41′-0″	42′-0″	43′-0″	44′-0″	45′-0″	46′-0″	47′-0″	48′-0″
24″ Depths	242	12	3,774	204	197	190	183	175	167	159	152	145	139	133	128
	243	13	4,200	227	219	211	203	196	189	183	176	170	162	156	149
	244	15	5,069	274	263	253	242	233	220	209	200	191	183	176	168
	245	17	5,458	295	284	274	264	255	246	238	229	220	211	202	194
	246	19	6,642	359	345	331	318	305	290	277	264	253	242	232	222
	247	21	7,215	390	374	360	346	333	321	309	296	283	271	260	250
	248	23	8,288	448	427	406	387	369	353	337	322	309	296	284	272
	249	25	8,862	479	460	442	426	409	394	379	363	347	333	320	307
	2410	27	9,937	537	523	498	475	453	432	413	395	378	363	348	334
	2411	29	10,360	560	545	531	518	494	471	450	431	413	395	379	364
	2412	32	10,773	582	567	552	539	526	513	490	469	449	430	413	396
	2413	34	11,073	598	583	568	554	540	527	515	492	470	450	431	413
	2414	36	11,543	624	608	592	577	563	550	537	525	513	491	470	451
				41′-0″	42′-0″	43′-0″	44′-0″	45′-0″	46′-0″	47′-0″	48′-0″	49′-0″	50′-0″	51′-0″	52′-0″
26″ Depths	264	15	4,920	240	232	223	216	208	201	193	185	178	171	165	159
	265	17	5,310	259	250	242	234	227	220	213	206	199	191	184	178
	266	19	6,478	316	304	294	283	273	263	252	242	232	223	214	206
	267	21	7,011	342	330	319	308	297	287	278	269	259	249	240	231
	268	23	8,057	393	380	364	348	333	319	307	294	283	272	262	252
	269	25	8,631	421	406	392	378	365	353	342	330	318	306	295	284
	2610	27	9,984	487	466	445	426	408	392	376	361	347	334	321	309
	2611	29	10,563	514	503	484	465	445	427	410	393	378	364	350	337
	2612	32	11,000	537	524	512	500	483	465	446	428	411	396	381	367
	2613	34	11,543	563	550	537	525	513	491	470	451	432	415	399	384
	2614	36	12,032	587	573	560	547	535	523	512	491	471	452	435	418
				45′-0″	46′-0″	47′-0″	48′-0″	49′-0	50′-0″	51′-0″	52′-0″	53′-0″	54′-0″	55′-0″	56′-0″
28″ Depths	284	15	4,815	214	207	200	194	187	182	175	169	162	156	151	145
	285	17	5,153	229	223	216	210	204	198	190	184	177	171	165	160
	286	19	6,323	281	272	263	254	247	239	232	223	214	206	199	192
	287	21	6,840	304	294	285	276	268	259	252	244	237	230	222	215
	288	23	7,875	350	338	326	315	303	292	281	271	261	252	243	235
	289	25	8,415	374	362	351	340	329	319	310	300	291	283	273	264
	2810	27	9,765	434	419	403	387	372	358	345	332	320	309	298	288
	2811	29	10,463	465	449	434	420	405	390	376	362	349	337	325	314
	2812	32	11,183	497	481	465	450	436	422	409	394	379	366	353	341
	2813	34	12,190	542	530	509	488	468	449	432	416	400	385	371	358
	2814	36	12,495	555	543	532	521	510	489	470	452	436	420	404	390
				49′-0″	50′-0″	51′-0″	52′-0″	53′-0″	54′-0″	55′-0″	56′-0″	57′-0″	58′-0″	59′-0″	60′-0″
30″ Depths	304	15	4,704	192	187	181	176	171	166	161	156	151	145	140	136
	305	17	5,023	205	200	194	188	182	175	170	164	159	154	149	144
	306	19	6,174	252	245	237	231	224	218	211	206	199	192	186	180
	307	21	6,689	273	265	257	250	243	236	230	223	217	211	205	199
	308	23	7,718	315	305	296	287	278	269	259	250	242	234	227	219
	309	25	8,232	336	326	316	307	299	291	282	275	267	259	251	243
	3010	27	9,555	390	378	367	354	341	329	318	307	297	287	278	269
	3011	29	10,241	418	405	393	381	370	359	347	335	324	313	303	293
	3012	32	10,952	447	433	420	408	396	385	374	363	352	340	329	319
	3013	34	12,103	494	479	464	447	430	415	400	386	372	359	347	336
	3014	36	12,825	523	513	498	483	468	451	435	420	405	391	378	366
				53′-0″	54′-0″	55′-0″	56′-0″	57′-0″	58′-0″	59′-0″	60′-0″	61′-0″	62′-0″	63′-0″	64′-0″
32″ Depths	328	23	7,553	285	277	270	263	255	249	241	233	226	219	212	206
	329	25	8,056	304	296	288	280	273	266	259	252	244	236	229	223
	3210	27	9,381	354	344	334	325	315	305	295	286	277	268	260	253
	3211	29	10,044	379	368	358	348	339	330	321	311	302	293	284	275
	3212	32	10,733	405	394	383	373	363	353	344	335	326	317	308	299
	3213	34	11,819	446	433	422	410	398	385	372	360	348	337	326	316
	3214	36	12,720	480	467	454	442	430	418	404	391	379	366	355	344

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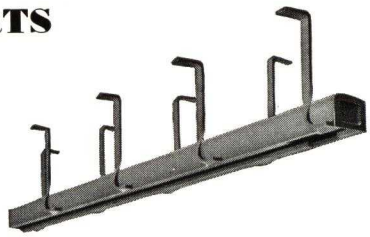
PRESSED STEEL INSERTS

SLOTTED INSERTS

Truscon Slotted Inserts are attached to the forms and are completely embedded in the concrete construction. Only the narrow slot flush with the concrete is seen in the completed work. The bolt can be moved along this slot to any location, allowing wide variation in position. Truscon Slotted Inserts are used with equal success in ceilings, slabs, beams or columns. The anchors are integral with the insert and occur every 6 in. on each side.

Standard lengths 12, 18, 24, 36, 48 and 60 in. Any desired length or run is obtained by removing end caps and butting the open ends together.

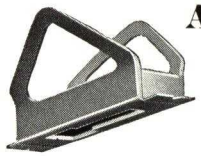
BRICK INSERTS



Truscon Brick Slotted Inserts have all the qualities and properties of Truscon Concrete Slotted Inserts.

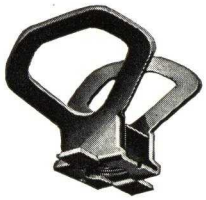
The prongs are so bent that they provide positive anchorage of the insert to masonry. They are furnished in standard lengths of 12, 18, 24, 36, 48 and 60 in.

ADJUSTABLE INSERTS



Truscon Adjustable Inserts are made of pressed steel and have the same simple method of application to concrete and adjustment for bolts as the slotted inserts, but without their wide range of adjustability. Carry ½, ⅝, and ¾ in. bolts.

TAPPED INSERTS



Truscon Tapped Inserts are made from pressed steel of highest quality, and furnished tapped for ⅜, ½, ⅝ and ¾ in. bolts. Particularly adapted for work where arrangement has been determined before start of construction. Where required, this type of insert can be furnished tapped for ⅜ or ½ in. pipe.

CARRYING CAPACITIES

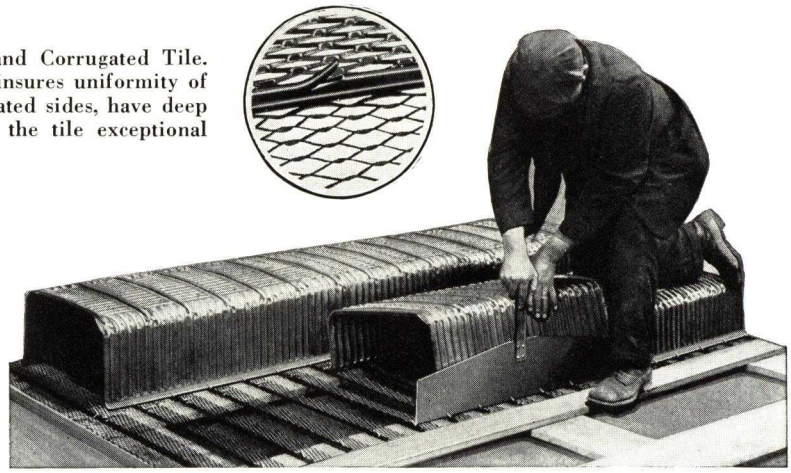
Since the supporting capacity of inserts is largely dependent on strength of the concrete and bolts, we cannot guarantee any particular loading. The following working loads have been determined by tests and give a factor of safety of at least four.

Inserts	For average good concrete
Slotted Inserts	2000 lbs. per lin. ft.
Adjustable Inserts: ½ in.	800 lbs. per insert
Adjustable Inserts: ⅝ and ¾ in.	1300 lbs. per insert
Tapped Inserts: All sizes	1500 lbs. per insert

FLORETYLE CONSTRUCTION

PERMANENT STEEL TILE

Truscon Floretyle are of two types—Ribbed Tile and Corrugated Tile. Both types are die formed in powerful presses, which insures uniformity of cross section. Ribbed tile in addition to having corrugated sides, have deep stiffening ribs across the top every 5 in. This gives the tile exceptional stiffness.



Properties of Floretyle

	Ribbed Tile	Corrugated Tile
Stand. Depths	4, 6, 8, 10, 12 and 14 in.	4, 6, 8, 10, 12, 14 and 16 in.
Stand. Width at base	20 in.	20 in.
Special Widths	10 and 15 in.	12 and 16 in.
Stand. Length will lay	2 ft. 2 in.	2 ft. 10 in.
Half Length will lay	1 ft. 1 in.	1 ft. 4 in.
Tapered Tile Length	2 ft. 2 in.	2 ft. 10 in.
Width of Tapered Tile Narrow End	Nominally 16 in. but can be furnished any width or depth required	16 in.

LOCKTYLE LATH

Locktyle Lath is a ⅜ Diamond Ribbed Lath furnished by special fabrication in rolls 100 ft. 0 in. long and 24 in. wide. The lath is furnished in weights of 3.4 lbs. and 4.0 lbs. per sq. yd. in either black or copper bearing steel. The ribs of the lath are pronged to engage the flange of the Floretyle.

Advantages of Permanent Tile

Saves in concrete due to stiffness of the pan.

Saves in placing costs, less weight per unit and removing of tile after pouring of concrete is eliminated.

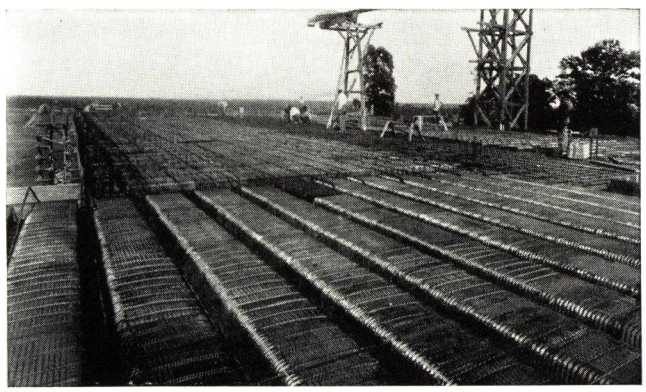
Simplifies form work.

Saves in placing pipes and conduits.

Locktyle construction is easily and speedily erected. The lath is rolled out on the forms, tacked in place, and the tile slipped into place by means of a special tool. The pressure of the wet concrete on the tile produces tension in the lath, resulting in a drum-like surface for a plaster base.

Advantages of Locktyle Lath

Insures uniform width of joists and positive attachment of ceiling to the structural slab.

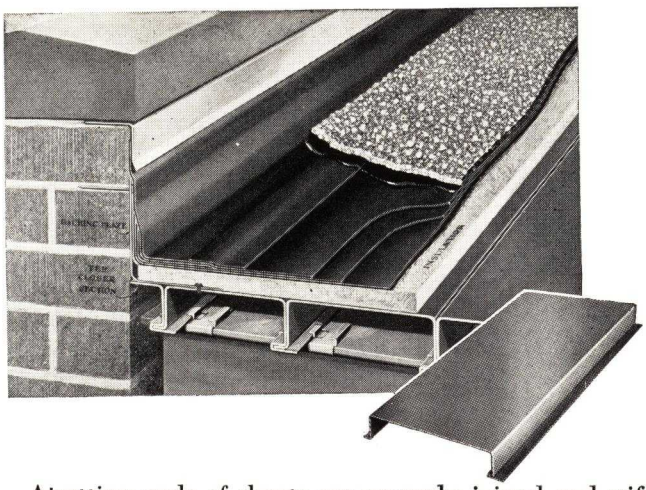


Saves in placing ceiling lath.

Saves in plastering due to the rigid lath and drum-like surface provided.

STEELDECK ROOFS

STEELDECK Roofs, insulated to any degree and waterproofed, are of a broad and general usefulness. They are particularly adaptable to theatres, gymnasiums, schools, auditoriums, public halls and industrial buildings requiring large floor areas free from supports and obstructions. Steeldecks are plates of copper-bearing steel of standardized lengths and widths, with ribs formed longitudinally in the plates. The ribs are on the underside of the plates and the top is a smooth level surface to receive insulation and waterproofing. They can be used to advantage on straightway, flat, pitched and curved roofs with a minimum radius of 60 ft.



FERROBORD ROOF

The Ferrobord type of Truscon Steelrock is a roof so formed that each sheet firmly interlocks with the adjoining sheets to form a continuous deck over the entire roof.

Truscon Ferrobord is formed of 18 or 20 gauge copper bearing or electro-galvanized strip steel. Each sheet is 6 in. wide with vertical flanges along the sides.

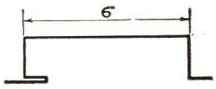
Ferrobord is applied directly to the roof supporting steel and is securely fastened to the structural members either by clipping or by welding each vertical rib to the purlins.

Abutting ends of sheets are securely joined and stiffened by a butt joint clip, presenting a smooth surface to which the insulation and built-up roofing are applied.

Ferrobord is adaptable to flat or pitched roofs or curved roofs, having a minimum radius of 60 ft.

The fabricated sheets receive a shop coat of gray paint.

Curving Ferrobord — Ferrobord may be curved to minimum radius of 60 ft. 0 in. in the shop or 115 ft. 0 in. in the field.



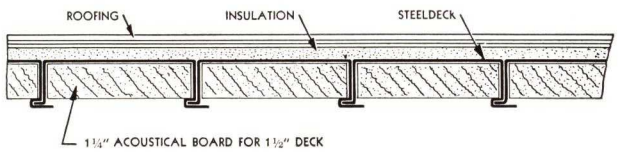
STEELDECK FERROBORD

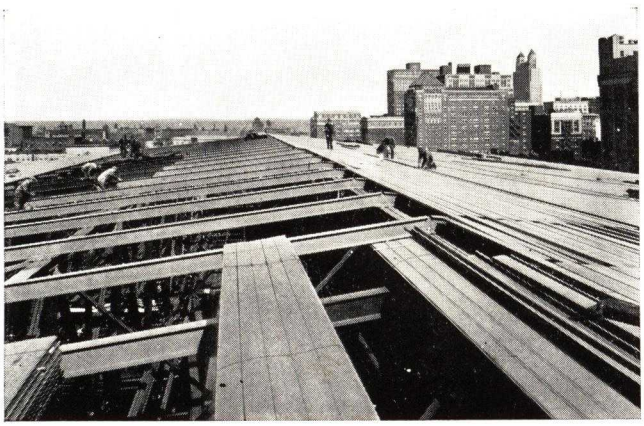
Gauge	Dimens., in.		Mom. of Inertia per ft. width	Sec. Modulus per ft. width	Table of Safe Loads in Lbs. per Sq. Ft.*												
	Depth	Width			4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"
18	1¼	6	.190	.205	155	120	100	85	70	60	50	45	40	35	25	.....	.....
20	1¼	6	.148	.160	120	95	80	65	55	47	40	35	30	25	.....	.....	.....
18	1½	6	.294	.268	250	195	160	130	110	95	80	70	60	50	45	.....	.....
20	1½	6	.228	.208	150	120	100	80	70	55	50	40	35	30	.....	.....	.....
18	1¾	6	.425	.337	260	205	165	135	115	100	85	75	65	55	50	45	40
20	1¾	6	.329	.261	200	160	130	105	90	75	65	55	50	45	40	35	30

*Loads shown in above table include 5.0 lbs. dead load for deck plates, insulation and roofing.

FERROCOUSTIC ROOFDECKS

Ferrocoustic Roofdecks provide all the advantages of Steeldeck with the additional feature of acoustical correction for auditoriums, large rooms, gymnasiums and similar places.





FERROBORD, 6 in. wide, with acoustical treatment, consists of panels of any commercial acoustical board fitted between the ribs of these roofdecks. The flanges of the ribs form a positive mechanical support. These ribs are 1¼, 1½ and 1¾ in. deep, allowing 1, 1¼ and 1½ in. of acoustical treatment to be used. Sheets with acoustical board inserted are welded to purlins, eliminating metal clips and adding strength to the construction.

The Ferrobord construction with the Ferrocoustic treatment also makes an excellent, light-weight, quiet floor construction of minimum thickness when surfaced with cement, magnesite, rubber tile, linoleum or other materials, for its structural design enables it to carry unusually heavy loads.

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DENVER, COLO., 820 12th Street
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JACKSONVILLE, FLA., 504-6 Hildebrandt Building

KANSAS CITY, MO., 1009 Baltimore Avenue
KNOXVILLE, TENN., 705 General Building

LITTLE ROCK, ARK., 5224 U Street
LOS ANGELES, CALIF., 5480 E. Slauson Avenue
LOUISVILLE, KY., 622 So. Fifth Street

MEMPHIS, TENN., 586 Shrine Building
MIAMI, FLA., 1333 No. Bayshore Drive
MILWAUKEE, WIS., 6111 Plankinton Building
MINNEAPOLIS, MINN., 738 Baker Building

NASHVILLE, TENN., 801 Nashville Trust Building
NEWARK, N. J., 605 Broad Street
NEW HAVEN, CONN., 42 Church Street
NEW ORLEANS, LA., 1143 Canal Bank Building
NEW YORK, N. Y., 155 E. 44th Street
NORFOLK, VA., 22nd and Manteo Streets

OKLAHOMA CITY, OKLA., 1 Northwest First Street
OMAHA, NEB., 851 Insurance Building

PEORIA, ILL., 306 Lehman Building
PHILADELPHIA, PA., 906 Architects Building
PHOENIX, ARIZ., 222 Luhrs Building
PITTSBURGH, PA., 2544 Oliver Building
PORTLAND, ORE., 2139 No. Kerby Avenue

RICHMOND, VA., 222 E. Broad Street

ST. LOUIS, MO., 1005 St. Louis Mart Building
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SAN FRANCISCO, CALIF., 604 Mission Street
SCRANTON, PA., 203 Colfax Avenue
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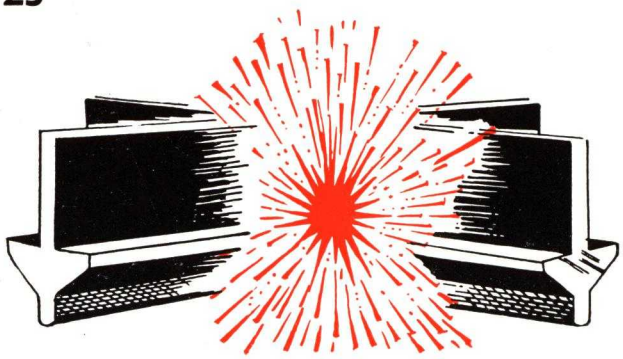
WINDOWS *by* VENTO



VENTO WELDED STEEL WINDOWS

THE COMPANY

For fifteen years THE VENTO STEEL PRODUCTS COMPANY have been manufacturing Electric Arc Welded steel windows, having pioneered numerous developments within the industry. Modern plant and equipment, a thoroughly experienced Engineering Department; and a production staff of window craftsmen, are devoted to the manufacture of steel window products of genuine merit.

THE ORGANIZATION

In addition to an experienced corps of thoroughly trained field representatives, distribution facilities are maintained in principal cities; and the Company's erection organization will undertake complete installation contracts when required. A competent Engineering staff is at the service of Vento clients.

THE PRODUCT

Domestic steel—Full weight and depth of sections—thorough electric arc welding—means unusual strength, rigidity and lasting window satisfaction.

Vento window products include types for all purposes of industrial, residential or public construction and embrace the entire range of casement and industrial window groups. Individual catalogs are available on each.

"WINDOWS BY VENTO"

is definite assurance of the very highest quality of steel window construction and unit responsibility throughout.

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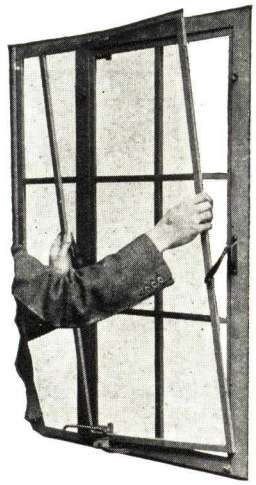
VENTO RESIDENCE CASEMENTS

DELUXE SIMPLEX AND ECONOMY



De Luxe Casement with Quadrant Adjuster

All types are with outswinging ventilators and designed for outside putty glazing. All are equipped with extended cleaning hinges. Dimensions, construction details, and workmanship are identical. The principal difference is in the method of operation, and the screening details.

"DE LUXE" CASEMENTS

Standard sizes are shown on pages 4 and 5

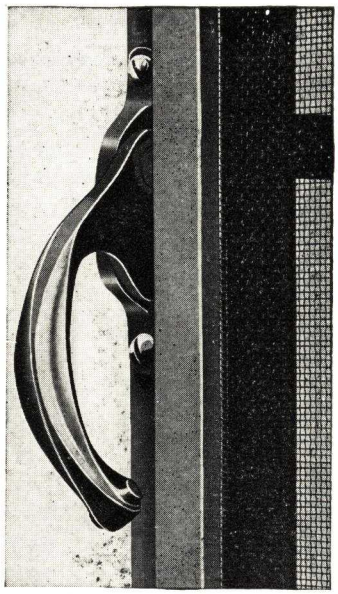
are designed particularly for the screened requirements of residence installations. This is truly the modern casement window and is recommended for all construction where screening is required.

This type of casement is equipped with underscreen hardware which operates the window through the sill of the casement frame, permitting the entire ventilator opening to be screened with flat screens attached to the inside of the casement.

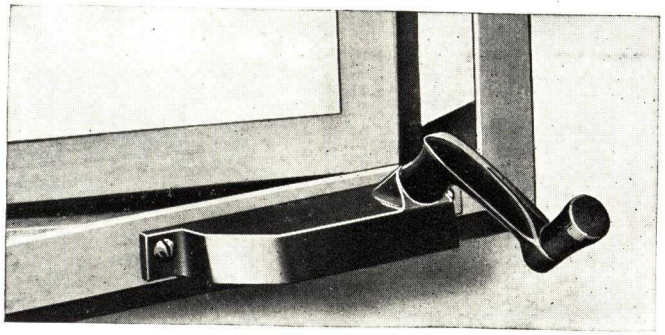
The screen is not removed for any stage of window operation.

Screens are attached and removed without tools, being held firmly by strong brackets.

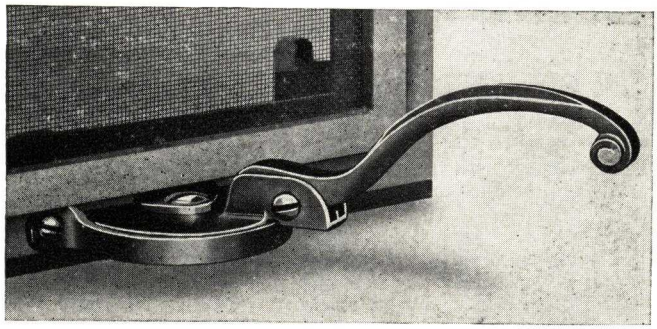
Standard hardware is attractively bronze finished. Full polished solid bronze is available.



Improved Locking Handle No. 350. Standard for De Luxe Casements. Semi-finished medium statuary solid bronze



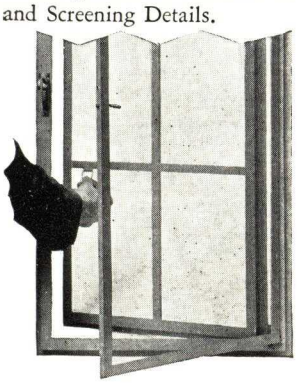
Improved Rotary Type Underscreen Operator No. 315. Supplied in medium statuary finish. Either this type as above or quadrant No. 310 optionally supplied for De Luxe Casements in solid bronze at extra price



Improved Direct Action Quadrant Operator No. 310. Entire operator including lever arm is of solid bronze in full finished medium statuary. Optionally supplied for De Luxe Casements at an extra. Note: This new quadrant handle will permit venetian blinds to come below the sight line of the bottom casement rail

SIMPLEX CASEMENTS—STANDARD SIZES ON PAGES 4 AND 5

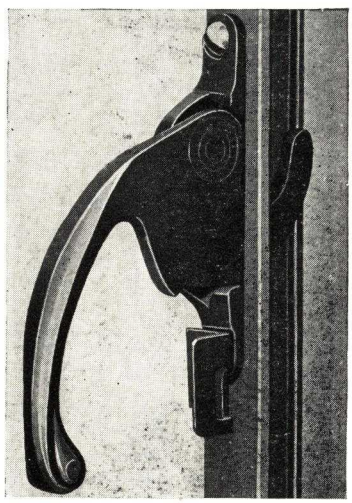
The general construction is the same as the De Luxe Casement, differing only in Hardware and Screening Details.



The locking handle operates through the casement frame permitting a flat type of screen to be used. This type of window, however, is not equipped with sill adjusters or opening devices and the ventilator leaf must be opened and closed by hand, for which purpose the pull ring is attached. The vent is held in any open position by adjustable friction built into the hinges. Operation of this type of window is illustrated at the left.

Being without sill adjusters, the screen must be of a type permitting same to be opened to operate the window. Side hinged screens as illustrated are recommended. Roll-Screens can also be used.

The screen snaps into place through a spring bolt operating in the keeper attached to the locking handle.



Locking Handle No. 375 for Simplex and Economy Casements. Solid bronze semi-finished in medium statuary.
Note: This handle will also be supplied for De Luxe Casements when venetian blinds are to be used.
Handle No. 375S, similar for sill vent units

ECONOMY CASEMENTS • *Standard Sizes on Page 6*

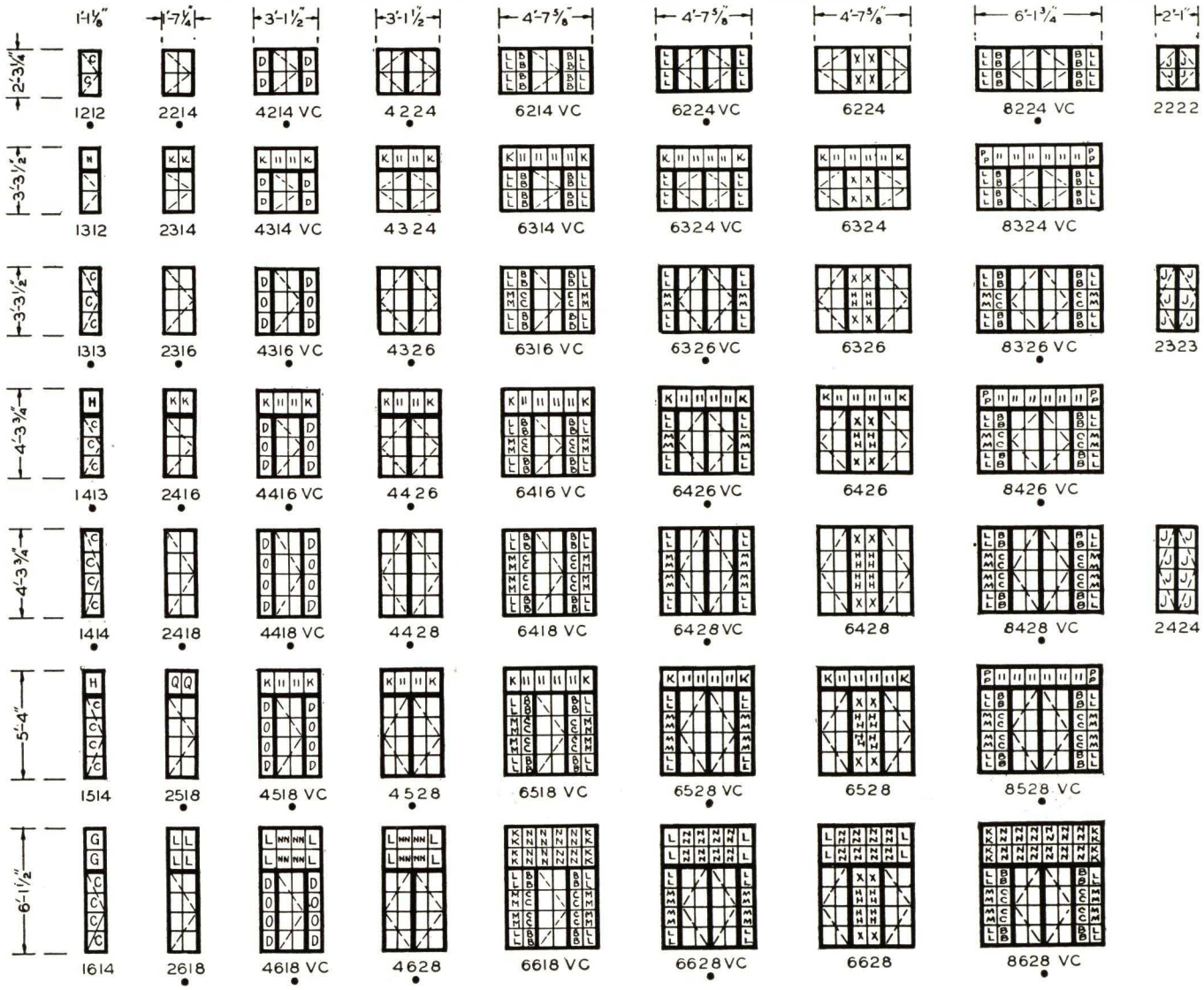
A residence type casement in which the intermediate vertical bars are omitted, giving the popular horizontal line effect. The marked savings in glazing costs plus the low cost of this group of windows makes this casement suitable where economy and first cost are of prime consideration.

Hinges, hardware, screening details and method of operation are exactly the same as Simplex Casements.

NOTE: Standard Rollscreens are available for all casement types where required.

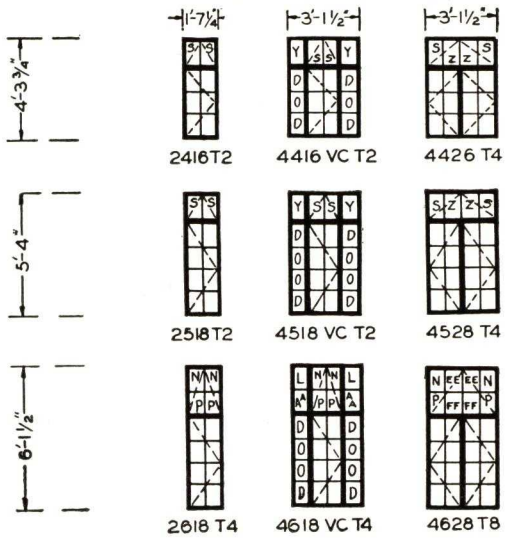
VENTO RESIDENCE CASEMENTS

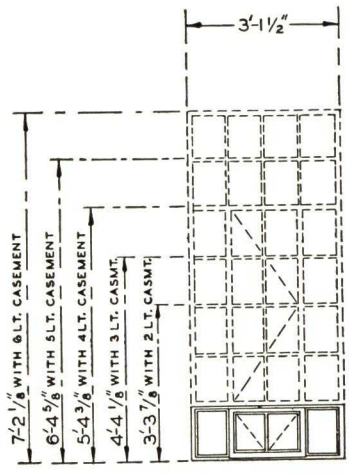
STANDARD TYPES AND SIZES



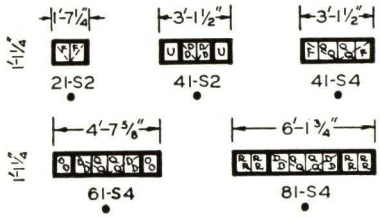
TRANSOM TYPE COMBINATIONS

Main vents side hinged. Transoms swing out.





SILL TYPE VENTILATORS



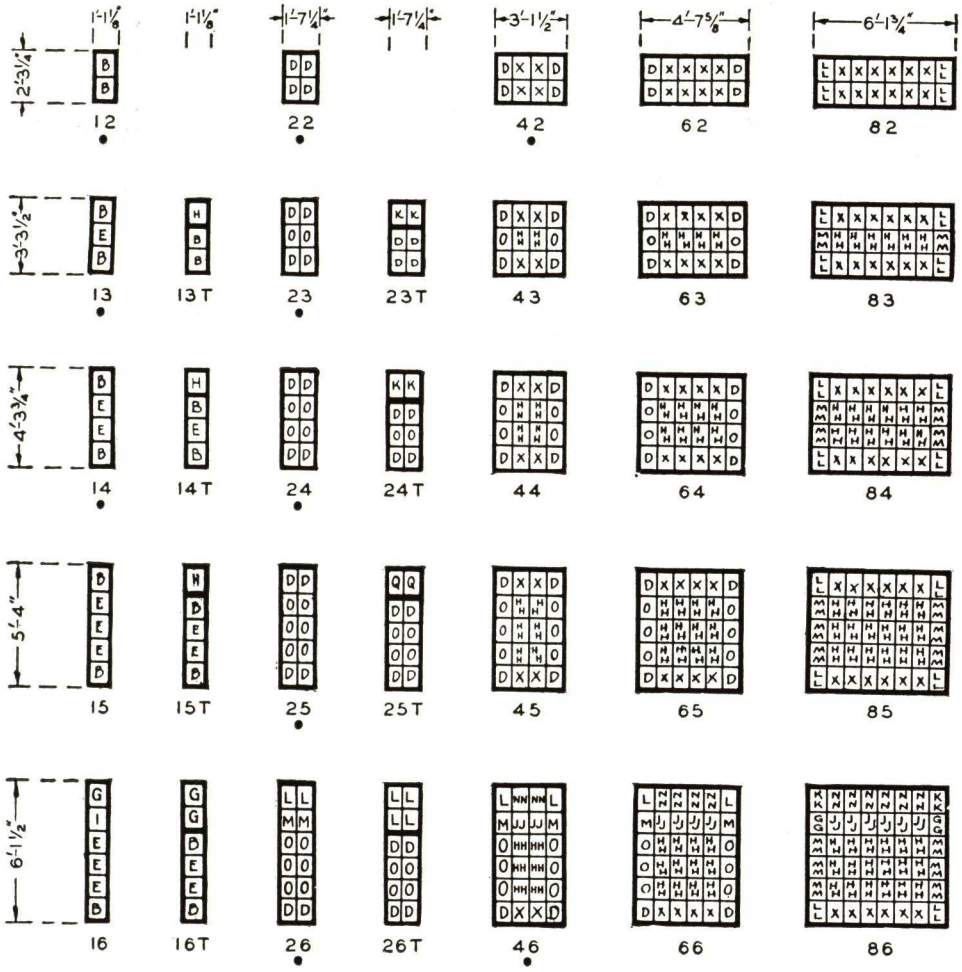
Hinged at Bottom to Open Inward

See diagram at left for standard still vent units combined with other units of varying lights high.

ADD ⅛" ALL around for opening dimensions.

VENTO RESIDENCE CASEMENTS

STANDARD TYPES AND SIZES



GLASS SIZES

Pane	Sizes
A	8 x 12
B	11 7/16 x 12 5/8
C	10 3/16 x 12
D	8 5/8 x 12 5/8
E	11 7/16 x 12
F	7 9/16 x 10 1/4
G	11 7/16 x 10 9/16
H	11 7/16 x 11 7/8
I	11 7/16 x 11 1/4
J	10 1/16 x 12
K	8 5/8 x 11 7/8
L	8 5/8 x 10 9/16
M	8 5/8 x 11 1/4
N	8 x 9 15/16
O	8 5/8 x 12
P	8 x 9 9/16
Q	8 5/8 x 11 7/8
R	8 9/16 x 11 9/16
S	8 x 10 5/16
T	8 5/8 x 11 9/16
U	8 5/16 x 11 5/16
V	8 13/16 x 11 5/16
W	11 7/16 x 11 9/16
X	8 13/16 x 12 5/8
Y	8 5/8 x 11 3/4
Z	8 13/16 x 10 5/16
AA	8 5/8 x 10 7/16
BB	8 3/4 x 12 5/8
CC	8 3/4 x 12
DD	8 7/16 x 10 1/4
EE	8 13/16 x 9 15/16
FF	8 13/16 x 9 9/16
GG	8 9/16 x 11 1/4
HH	8 13/16 x 12
II	8 13/16 x 11 7/8
JJ	8 13/16 x 11 1/4
KK	8 9/16 x 10 9/16
LL	8 9/16 x 12 5/8
MM	8 9/16 x 12
NN	8 13/16 x 10 9/16
OO	8 5/16 x 11 5/16
PP	8 9/16 x 11 7/8
QQ	8 3/4 x 10 1/4
RR	8 1/2 x 11 3/16

Templates required for circular head types. Lights not lettered are size "A."

NOTES

Sizes given are exact sash sizes. 1/8" must be allowed on all sides for sash clearance. If more than one type is used in the same opening add 1/4" to the sum of the sash sizes for each mullion or transom used to determine the overall sash size. For example: Type 4426 is 3'-1 1/2" wide. Two types 4426 side by side in the same opening would be 6'-3 1/4".

Handing of casements is determined by location of hinges. Viewed from outside, right-hand casements being hinged at right; left-hand being hinged at left.

VC—Ventilator in center
S—Bottom hinged sill type
●—Stock type
T—Transom Bar Type

Side hinged vents are outward opening. All types furnished with partial or complete omission of muntins when required.

Casements with single side hinged ventilators may be right or left hand as desired; i.e.: type 2416R or 2416L.

1st Figure—Number of lights wide
2nd Figure—Number of lights high
3rd Figure—Number of vents
4th Figure—Lights each vent

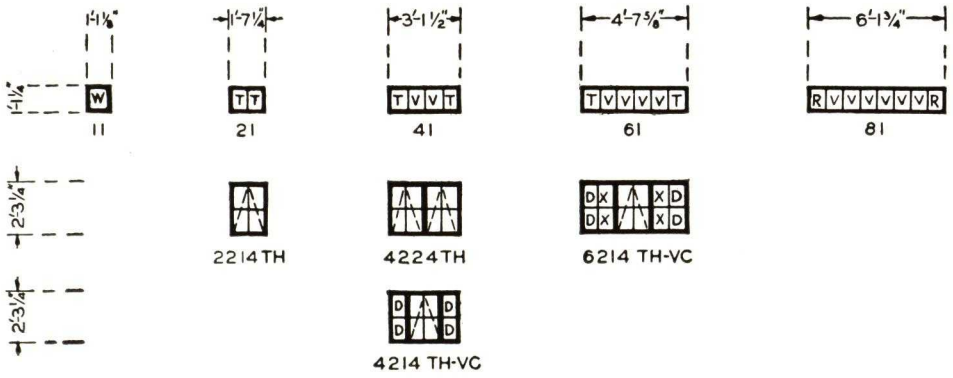
For Dimensions and Details of Sill Vents combined with other Units—see Page Four.

The diagonal dotted lines in the drawings represent the Ventilated portion of Each Window.

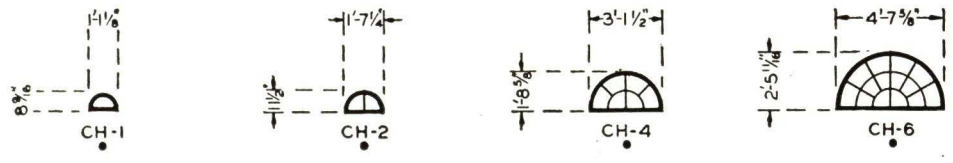
Those shown without these lines are "Fixed," i.e.: without Ventilators.

The point at which these lines meet is the side on which the Ventilators are hinged.

TRANSOM TYPE WINDOWS

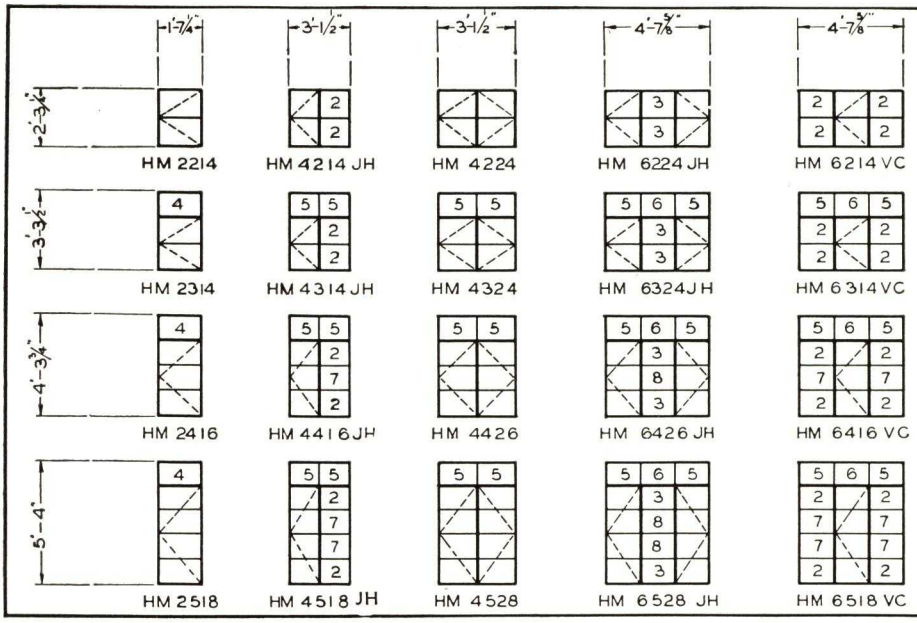


CURVED HEAD TRANSOMS



VENTO ECONOMY CASEMENTS
STANDARD TYPES AND SIZES

"Simplex" Type with Intermediate Vertical Muntins Omitted
For Construction Requiring Maximum Window Economy • Hardware and All Details Are the Same as "Simplex" Casements

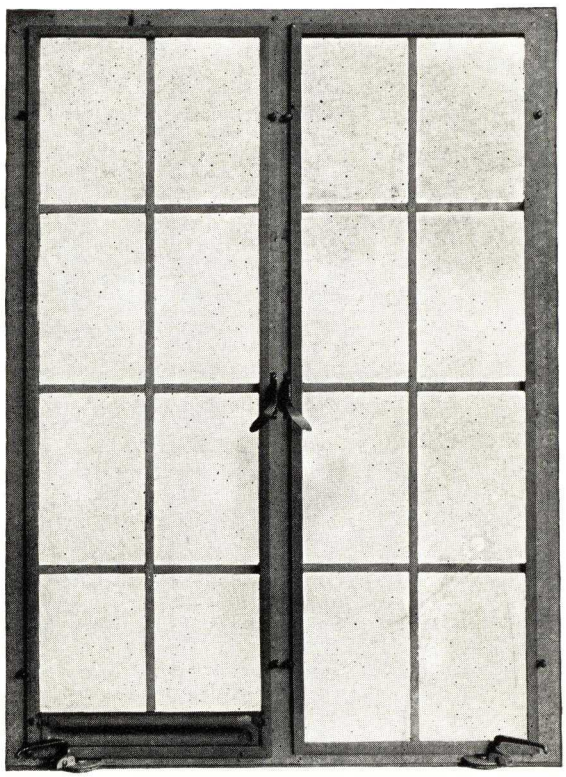


GLASS SIZES

Pane		Size
1	= 16 5/16" ×	12"
2	= 17 3/4" ×	12 5/8"
3	= 17 9/16" ×	12 5/8"
4	= 17 9/16" ×	11 3/4"
5	= 17 3/4" ×	11 3/4"
6	= 17 15/16" ×	11 3/4"
7	= 17 3/4" ×	12"
8	= 17 9/16" ×	12"

Lights not numbered are size **1**

VENTO INSULPANES



A refinement of the storm sash principle providing in effect double glazing. It adds to comfort, saves fuel and prevents objectionable condensation. Shipped completely glazed and are interchangeable with screens. Supplied in fixed units, with small tilt-in vent as illustrated above, or with ventilators one light high, permitting winter ventilation.

REDWOOD SURROUNDS

Vento Redwood surrounds have unusual resistance to weather and provide a brick guide for the mason which enables the brick to be laid up accurately and quickly.

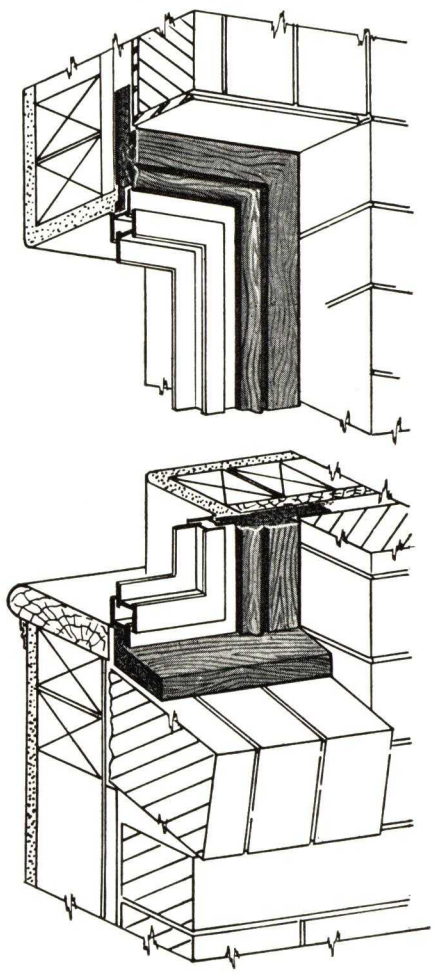
The use of Redwood surrounds provides a wider line between the brick and the casement, which is sometimes desirable to achieve the effect of added weight or width.

Redwood Surrounds not only provide a natural framing, enhancing the beauty of the casement installation itself, but also eliminates the use of other framing and trim. Surrounds are shipped mitered and cut to exact length ready for attachment. *No fitting necessary —no miters to cut—exact fit guaranteed.*

The groove in the surround that seats the casement section insures an absolutely weather-tight job.

Mastic is supplied for bedding and pointing the sash section.

Redwood mullions for multiple openings are also available and which are mitered to fit standard single head surround sections.

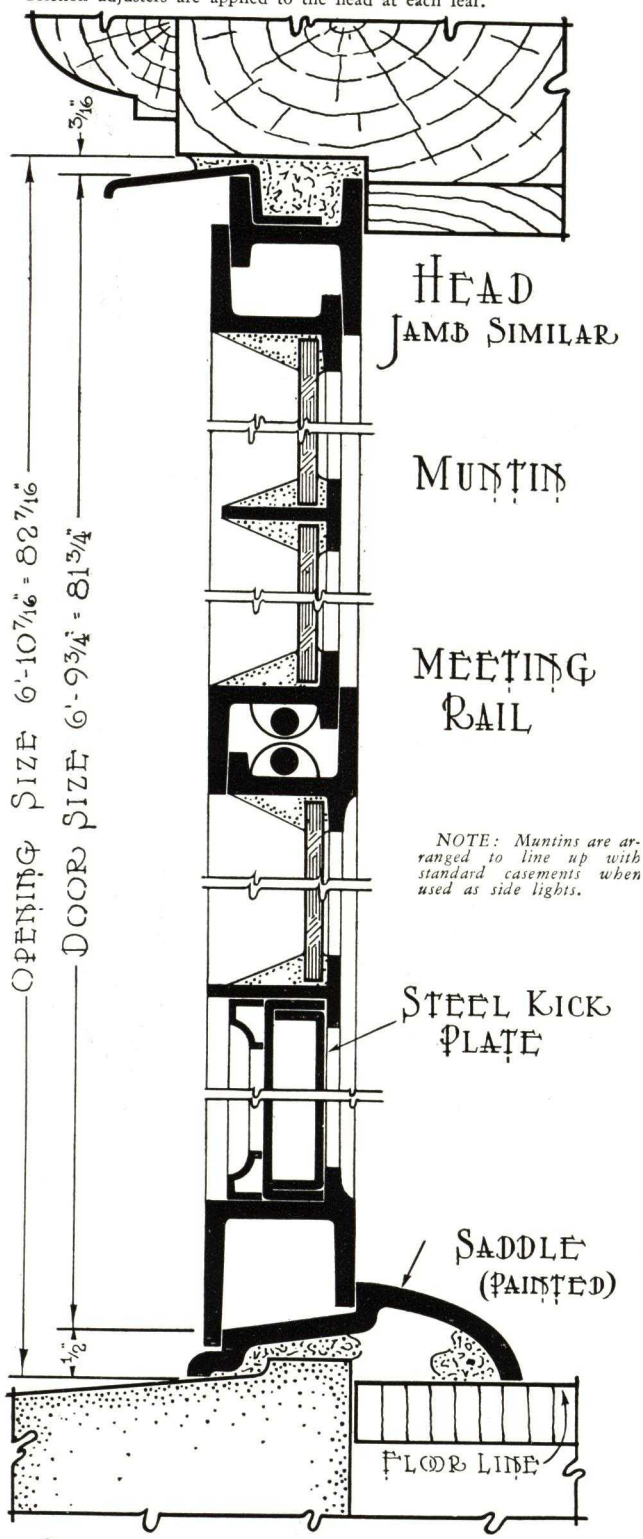


VENTO STANDARD STEEL FRENCH DOORS

CONSTRUCTION DETAILS

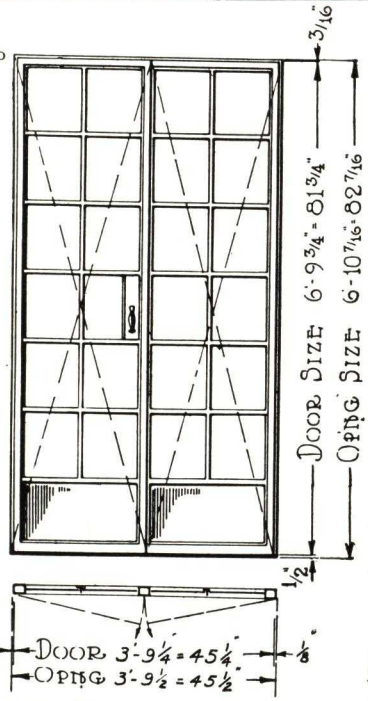
Hardware

Each leaf is hung on three 3-inch bronze butts.
Right hand leaf is fitted with aluminum lock box and bronze lever handles to operate concealed rods that lock doors at head and sill.
Doors also lock at the center.
Left hand leaf is fitted with concealed top and bottom bolts.
Friction adjusters are applied to the head at each leaf.

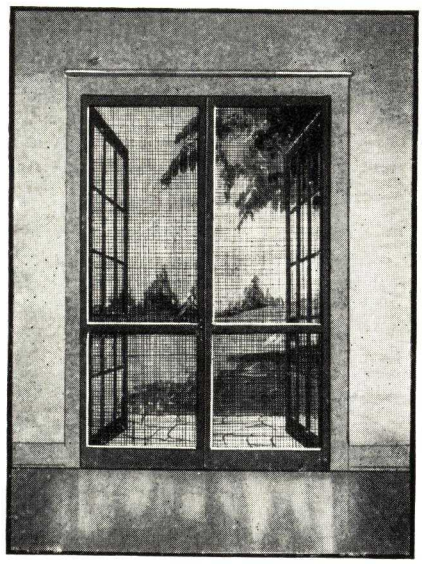


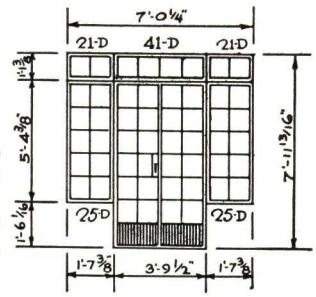
SECTION THRU DOOR

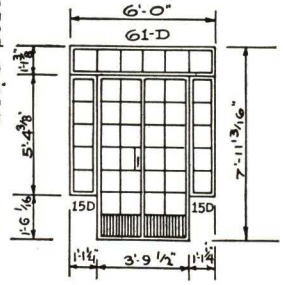
Scale ½ Full Size

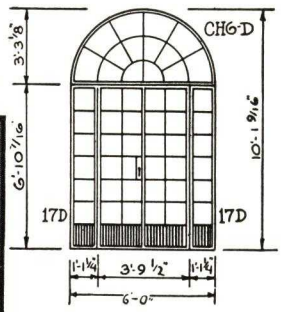


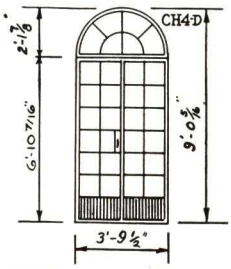
ELEVATION SCALE 3/8" = 1'-0"











All Dimensions Shown Are Opening Sizes

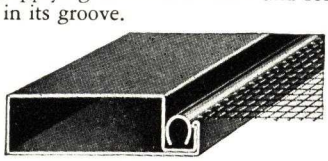
French Screen Doors

Furnished complete with mortise lever latch, steel hinges, top and bottom bolts and air closer.

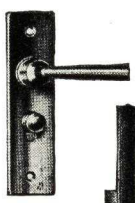
Two panel doors have a 3-inch top rail, 2-inch stiles and cross rail and 5¾-inch bottom rail. Thickness of stile ⅝ inch.

Single panel doors have a 3-inch top rail, 2-inch stiles and 12-inch bottom rail.

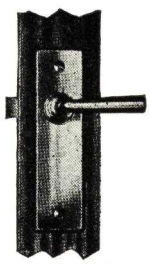
Screening is readily replaced by removing tube, applying new screen cloth and forcing tube in its groove.



Section of Screen Door



Inside View

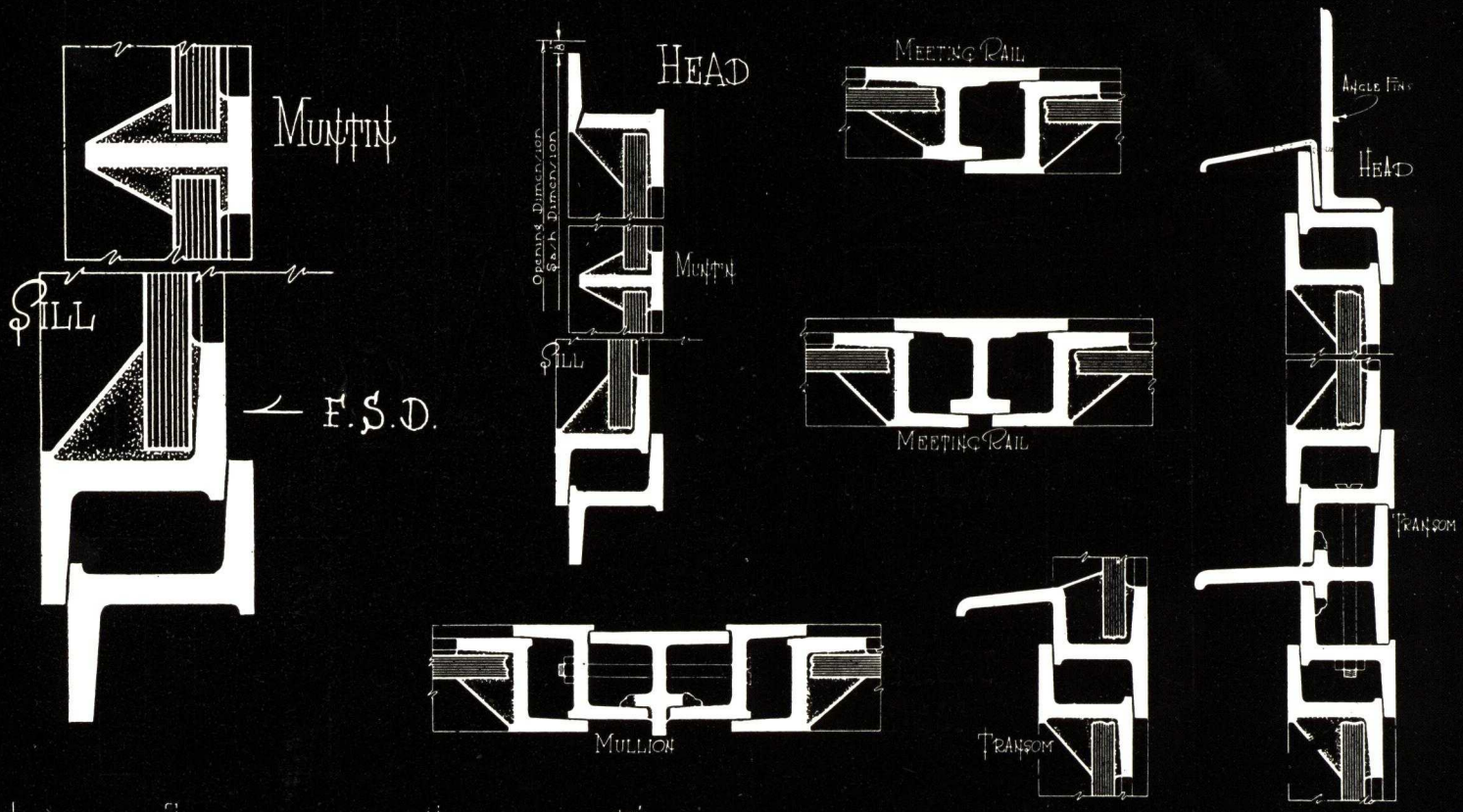


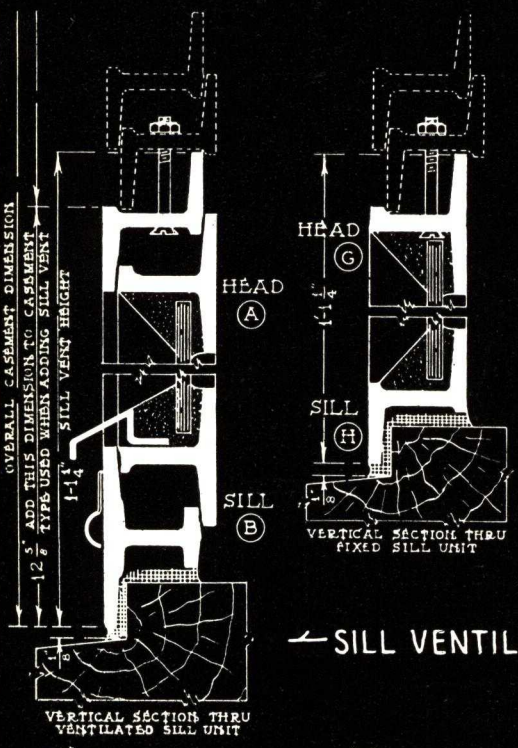
Outside View of Mortise Lever Latch

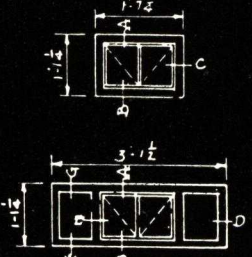
VENTO RESIDENCE CASEMENT ASSEMBLY DETAILS

APPLYING TO ALL CASEMENT TYPES

See Page 4 for Combination Heights Using Sill Ventilators

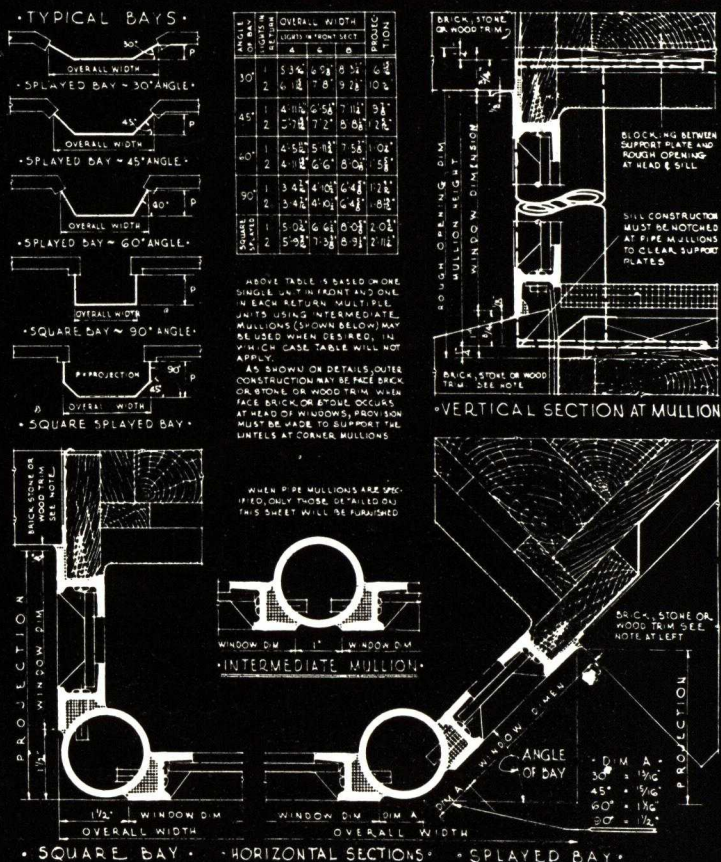


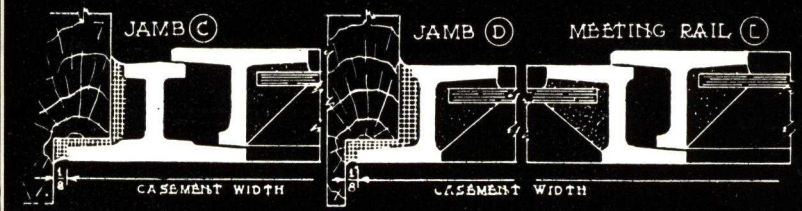




Above units shown to indicate section points.

BAYS AND PIPE MULLION DETAILS

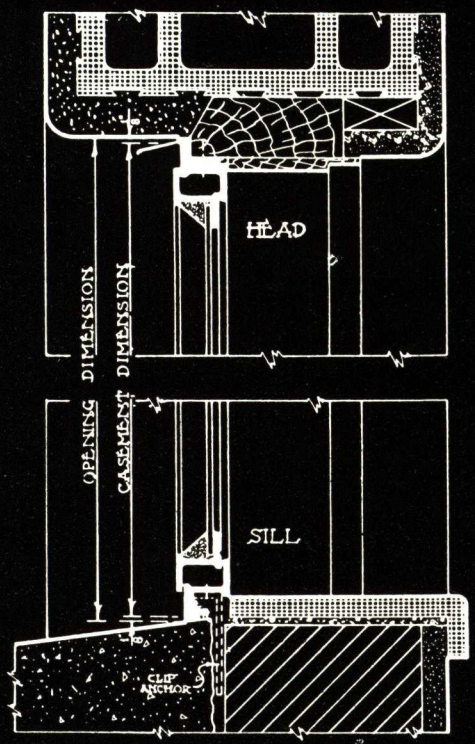




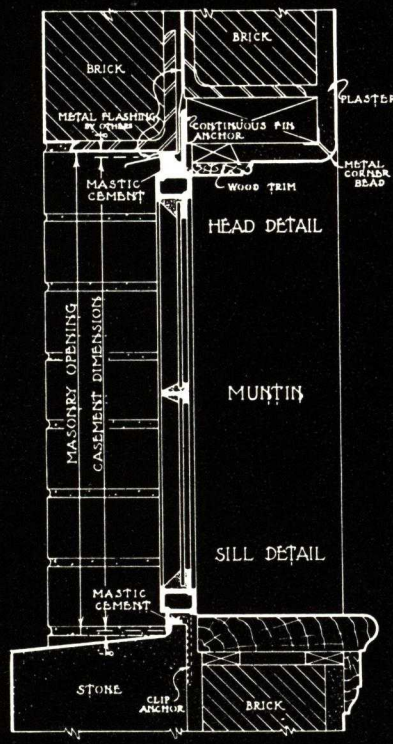
VENTO RESIDENCE CASEMENTS

MISCELLANEOUS INSTALLATION DETAILS

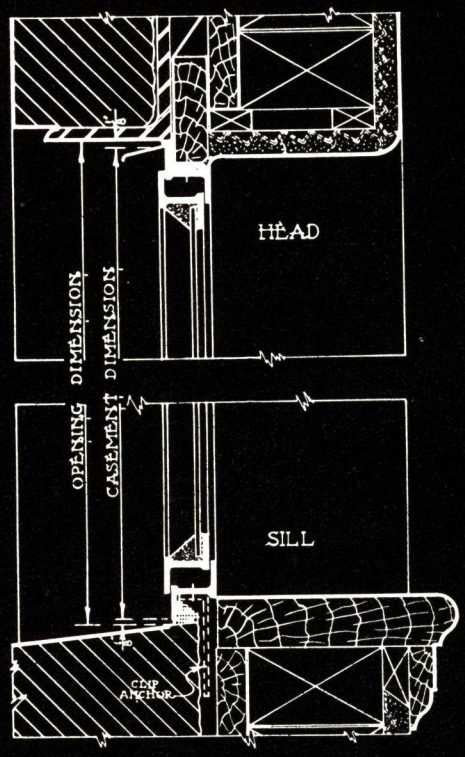
Our Engineering Department Will Gladly Prepare Details for Special Conditions



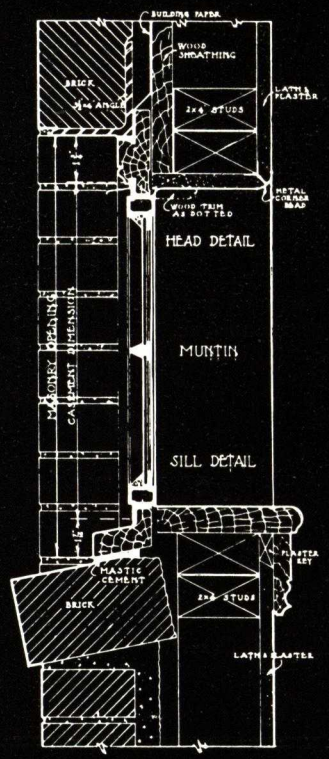
TILE AND STUCCO



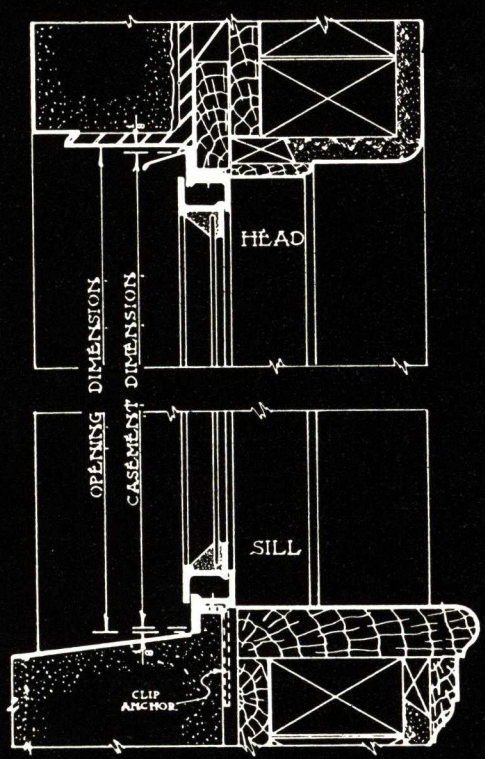
DETAILS FOR SOLID BRICK



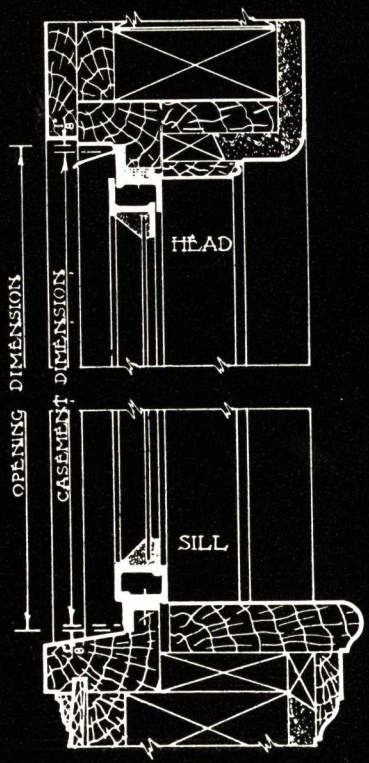
BRICK VENEER
WITH WOOD ANCHORING STRIP



BRICK AND STONE VENEER
WITH SURROUNDS



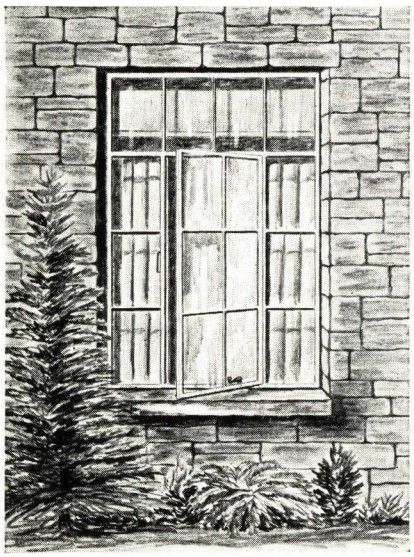
STONE TRIM



FRAME CONSTRUCTION

VENTO INTERMEDIATE SECTION WINDOWS

CASEMENTS AND COMBINATION PROJECTED CASEMENTS PROJECTED WINDOWS OF CASEMENT SECTIONS

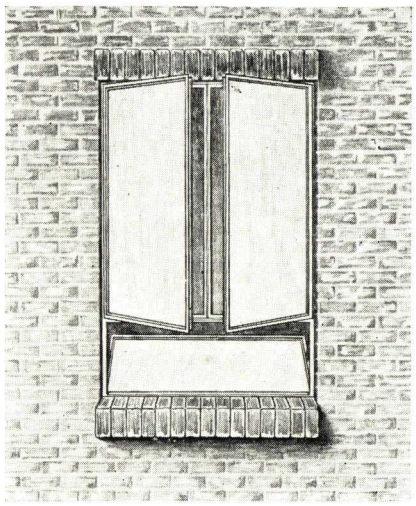


Intermediate Casement with Side Hinged Ventilator

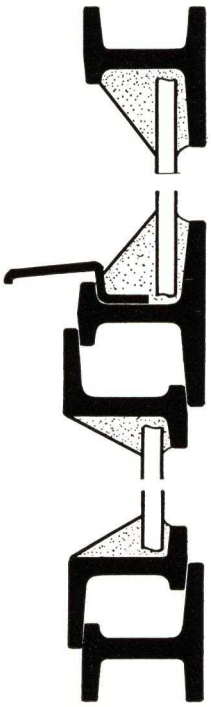
Vento intermediate windows in weight of section, care in manufacture, hardware details and finish make this line worthy of the finest structure.

Bronze hardware is standard for all intermediate section types and a wide range of standard sizes are available.

See following pages.

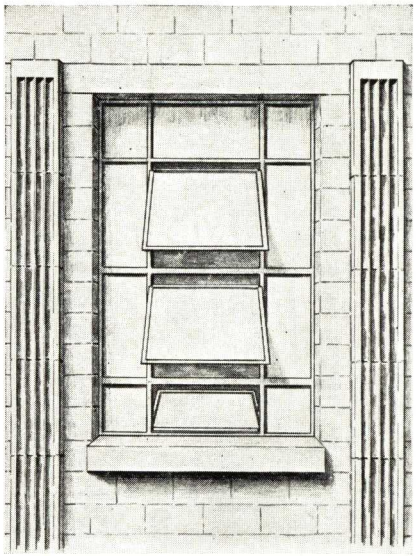


Casement Combination. Top Ventilators Hinged at Jambs to Open Out. Sill Ventilator to Tilt In



Intermediate casement illustrated above, left, is the standard window for the finest homes. Furnished in both screened and non-screen type.

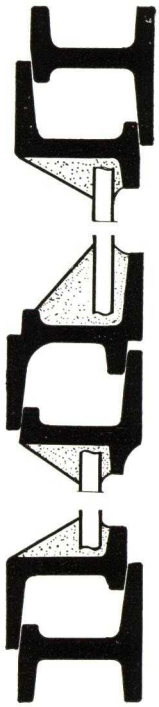
Flat screens of steel, aluminum or bronze are available.

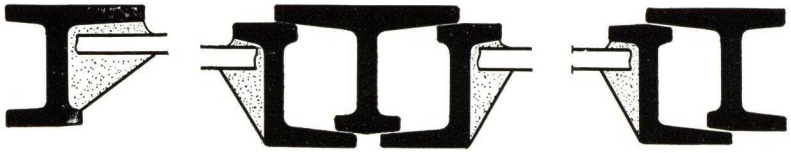


Projected Casements. Upper Ventilators Project Out; Sill Ventilator Projects In

The projected and combination types illustrated are especially suited for the better class of school, institutional, commercial and public construction.

The heavy casement sections and workmanship plus standardization permit the availability of this superb quality for the purposes of such construction.





NOTE: Custom Built Casements of Heavy Section Are Also Available. Full Data on Request

SECTIONS SHOWN ARE HALF FULL SIZE

VENTO INTERMEDIATE SECTION CASEMENTS

STANDARD TYPES AND SIZES

	1'-1⅛"	1'-7⅝"	2'-7⅝"	3'-2⅝"	3'-2⅝"	3'-2⅝"	4'-9¼"	4'-9¼"	4'-9¼"
1'-2¼"		DD ●21		FHHF ●41			FHHHHF 61		
2'-1⅜"	BB ●12	DD DD ●22	●2214	FHHF FHHF ●42	OO OO ●4214VC		FHHHHF FHHHHF 62	QO QO ●6224VC	
2'-1⅜"	C C ●1212		●2214TH	●4224	GG GG ●4218TH	4224TH	JJ JJ 6224	OGGO OGGO 6218TH-VC	JJ JJ 6224TH
3'-1"	BEB ●13	DD FF DD ●23	QQ 2314	QRRQ 4324	QRRQ OO OO 4314VC		QRRRRQ JJ JJ 6324	QRRRRQ OO OO 6324VC	
3'-1"	C C C ●1313		●2316	●4326	MM NN MM ●4316VC		KK LL KK 6326	MM NN MM ●6326VC	
4'-0⅜"	BEEB ●14	DD FF FF DD ●24	QQ 2416	QRRQ 4426	QRRQ MM NN MM 4416VC		QRRRRQ KK LL KK 6426	QRRRRQ MM NN MM 6426VC	
4'-0⅜"	C C C C ●1414		●2418	●4428	MM NN NN MM ●4418VC		KK LL LL KK 6428	MM NN NN MM ●6428VC	
4'-1¾"	BEEEB ●15	DD FF FF DD ●25	QQ 2518	QRRQ 4528	QRRQ MM NN NN MM 4518VC		QRRRRQ KK LL LL KK 6528	QRRRRQ MM NN NN MM 6528VC	
4'-1¾"	C C C C C ●1515		●25-1-10	●45-2-10	MM NN NN MM ●45-1-10VC		KK LL LL LL KK 65-2-10	MM NN NN MM ●65-2-10VC	
5'-11⅛"	UU UU 2618-T4	SS SS 2618	STTS STTS 4628	STTS STTS MM NN NN MM 4618VC	UUU UUU 4628-2T4		STTTTS STTTTS KK LL LL KK 6628	STTTTS STTTTS MM NN NN MM 6628VC	VUUUUV VUUUUV MM NN NN MM 6628VC-2T4
5'-11⅛"		QQ 26-1-10	QRRQ 46-2-10	QRRQ MM NN NN MM 46-1-10VC			QRRRRQ KK LL LL KK 66-2-10	QRRRRQ MM NN NN MM 66-2-10VC	
6'-10½"		SS SS 27-1-10	STTS STTS 47-2-10	STTS STTS MM NN NN MM 47-1-10VC	UUU UUU 47-2-10-2T4		STTTTS STTTTS KK LL LL KK 67-2-10	STTTTS STTTTS MM NN NN MM 67-2-10VC	VUUUUV VUUUUV MM NN NN MM 67-2-10VC-2T4

GLASS SIZES

Pane	Size
A	8 x 11
B	$10\frac{3}{16}$ x $11\frac{1}{4}$
C	$9\frac{11}{16}$ x 11
D	$8\frac{1}{4}$ x $11\frac{1}{4}$
E	$10\frac{3}{16}$ x 11
F	$8\frac{1}{4}$ x 11
G	$9\frac{1}{8}$ x 11
H	$9\frac{1}{8}$ x $11\frac{1}{4}$
J	$9\frac{1}{16}$ x $11\frac{3}{4}$
K	$9\frac{1}{16}$ x $11\frac{13}{16}$
L	$9\frac{1}{16}$ x 11
M	$8\frac{13}{16}$ x $11\frac{13}{16}$
N	$8\frac{13}{16}$ x 11
O	$8\frac{13}{16}$ x $11\frac{3}{4}$
P	$11\frac{1}{2}$ x $10\frac{1}{2}$
Q	$8\frac{13}{16}$ x $10\frac{3}{4}$
R	$9\frac{1}{16}$ x $10\frac{3}{4}$
S	9 x $10\frac{13}{16}$
T	$9\frac{1}{16}$ x 11
U	8 x 10
V	$8\frac{1}{2}$ x 11

Lights not lettered are size "A."

NOTES

Sizes given are exact sash sizes. One-eighth inch must be allowed on all sides for sash clearance. If more than one type is used in the same opening add ¼" to the sum of the sash sizes for each mullion or transom used to determine the overall sash size.

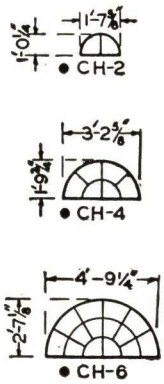
Handing of casements is determined by location of hinges.

Viewed from outside, right-hand casements being hinged at right, left-hand being hinged at left.

VC—Ventilator in center
T—Transom vent
●—Stock types

Side hinged vents are outward opening. All types furnished with partial or complete omission of muntins when required.

TRANSOM UNITS



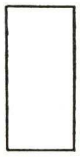
CASEMENT PROJECTED WINDOWS

STANDARD TYPES AND SIZES

Widths and heights of units increase by 6″ from minimum to maximum dimensions given

W = Widths
H = Heights

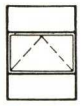
SEE PAGE 10 FOR SECTIONS



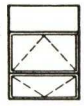
TYPE-A
W-1'-6" TO 4'-6"
H-1'-0" TO 9'-0"

TYPE-B
W-1'-6" TO 4'-6"
H-1'-0" TO 4'-0"

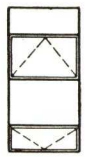
TYPE-C
W-1'-6" TO 4'-6"
H-3'-0" TO 6'-0"



TYPE-D
W-1'-6" TO 4'-6"
H-4'-6" TO 7'-0"

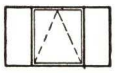


TYPE-E
W-1'-6" TO 4'-6"
H-4'-6" TO 7'-0"

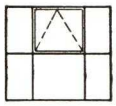


TYPE-F
W-1'-6" TO 4'-6"
H-6'-6" TO 9'-0"

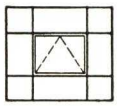
TYPE-G
W-1'-6" TO 4'-6"
H-6'-6" TO 9'-0"



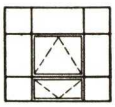
TYPE-H
W-4'-0" TO 7'-0"
H-1'-0" TO 4'-0"



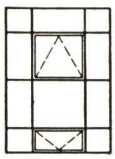
TYPE-J
W-4'-0" TO 7'-0"
H-3'-0" TO 6'-0"



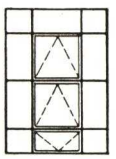
TYPE-K
W-4'-0" TO 7'-0"
H-4'-6" TO 7'-0"



TYPE-L
W-4'-0" TO 7'-0"
H-4'-6" TO 7'-0"



TYPE-M
W-4'-0" TO 7'-0"
H-6'-6" TO 9'-0"



TYPE-N
W-4'-0" TO 7'-0"
H-6'-6" TO 9'-0"

CASEMENT COMBINATION WINDOWS

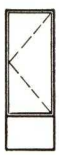
STANDARD TYPES AND SIZES

Widths for units B and C increase by 3″ from minimum to maximum dimensions given.
Balance of units increase by 6″ from minimum to maximum dimensions given.
Heights of all units increase by 6″ from minimum to maximum dimensions given.

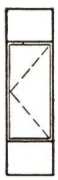
W = Width
H = Height

SEE PAGE 10 FOR SECTIONS

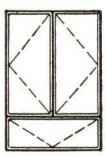
TYPE-A
W-1'-6" TO 4'-6"
H-4'-6" TO 9'-0"



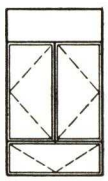
TYPE-B
W-1'-6" TO 2'-6"
H-4'-6" TO 7'-6"



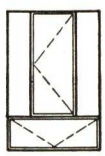
TYPE-C
W-1'-6" TO 2'-6"
H-5'-6" TO 9'-0"



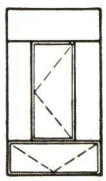
TYPE-D
W-2'-6" TO 4'-6"
H-4'-6" TO 7'-6"



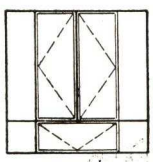
TYPE-E
W-2'-6" TO 4'-6"
H-5'-6" TO 9'-0"



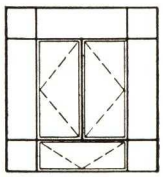
TYPE-F
W-2'-6" TO 4'-6"
H-4'-6" TO 7'-6"



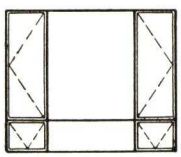
TYPE-G
W-2'-6" TO 4'-6"
H-5'-6" TO 9'-0"



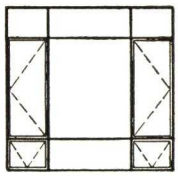
TYPE-H
W-5'-0" TO 7'-6"
H-4'-6" TO 7'-6"



TYPE-J
W-5'-0" TO 7'-6"
H-5'-6" TO 9'-0"



TYPE-K
W-5'-0" TO 7'-6"
H-4'-6" TO 7'-6"



TYPE-L
W-5'-0" TO 7'-6"
H-5'-6" TO 9'-0"

SPECIFICATIONS—VENTO CASEMENTS

The following specification notes will be useful to specification writers, covering all types of Vento Steel Casements

1. GENERAL: All steel casements shown on drawings shall be of the (Insert whether DeLuxe, Simplex or Economy residence type) or (casements, projected casements or combination casements of the intermediate section type) as manufactured by the VENTO STEEL PRODUCTS COMPANY of Muskegon, Michigan, or equal.

2. MATERIAL: Frame and ventilator sections shall be hot-rolled new Billet steel providing two point weathering contact between ventilator and frame. Corners of frame and ventilator sections to be mitred and welded, all welds being ground to a smooth finish. All steel hardware parts shall be heavily cadmium plated before painting.

3. HARDWARE: Provide (standard medium statuary finish or full polished bronze) hardware according to manufacturers' standards for the type of window above specified. (Include here whether quadrant or rotary type underscreen operator desired.)

   All side hung swing leaves shall open on heavy, extended cleaning hinges solidly welded to casement frame.

   NOTE: Add following specifications if sill or transom units are used. Hardware for tilt-in sill units to match hardware of other casements. Transom units shall be equipped with push type locking bar.

4. SCREENS FOR CASEMENTS WITH UNDERSCREEN OPERATORS: Provide 5/8" flat tubular frame screens for all ventilator openings. Frame to be made of electro galvanized steel solidly welded and finished with baked-on enamel. Screen cloth shall be 16-mesh antique bronze wire.

   HINGED SCREENS FOR CASEMENTS WITHOUT UNDERSCREEN OPERATORS: Supply standard Vento Side Hinged Screens with 5/8" tubular steel frame, frame to be made of electro galvanized steel with baked enamel finish. Screen cloth to be of 16-mesh antique bronze wire.

   NOTE: SCREENS: Aluminum, bronze or stainless steel screen frames can be supplied on order. Screen cloth can be bronze, aluminum or Inconel metal, the latter being generally used with stainless steel screens under atmospheric conditions of considerable corrosion.

5. SHADING: All casements shall be drilled to receive shade brackets. Shade brackets furnished under another heading.

6. MASTIC: Provide sufficient mastic cement for embedding casements. (Pointing and caulking, if desired, by others.)

7. ANCHORS: Specifications should state which of the several alternative methods of anchorage are required: Viz.: Wood screws, continuous fin anchors (for solid masonry) or Redwood Surrounds. Anchorage materials will be supplied in accordance with this specification.

8. GLAZING: Provide necessary spring wire glazing clips. (Glass, putty and glazing under separate heading.)

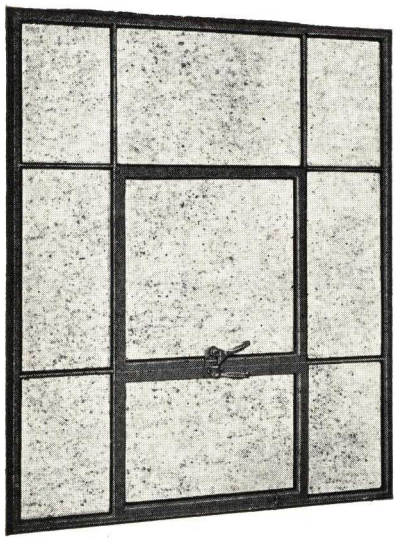
9. ERECTION: Casements shall be set in accordance with the manufacturer's instructions (or by manufacturer's erection forces if desired).

10. PAINT: Casements shall receive coat of manufacturer's standard paint applied at the factory before shipment.

ARCHITECTURAL PROJECTED WINDOWS

FOR SCHOOLS, OFFICES AND COMMERCIAL BUILDINGS, INSTITUTIONAL STRUCTURES AND ALL MAJOR CONSTRUCTION

Standard Sizes and Types Shown on Page 15



Type M Architectural Projected Window with Ventilator Closed

This is a high-grade, heavy section, projected window, the ventilator movement being through the medium of heavy bronze adjustable friction shoes riding in guides concealed in the weathering.

Supplied for either inside or outside putty glazing or inside angle glazing. See section details page 16.

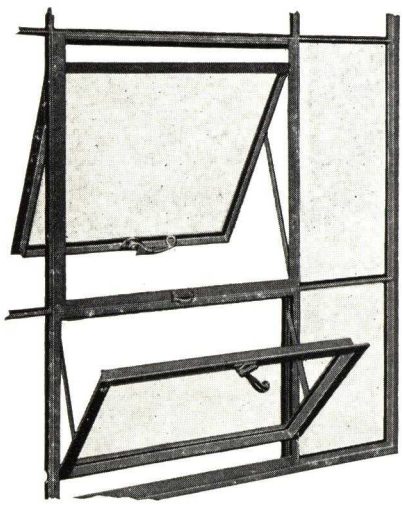
Hardware is fully Polished Solid Bronze. Adjacent ventilators as illustrated are provided with combination latch and strike.

Either equal or unequal leg frame sections are available. The equal leg construction is recommended for schools and other installations where simplicity of interior trim details is desired. Only a single rebate in the masonry is necessary and the interior trim can be carried direct to the window frame itself. The use of this equal leg section makes an exceedingly strong and rigid window construction.

Unusual attention is given to the assembly of these windows to insure perfect operation. Completely welded in jig frames; proper alignment, tight weathering, and thorough rigidity become inbuilt features of this Vento line.

Mullions, where required, are supplied with heavy plate covers.

Windows are given one coat of priming paint before shipping.



Detail of Window Construction and Operation of Adjacent Ventilators

ARCHITECTURAL PROJECTED WINDOWS

Architectural projected windows where shown on the drawings shall be those as manufactured by the VENTO STEEL PRODUCTS COMPANY, Muskegon, Michigan, or equal, and shall be of the sizes and types as shown.

MATERIALS: Frame members shall be heavy specially designed—(equal or unequal)—leg section, allowing 5/8" continuous anchorage. The muntins to be special formed T sections. Vertical mullions where indicated are to be manufacturer's standard hot rolled T sections with formed Steel Mullion Covers.

CONSTRUCTION:

NOTE: Specify here whether windows are to be designed for inside or outside putty glazing or inside angle glazing.

Frames and ventilators shall be assembled by tenoned, riveted and welded joints. Continuous two point contact weathering shall be provided between ventilators and frames.

Venilators to be accurately supported on solid steel arms and bronze adjustable friction shoes, the latter riding vertically in concealed guides.

Window manufacturer shall furnish necessary clips, anchors and bolts for window installation.

NOTE: Steel specification should refer to such punching as is necessary for the attachment of structural clips.

HARDWARE: All hardware shall be solid bronze full polished. Open-out ventilators within reach of manual operation to be equipped with Vento standard bronze ring type cam handle. Open-out vents beyond reach of manual operation shall additionally be equipped with pull down pole head ring.

Open-in ventilators shall be equipped with handle and keeper, all hardware to match in design and finish. Where such vents are beyond reach of manual operation, hardware to be bronze spring catch for pole operation.

ERECTION: All windows to be set plumb and true in prepared openings; and to be properly aligned and securely anchored prior to glazing.

NOTE: Mention in masonry specification that all openings are to be accurately constructed in accordance with manufacturer's details and also mention that all mortar, grouting and pointing shall be done by the masonry contractor after the windows are set.

NOTE: Mention under structural steel specification, where required, that all structural work forming a part of the window framing is to be provided by the steel contractor and punching in same to be in accordance with window manufacturer's details.

PAINTING: All windows to receive one shop coat of window manufacturer's standard shop paint.

NOTE: Windows should be given a field coat of paint after erection but before glazing, the final field coat not to be applied until putty has thoroughly set—usually about three weeks.

GLASS AND GLAZING:

NOTE: Glass and glazing are not a part of the window contract. The following, however, may be noted.

Specify glass thickness. Single strength glass is not recommended.

Specify a high grade steel window putty. Do not permit wood sash putty to be used.

For putty glazing specify that glass shall be bedded and the putty applied in a neat and clean cut manner.

For angle glazed windows specify that the glass shall be set in bed putty and held by glazing angles.

SCREENS:

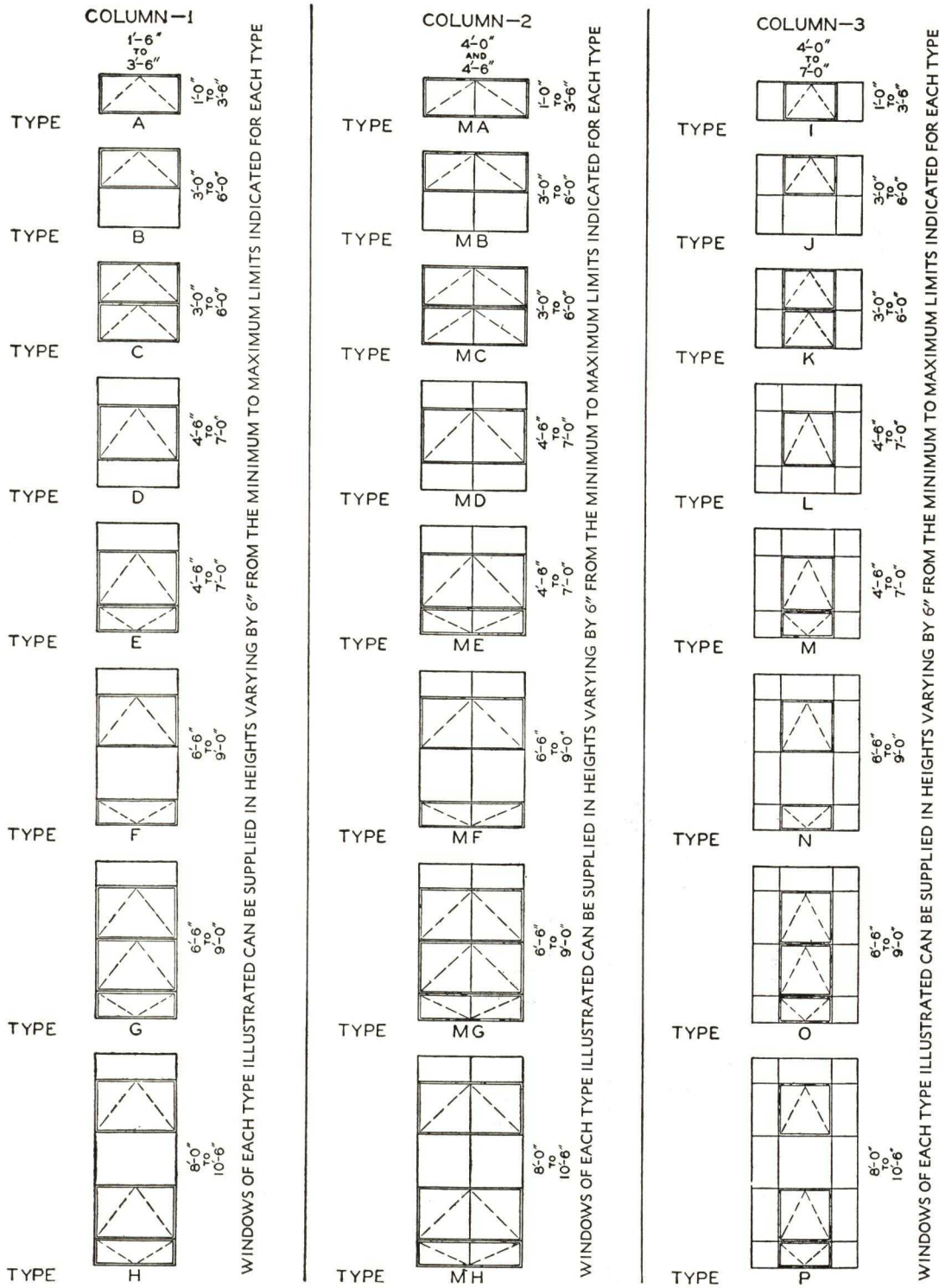
NOTE: Vento standard flat screens can be applied to the outside of architectural projected windows with project-in ventilators. No change in hardware is necessary.

Screening project-out vents with inside flat screens requires under-screen hardware, which when specified is supplied in bronze.

ARCHITECTURAL PROJECTED WINDOWS

STANDARD TYPES AND SIZES

Windows of the type illustrated in columns one and three, can be supplied in widths varying by 6″ from the minimum to maximum limits indicated. Windows of the muntin bar type illustrated in column two, can be supplied only in the two widths noted.



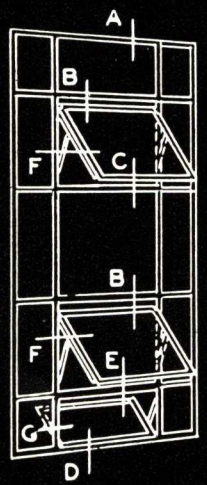
ARCHITECTURAL PROJECTED WINDOWS

ASSEMBLY AND INSTALLATION DETAILS

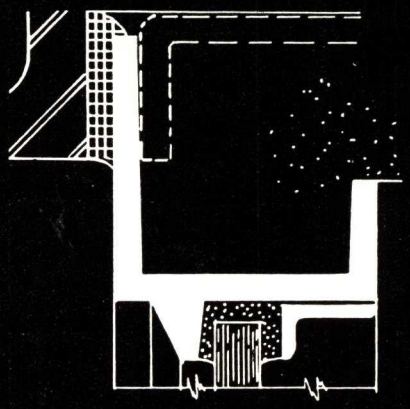
Full size sections at top show both inside angle glazing and outside putty glazing. Installation and section assemblies below apply to either.

DETAILS INDICATE RECOMMENDED CAULKING POINTS
WHERE SUCH IS REQUIRED OR SPECIFIED

Glazed Inside

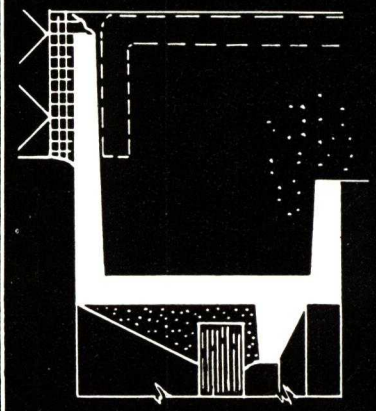


OUTSIDE VIEW
VENTILATORS PARTLY OPEN

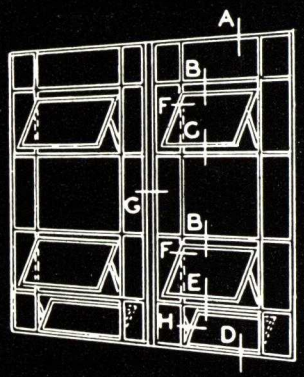


Full Size Section

Putty Glazed Outside

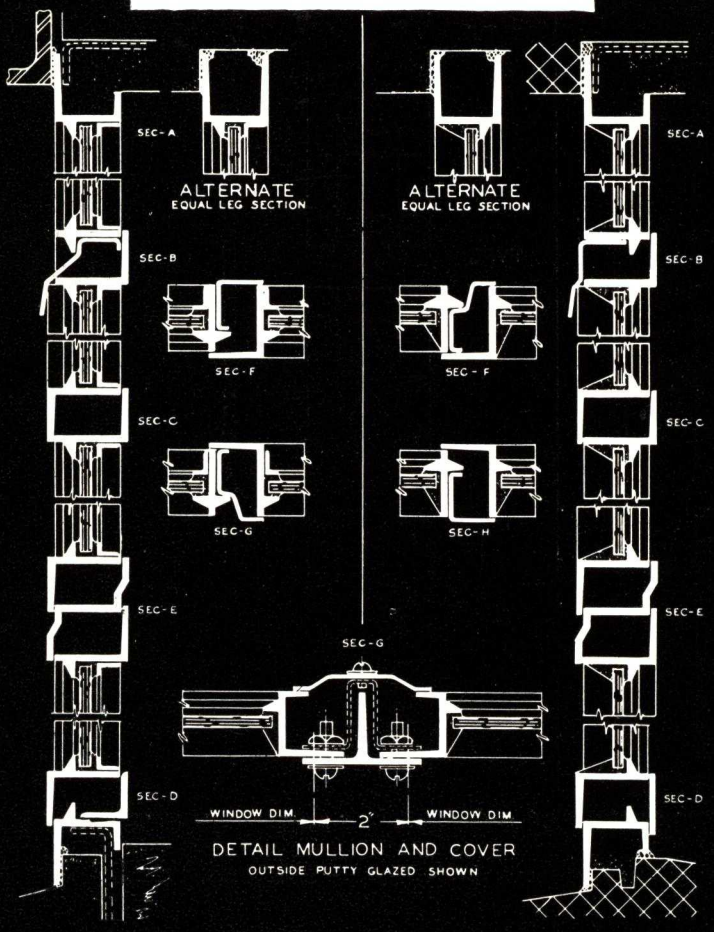


Full Size Section

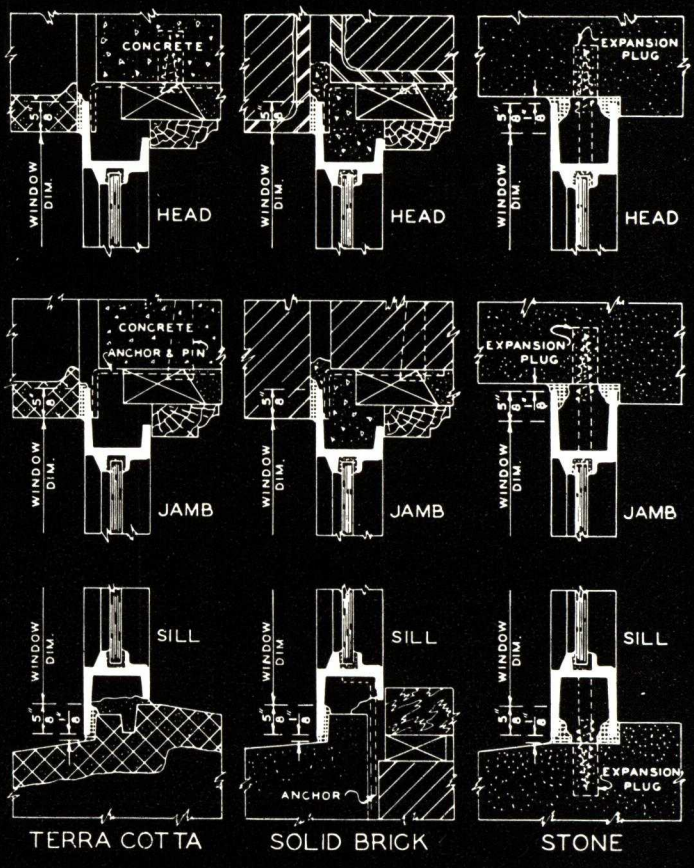


OUTSIDE VIEW
VENTILATORS PARTLY OPEN

ASSEMBLY DETAILS



INSTALLATION DETAILS

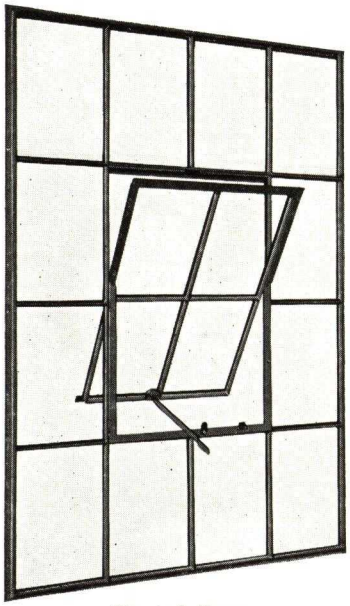


INDUSTRIAL AND COMMERCIAL STEEL WINDOWS

Made with Two Standard Types of Ventilators:

Installation Details on Page 25
Standard Sizes on Pages 18 and 20

PIVOTED AND PROJECTED



Pivoted Type

These windows are made of full 1⅜-inch section under air hammer assembly and arc welding. The most rigid window made.

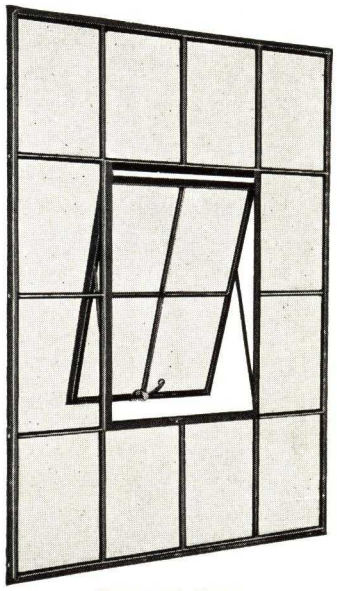
Pivoted ventilators have concealed hinges operating on bronze pins.

Projected vents have adjustable friction through the medium of sliding bronze shoes.

Standard hardware is solid bronze semi-finished.

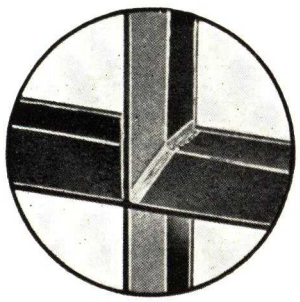
Standard window finish is a high-grade brown oxide paint. Permalum (aluminum with asphalt base) is available on special order.

Flat screens supplied for both pivoted and projected windows. **Pivoted windows to be screened require special preparation and special hardware.** Projected windows with inward opening vents when screened show greater economy.



Projected Type

THE INTEGRAL WELDED CONSTRUCTION OF VENTO WINDOWS



Main Joints

Assembly of main intersections are such as prevents distortion of steel in fabrication, assembly or welding

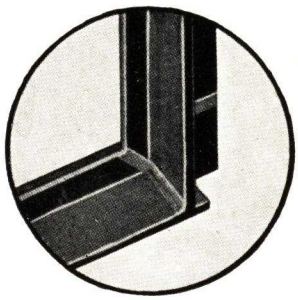
Intersection of muntin and frame are of tenon construction securely air hammered

All Vento Windows are assembled and welded in master frames insuring perfect alignment. Vento welded construction retains this alignment permanently.

Full Depth and Weight of Sections
Electric Arc Welding
Highest Quality Oxide Paint
No Distortion of Steel in Fabrication
Mortise and Tenon Construction
Hand Fitted Ventilators and Weathering

The initial assembly of frame members is by tenon construction. These tenons are securely air hammered. Vento windows however do not rely on these hammered tenons for final strength. Following the jig assembly, MAIN JOINTS are welded, making EVERY WINDOW AN INTEGRAL STRUCTURAL FRAMEWORK.

The Vento welding process, developed in our own shops, accomplishes a clean, smooth joint that does not interfere with glass or glazing, yet actually fuses the metal together, producing an integral weathertight construction not secured by other methods.



Vent Corner

Vent Corners are fully welded as shown and in addition are mortised and tenoned. An absolutely rigid assembly

Ventilator Corners receive especial care. They are separately aligned and welded throughout

VENTO PERMALUM FINISH

The standard finish on all Vento Steel Sash is a high grade chromatic oxide oil paint and all material unless otherwise specified will be so shipped.

Our special PERMALUM finish is a metallic aluminum corrosion resistant embodying the well known preservative properties of pure aluminum. This is applied through the medium of Gilsonite Asphalt by an exclusive Vento process which achieves a lustrous silvery finish that gives the absolute maximum in the practical preservation of steel.

PERMALUM finished windows are available on special order.

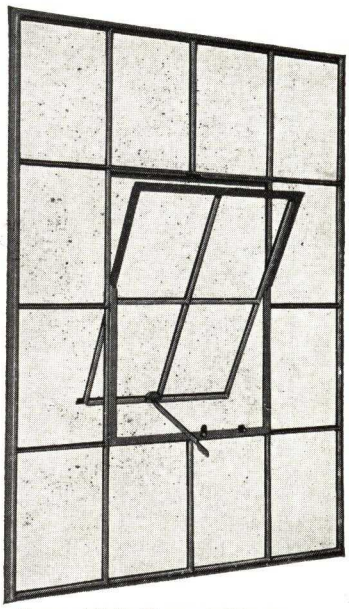
INDUSTRIAL AND COMMERCIAL STEEL WINDOWS
PIVOTED VENTILATORS . . . STANDARD TYPES AND SIZES

WIDTH	TWO LIGHTS WIDE	THREE LIGHTS WIDE	FOUR LIGHTS WIDE	FIVE LIGHTS WIDE	SIX LIGHTS WIDE
12″ X 18″	2′-1 5/8″	3′-2″	4′-2 3/8″	5′-2 3/4″	6′-3 1/8″
14″ X 20′	2′-5 5/8″	3′-8″	4′-10 3/8″	6′-0 3/4″	7′-3 1/8″

| HEIGHT | | |

COMMERCIAL WINDOWS WITH PIVOTED VENTILATORS

VENTO COMMERCIAL WINDOWS are of integral construction—the ventilators being solidly welded. The sections are of full depth, weight and strength; and all accessory assembly factors match this quality in every respect. Hardware is interchangeable on standard brackets. Lock bars are of steel, and are heavily painted. All other hardware is a special tough alloy of great strength, and guaranteed rustproof. Solid bronze in any finish is also available.



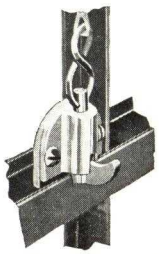
Type 44141 Pivoted Window. No. 505 Lock Bar Hardware

SCREENING

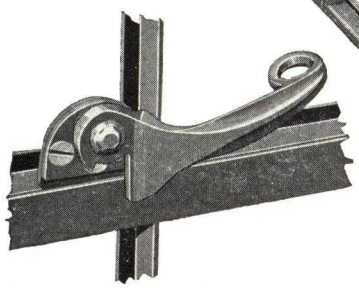
Standard pivoted windows are hinged 2¾ inches above center to provide the gravity self-closing feature. When such ventilators are to be screened, hinging is *exactly at center* in order to secure symmetrical contact between the ventilator and screen frames; and the window is provided with the special hardware illustrated below comprising friction stay arm and the special head catch noted.

These details apply only to pivoted windows specifically prepared for screens at the time of manufacture. Such screens cannot be applied to pivoted windows built without this special preparation.

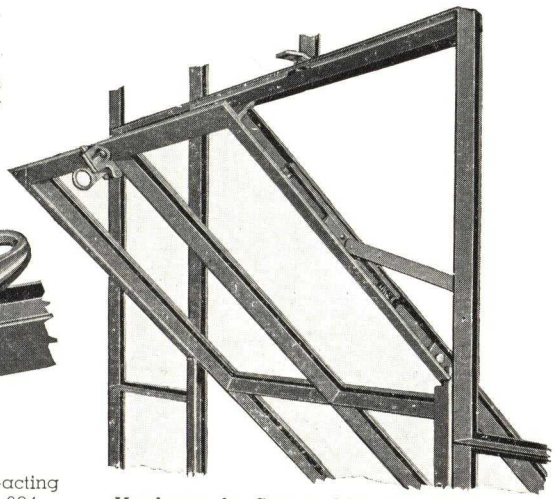
NOTE: *Projected windows with inward opening vents and flat outside screens (see Page 21) are more economical.*



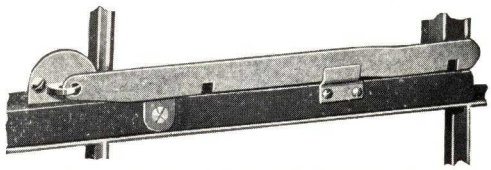
Optional Sill Catch and Chain Hardware No. 719. Head Idler Roller No. 703 is part of this hardware



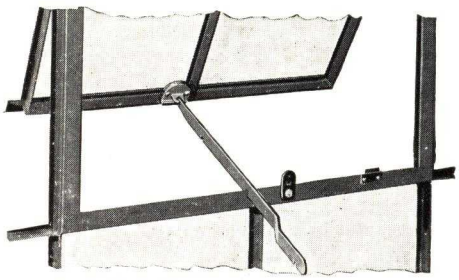
Optional Gravity Type Self-acting Cam Handle Hardware No. 604



Hardware for Screened Pivoted Window

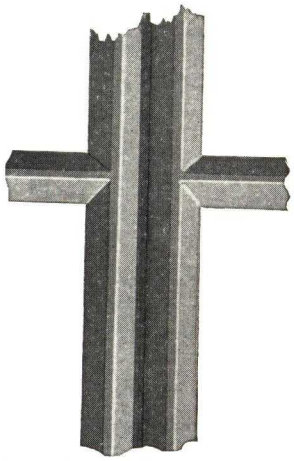


Lock Bar No. 505 in Closed Position

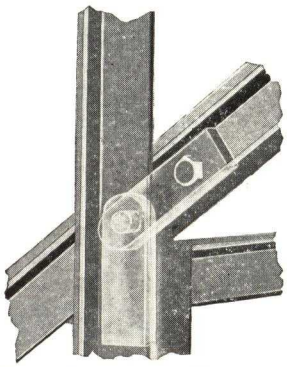


Lock Bar No. 505 in Open Position

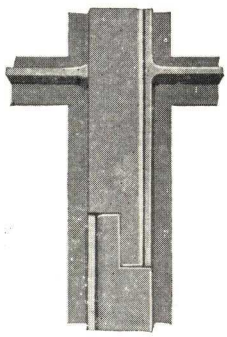
Hinges are entirely concealed and of the strongest possible construction being made of $\frac{5}{16}$" plate steel. Hinge pins are of heavy solid bronze.



Front View of Hinge. Note the Neat Tight and Weatherproof Assembly



Open Position of Ventilator Showing Concealed Hinge Construction



Inside View of Hinge. Surface is Entirely flush and Tight

UNDERWRITERS' Labeled Windows Can Be Supplied

Maximum width for single window openings are 8′ 6″; height 12′ 0″.

Maximum area fixed units 80 square feet. Maximum area Vented units 75 square feet.

Maximum vent area per window 40 square feet.

Maximum number of vents—3 per window.

Units in multiple openings must not exceed 7′ 0″ in width.

Maximum exposed glass area per light 350 square inches.

INDUSTRIAL AND COMMERCIAL WINDOWS

PROJECTED VENTILATORS . . . STANDARD TYPES AND SIZES

WIDTH	TWO LIGHTS WIDE	THREE LIGHTS WIDE	FOUR LIGHTS WIDE	FIVE LIGHTS WIDE
12 X 18	2'-1⅝"	3'-2"	4'-2⅜"	5'-2¾"
14 X 20	2'-5⅝"	3'-8"	4'-10⅜"	6'-0¾"

HEIGHT		
12" X 18"	3'-1⅝"	3'-5⅝"
	4'-8"	5'-2"
	6'-2⅜"	6'-10⅜"
	7'-8¾"	8'-6¾"
	9'-3⅛"	10'-3⅛"
	10'-9½"	11'-11½"
14" X 20"		

AREA TABLE 12/18 SIZES
WINDOW AREA'S SQ. FT.

LIGHTS HIGH \ LIGHTS WIDE	2	3	4	5	6
1	—	5	7	8	—
2	7	10	13	16	20
3	10	15	20	24	29
4	13	20	26	32	39
5	17	25	33	40	48
6	—	29	39	48	58
7	—	34	45	56	—

AREA TABLE 14/20 SIZES
WINDOW AREA'S SQ. FT.

LIGHTS HIGH \ LIGHTS WIDE	2	3	4	5	6
1	—	7	9	11	—
2	9	13	17	21	25
3	13	19	25	31	37
4	17	25	33	42	50
5	21	31	42	52	62
6	—	38	50	62	74
7	—	44	58	73	—

22140 32160 42140 52160

23141 33161 43141 53161

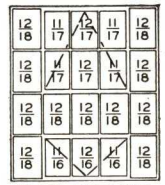
•24141 34161 •34162 3423602 44141 4422402 54161 •54162 5423602

•25141 35162 35161 •35163 3523602 •352603 •3523603 45141 •45142 4522402 55162 55161 •55163 5523602 •5523603 •552603

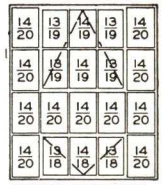
36161 •36163 3623603 362614 46141 •46143 4622403 •462414 56161 •56163 5623603 562614

37161 •37164 •3723604 372614 •472414 •57161 •57164 •5723604 572614

GLASS SIZES FOR 12" x 18" SASH UNITS

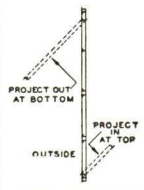


GLASS SIZES FOR 14" x 20" SASH UNITS



NOTE: Diagonal lines indicate ventilator area.

● Indicates non-standard units.

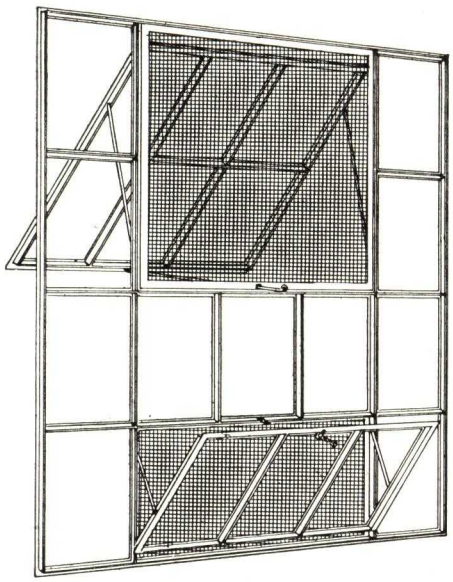


VERTICAL SECTION THROUGH WINDOW

VENTS MAY BE SPECIFIED TO PROJECT-IN OR-OUT

COMMERCIAL WINDOWS WITH PROJECTED VENTILATORS

PROJECTED WINDOWS ARE DRILLED AND TAPPED TO RECEIVE SCREENS



Project-out Top Vent with Inside Screen and Underscreen Hardware No. 800; and Projected In Sill-vent with Cam Locking Handle No. 660 and Outside Screen

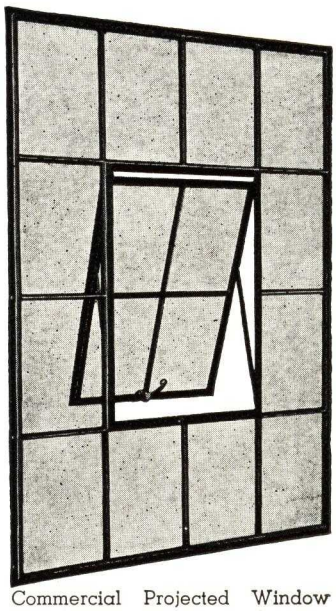
The construction of Vento commercial projected windows is the same as the pivoted ventilator type. Ventilators operate smoothly and entirely without racking.

The operation is through the medium of adjustable bronze shoes moving in side guides. All hardware is our high test alloy, guaranteed rust-proof. Bronze hardware in any finish also available.

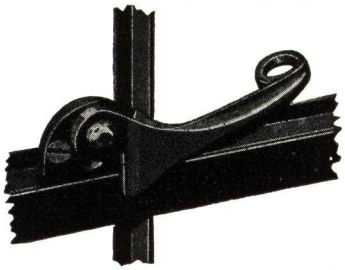
Recommended screening arrangements provide for flat outside screens and project-in vents.

Screening project-out vents require either a hinge screen with a box frame of sufficient depth to clear the locking handle when the window is closed; or underscreen hardware. The latter is illustrated below.

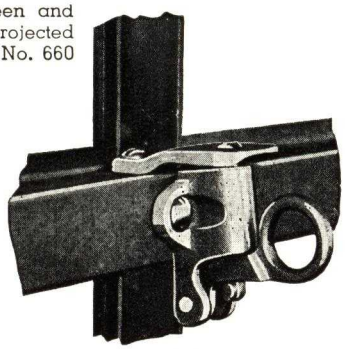
Project-in sill vent hardware matches cam handle No. 604 shown below.



Commercial Projected Window Type 44141. Vents may be specified to project in or out



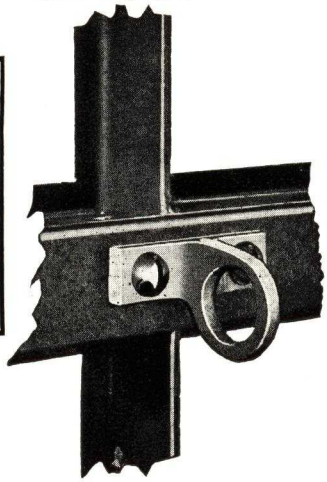
Cam Handle Hardware No. 604 for Unscreened Project-out Vents



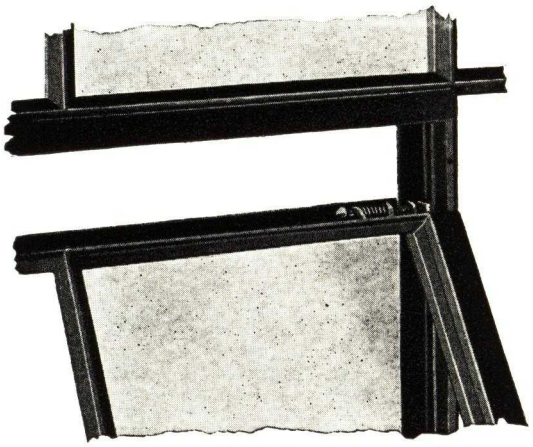
Head Catch No. 717 for Project-in Top Vents

UNDERWRITERS' LABELED WINDOWS CAN BE SUPPLIED

See page 19



Pull-down Head Ring No. 652

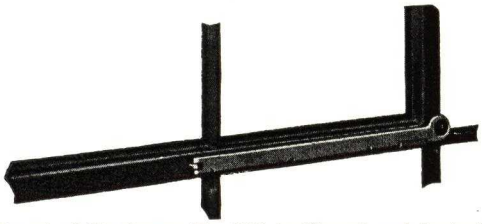


Detail of Adjustable Friction Slide and Guide

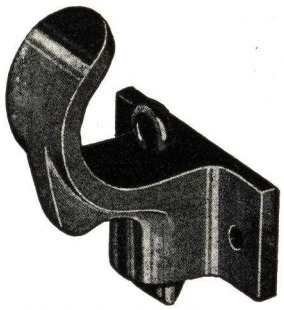
EXPLOSION HARDWARE

The special sill lock shown below is supplied where explosion hazards require a self-opening mechanism. Adjustable for pressure.

Underscreen Bar-lock No. 800 with Window Opened. The operation is through the window frame without moving the screen
This bar swivels to the locking position as shown to the left



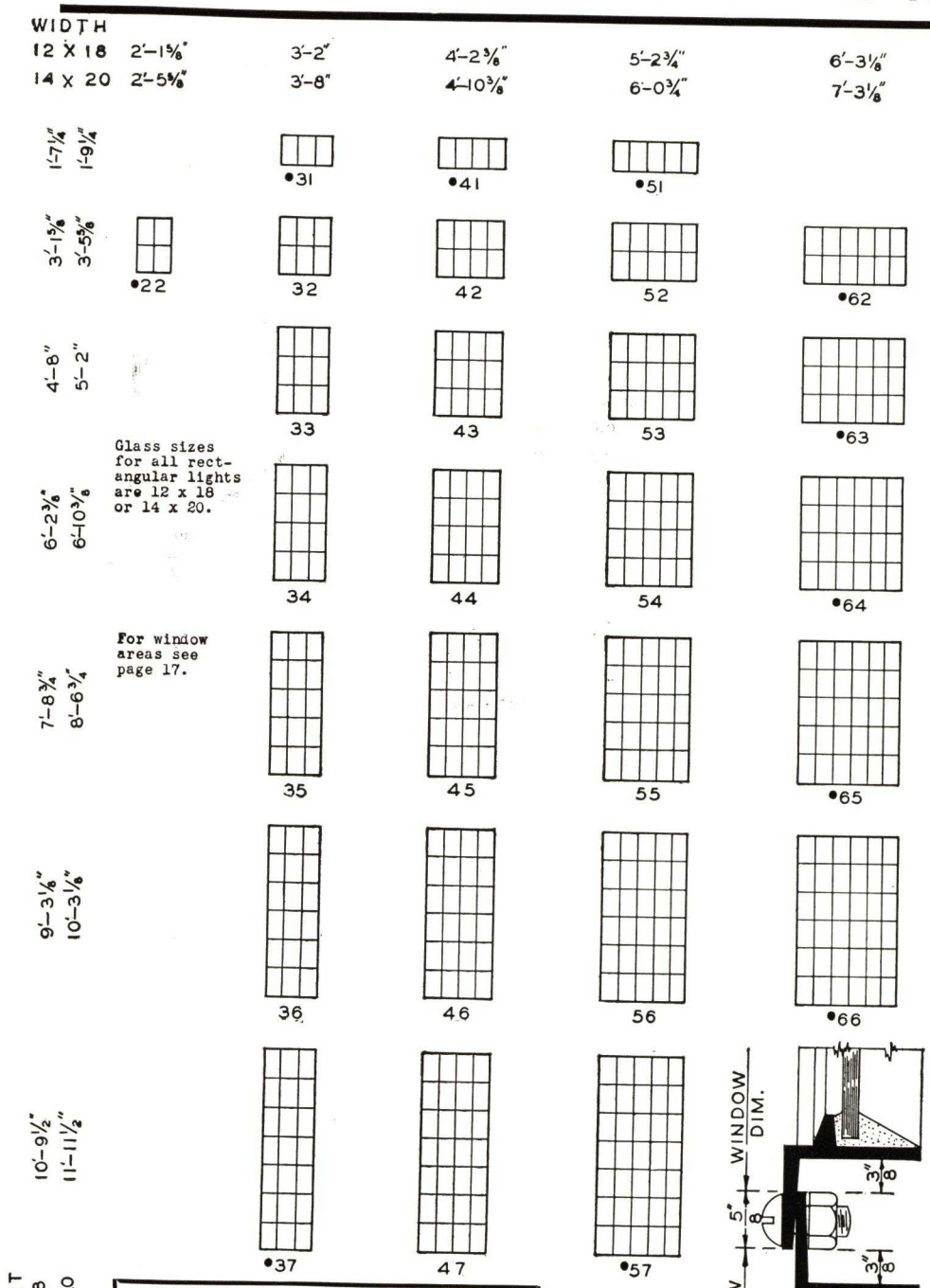
Detail of Hardware No. 800 in Closed and Locked Position



Explosion Lock No. 776

VENTO INDUSTRIAL AND COMMERCIAL WINDOWS

FIXED WINDOWS AND CURVED TRANSOMS



UNDERWRITERS' Labeled Windows Can Be Supplied

Maximum width for single window openings are 8′ 6″; height 12′ 0″.

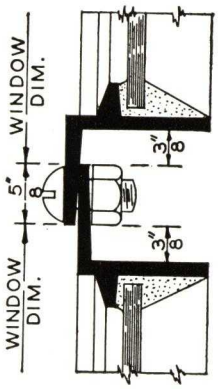
Maximum area fixed units 80 square feet. Maximum area Vented units 75 square feet.

Maximum vent area area per window 40 square feet.

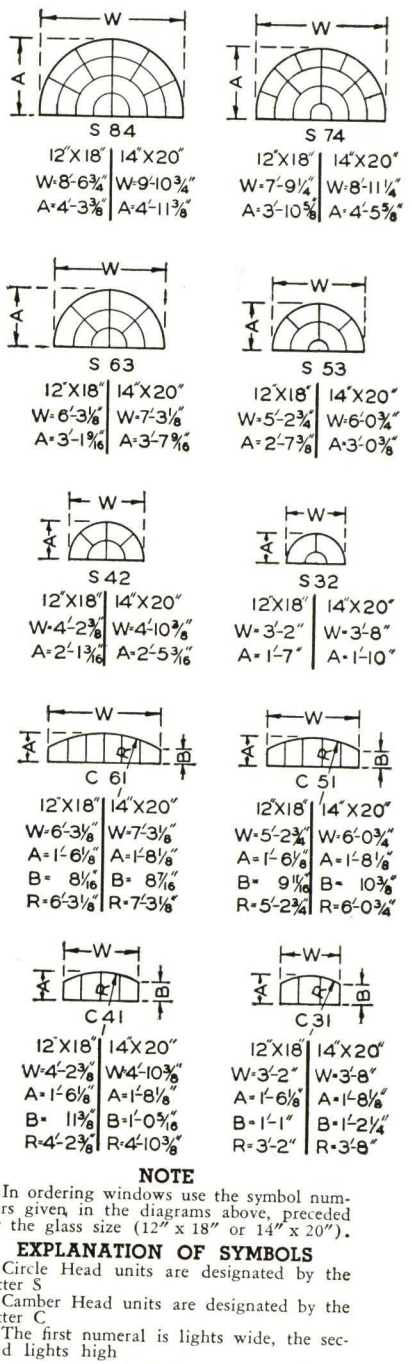
Maximum number of vents—3 per window.

Units in multiple openings must not exceed 7′ 0″ in width.

Maximum exposed glass area per light 350 square inches.



CURVED HEAD TRANSOMS
NON-VENTILATING



NOTE

In ordering windows use the symbol numbers given in the diagrams above, preceded by the glass size (12″ x 18″ or 14″ x 20″).

EXPLANATION OF SYMBOLS

Circle Head units are designated by the letter S

Camber Head units are designated by the letter C

The first numeral is lights wide, the second lights high

W—width
A—height at center of arch
B—height at side
R—radius

Standard curved transoms up to six lights wide are made to fit rectangular units with which they are used.

Curved units over six lights wide are used over multiple combinations of rectangular sash, requiring the use of vertical and horizontal mullions. See page 23.

Single units up to six lights wide can be bolted vertically together as shown in detail above. Larger openings require mullions. This applies to either curved units over rectangular or two rectangular units together.

WINDOW COMBINATION — MULLION AND STRUCTURAL DATA

Combinations of Standard Sizes Widths of Openings

12" x 18" Glass WIDTHS OF OPENINGS	Total Number of Units	NO. OF LIGHTS PER UNIT Position of each number indicates position of unit in opening	Total Number of Lights	Total Number of Mullions	14" x 20" Glass WIDTHS OF OPENINGS
2′ 1 5/8″	1	2	2	None	2′ 5 5/8″
3′ 2″	1	3	3	"	3′ 8″
4′ 2 3/8″	1	4	4	"	4′ 10 3/8″
5′ 2 3/4″	1	5	5	"	6′ 0 3/4″
6′ 3 1/8″	1	6	6	"	7′ 3 1/8″
6′ 6″	2	3, 3	6	1	7′ 6″
8′ 6 3/4″	2	4, 4	8	1	9′ 10 3/4″
9′ 10″	3	3, 3, 3	9	2	11′ 4″
10′ 7 1/2″	2	5, 5	10	1	12′ 3 1/2″
10′ 10 3/8″	3	3, 4, 3	10	2	12′ 6 3/8″
11′ 10 3/4″	3	3, 5, 3	11	2	13′ 8 3/4″
11′ 10 3/4″	3	4, 3, 4	11	2	13′ 8 3/4″
12′ 8 1/4″	2	6, 6	12	1	14′ 8 1/4″
12′ 11 1/8″	3	4, 4, 4	12	2	14′ 11 1/8″
13′ 11 1/2″	3	4, 5, 4	13	2	16′ 1 1/2″
13′ 11 1/2″	3	5, 3, 5	13	2	16′ 1 1/2″
14′ 11 7/8″	3	4, 6, 4	14	2	17′ 3 7/8″
14′ 11 7/8″	3	5, 4, 5	14	2	17′ 3 7/8″
15′ 2 3/4″	4	3, 4, 4, 3	14	3	17′ 6 3/4″
16′ 0 1/4″	3	5, 5, 5	15	2	18′ 6 1/4″
16′ 0 1/4″	3	6, 3, 6	15	2	18′ 6 1/4″
17′ 0 5/8″	3	5, 6, 5	16	2	19′ 8 5/8″
17′ 0 5/8″	3	6, 4, 6	16	2	19′ 8 5/8″
17′ 3 1/2″	4	4, 4, 4, 4	16	3	19′ 11 1/2″
18′ 1″	3	6, 5, 6	17	2	20′ 11″
19′ 1 3/8″	3	6, 6, 6	18	2	22′ 1 3/8″
19′ 4 1/4″	4	3, 6, 6, 3	18	3	22′ 4 1/4″
19′ 4 1/4″	4	4, 5, 5, 4	18	3	22′ 4 1/4″
20′ 7 1/2″	5	5, 3, 3, 3, 5	19	4	23′ 9 1/2″
21′ 5″	4	5, 5, 5, 5	20	3	24′ 9″
21′ 5″	4	4, 6, 6, 4	20	3	24′ 9″
21′ 7 7/8″	5	4, 4, 4, 4, 4	20	4	24′ 11 7/8″
22′ 8 1/4″	5	4, 4, 5, 4, 4	21	4	26′ 2 1/4″
22′ 8 1/4″	5	3, 5, 5, 5, 3	21	4	26′ 2 1/4″
23′ 5 3/4″	4	5, 6, 6, 5	22	3	27′ 1 3/4″
23′ 8 5/8″	5	5, 4, 4, 4, 5	22	4	27′ 4 5/8″
23′ 11 1/2″	6	3, 4, 4, 4, 4, 3	22	5	27′ 7 1/2″
24′ 9″	5	4, 5, 5, 5, 4	23	4	28′ 7″
25′ 6 1/2″	4	6, 6, 6, 6	24	3	29′ 6 1/2″
25′ 9 3/8″	5	3, 6, 6, 6, 3	24	4	29′ 9 3/8″
26′ 0 1/4″	6	4, 4, 4, 4, 4, 4	24	5	30′ 0 1/4″
26′ 9 3/4″	5	5, 5, 5, 5, 5	25	4	30′ 11 3/4″
27′ 10 1/8″	5	5, 5, 6, 5, 5	26	4	32′ 2 1/8″
28′ 1″	6	5, 4, 4, 4, 4, 5	26	5	32′ 5″
28′ 1″	6	3, 5, 5, 5, 5, 3	26	5	32′ 5″
28′ 10 1/2″	5	6, 5, 5, 5, 6	27	4	33′ 4 1/2″
29′ 10 7/8″	5	5, 6, 6, 6, 5	28	4	34′ 6 7/8″
30′ 1 3/4″	6	4, 5, 5, 5, 5, 4	28	5	34′ 9 3/4″
30′ 11 1/4″	5	6, 6, 5, 6, 6	29	4	35′ 9 1/4″

Heights of Openings

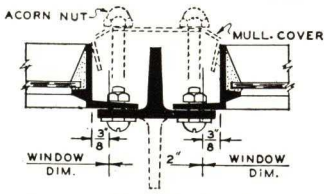
12" x 18" Glass Lights High	Height of Openings	14" x 20" Glass Lights High	Height of Openings
1	1′ 7 1/4″	1	1′ 9 1/4″
2	3′ 1 5/8″	2	3′ 5 5/8″
3	4′ 8″	3	5′ 2″
4	6′ 2 3/8″	4	6′ 10 3/8″
5	7′ 8 3/4″	5	8′ 6 3/4″
6	9′ 3 1/8″	6	10′ 3 1/8″
7	10′ 9 1/2″	7	11′ 11 1/2″

Table above shows overall opening dimensions of various standard units combined with mullions.

Note: In using above table, note that windows with projected ventilators are not standard in sizes more than 5 lights wide. Opening dimensions above showing 6 lights wide windows should not be used for projected types.

HORIZONTAL STRUCTURAL MULLION DATA							
Number of Lights Wide		Mull Type	Angles		Plate or Channel	Est. Weight Per Ft.	Between Window Dimens.
12x18	14x20		No.	Size			
MULLIONS FOR SINGLE UNITS MORE THAN TWO UNITS HIGH							
3 to 6	3 to 5	A	1	1x1x1/8	None	3.0 lbs.	2"
			1	2x1 1/2x3/16			
FOR MULTIPLE UNITS							
6 to 9	5 to 8	B	2	2 1/2x2 1/2x3/16"	None	6.5 lbs.	5 "
10 to 13	9 to 11	C	2	2 1/2x2 1/2x1/4"	6x1/4" Plt.	11.5 lbs.	5 1/4"
10 to 13	9 to 11	D	1	3 1/2x2 1/2x1/4"	4" Channel	10.5 lbs.	5 1/4"
14 to 18	12 to 16	C	2	3 x3 x5/16"	6x1/4" Plt.	17.5 lbs.	6 1/4"
14 to 18	12 to 16	D	1	4 x3 x5/16"	6" Channel	15.5 lbs.	6 1/8"

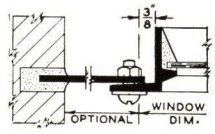
Vertical Mullions



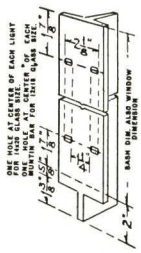
For units 5 lights high or less, stem may be turned in or out. For units over 5 lights high stem to be turned out.

Cover plate as dotted can be furnished when required.

Note: Double mullions furnished with windows 7 lights high.



Detail above shows use of jamb plates to adapt standard windows to opening larger than window dimensions.



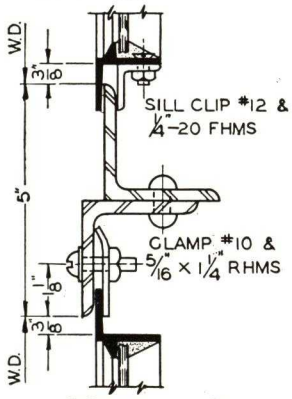
Standard mullion cutting and punching.

Standard "T" mullions shown at above right are cut off at top, level with sash dimension. At bottom, the flanges project 5/8" beyond sash dimension and the stem or web 2" beyond sash dimension. This is to allow suitable anchorage.

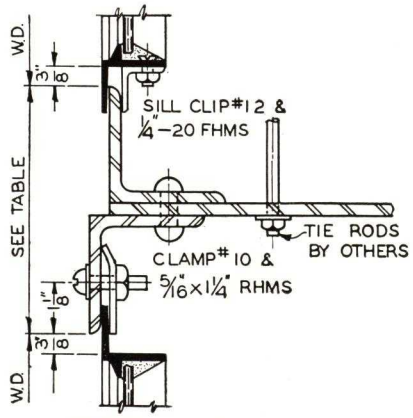
Horizontal Mullions

Where heights greater than seven lights are required in one opening, structural horizontal mullions are required to permit vertical combinations of sash units. Circle and camber head units are made to bolt directly to the sash underneath, for which horizontal mullions are not required unless the window is more than six lights wide. This also applies to single square units mounted one over the other not more than two units high. See detail page 22.

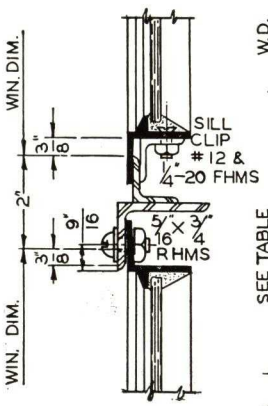
Tie Rods should support horizontal mullions in openings over 10 feet. Structural material is not customarily furnished with windows. These details however will serve as a guide in aiding designers to lay out such construction.



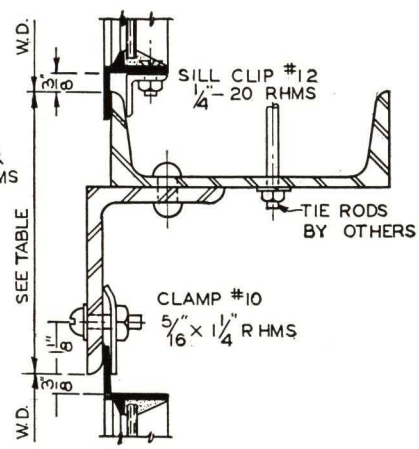
DETAIL — B



DETAIL — C



DETAIL — A



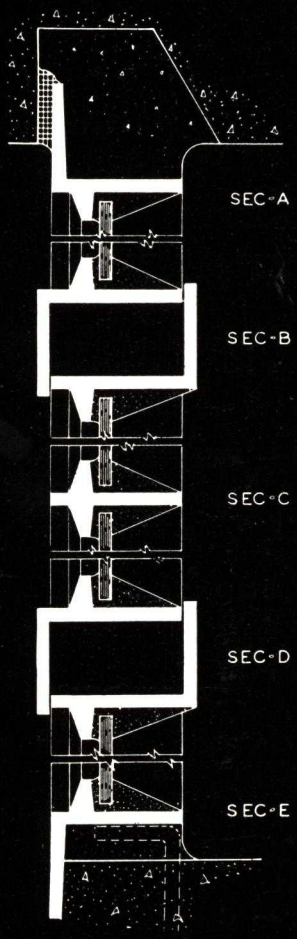
DETAIL — D

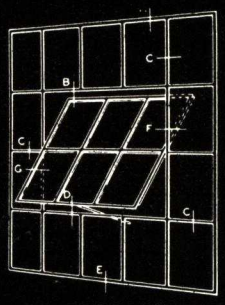
INDUSTRIAL AND COMMERCIAL WINDOWS

SECTION ASSEMBLY DETAILS

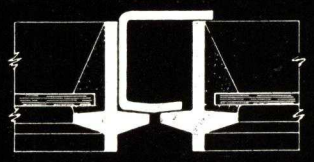
NOTE: Major sections are identical

Pivoted Windows

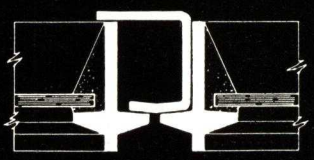




OUTSIDE VIEW
OF TYPICAL WINDOW

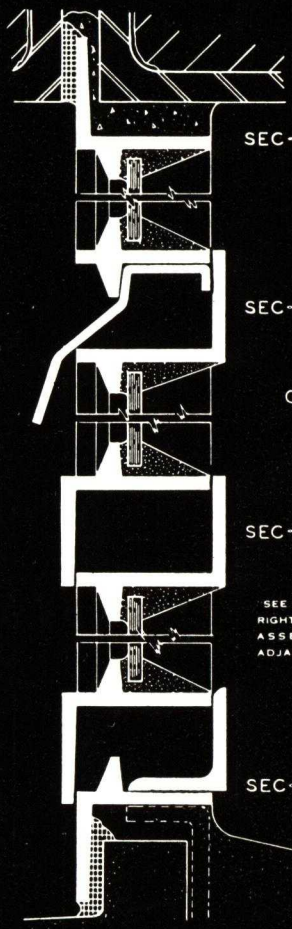


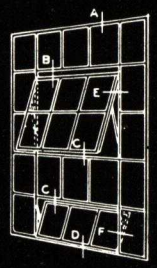
SEC-F



SEC-G

Projected Windows

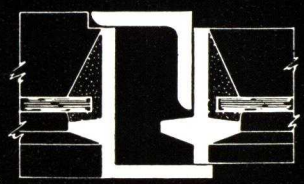




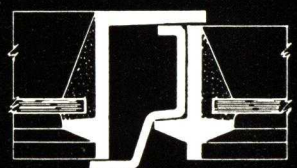
OUTSIDE VIEW
OF TYPICAL WINDOW

CONSTRUCTION BETWEEN ADJACENT VENTS
SCALE 6"=1'-0"

SEE DETAIL UPPER RIGHT OF SECTION ASSEMBLY FOR ADJACENT VENTS

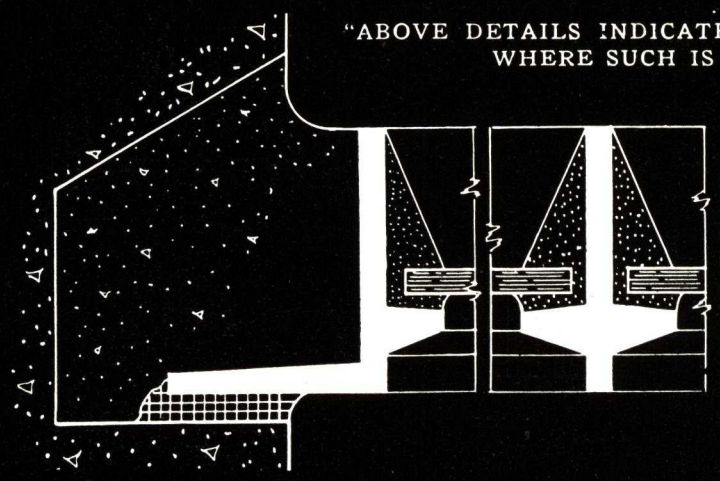


SEC-E

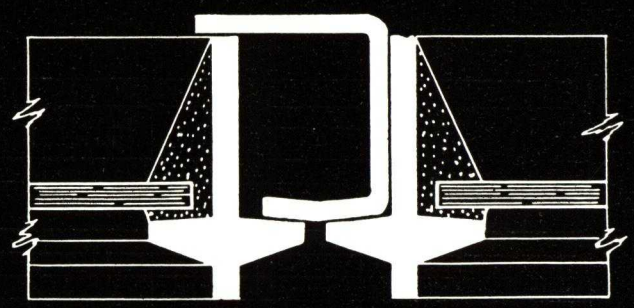


SEC-F

"ABOVE DETAILS INDICATE RECOMMENDED CAULKING POINTS WHERE SUCH IS REQUIRED OR SPECIFIED"

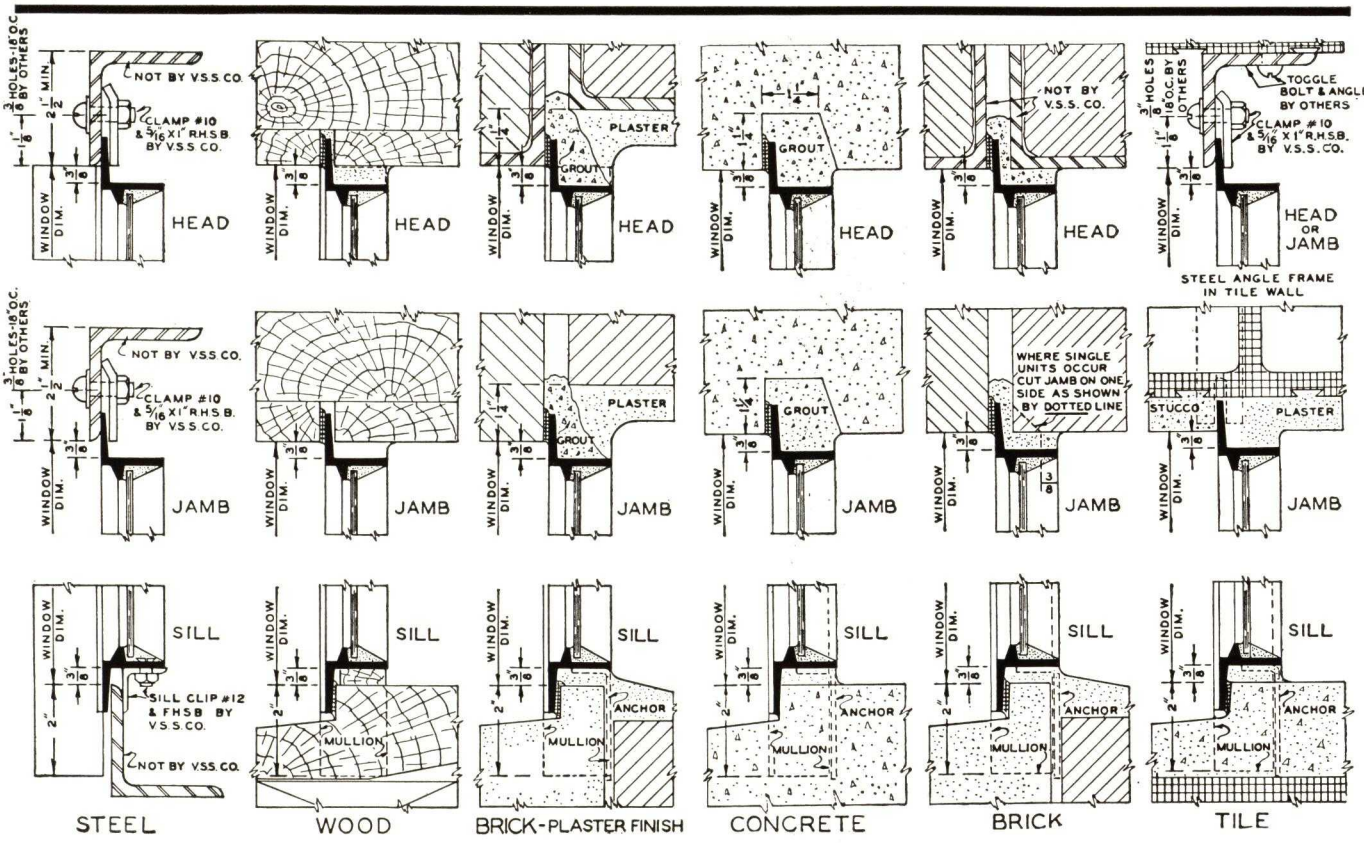


Full Size Sections - - Inside Putty Glazed

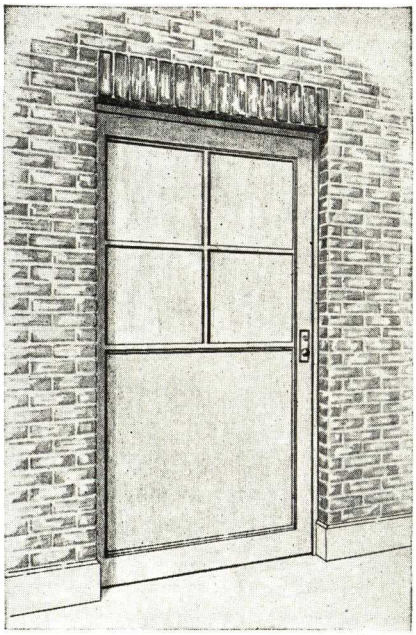


Full Size Sections- Inside Putty Glazed

INSTALLATION DETAILS—INDUSTRIAL WINDOWS



INDUSTRIAL DOORS



Suitable for industrial buildings, service departments of commercial buildings and institutions.

Swing and slide types are available in a wide range of sizes to meet most conditions.

Stiles and rails are made of 14-gauge pressed steel tubing, all corners neatly fitted and solidly welded.

Standard pressed steel door frames are available for swing doors. The corners are heavily reinforced and prepared for hardware.

Doors can be fitted with cylinder lock or lever latch hardware as required.

Upper door panel may be steel sash open for glass or solid steel panels as desired.

STANDARD DOORS

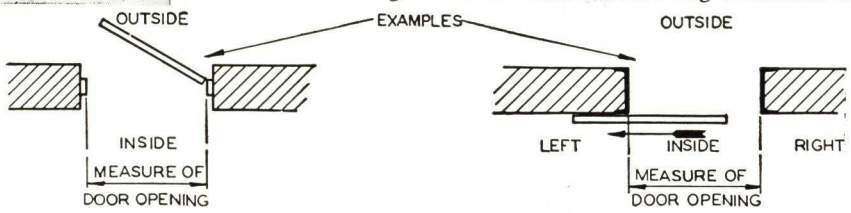
OPENING SIZES			
TYPE	SLIDE DOORS	TYPE	SWING DOORS
A	2'-3" × 6'-10½" & 2'-9" × 6'-10½"	A	2'-6" × 7'-0" & 3'-0" × 7'-0"
B	3'-3" × 7'-4½" & 3'-9" × 7'-10½"	B	3'-6" × 7'-6" & 4'-0" × 8'-0"
C	4'-9" × 9'-10½"	C	5'-0" × 10'-0"
D	4'-9" × 6'-10½" & 5'-9" × 6'-10½"	D	5'-0" × 7'-0" & 6'-0" × 7'-0"
E	6'-9" × 7'-4½" & 7'-9" × 7'-10½"	E	7'-0" × 7'-6" & 8'-0" × 8'-0"
F	9'-9" × 9'-10½"	F	10'-0" × 10'-0"

TYPES

NOTE: Drawings or orders should include swing or direction of slide.

SWING DOOR DIMENSIONS

Opening width dimensions are taken back to back of steel door frame. Opening height dimensions are taken from top of threshold to underside of steel frame at head

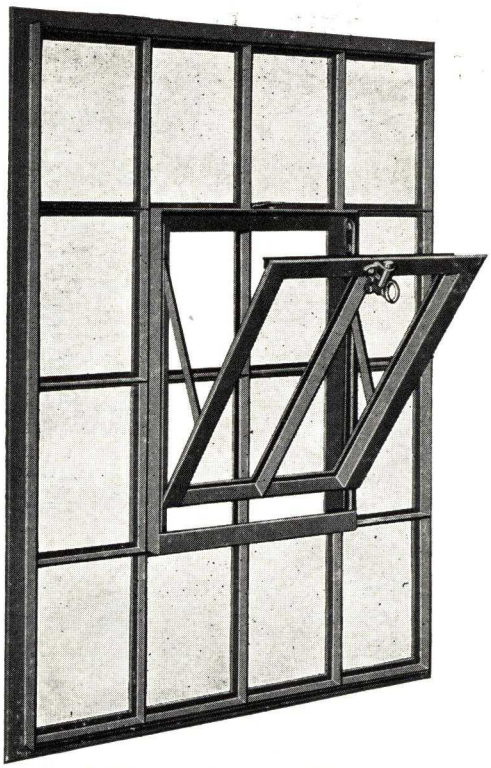


SLIDE DOOR DIMENSIONS

Opening width dimensions are taken from back to back of structural channel frame.

Opening height dimensions are taken from top of threshold to underside of structural head

VENTO PROTECTION WINDOWS



Inside View of Protection Window with Ventilator Open

This is a strong heavily constructed, completely welded type of window especially designed for maximum protection requirements or for psychopathic, reformatory or other institutional semi-detention purposes.

This is a considerably heavier window than the Security type illustrated on page 28 in that the size of the lights in the Protection type are 6″ x 9″, just half the size of those in the Security window. This smaller glass opening and consequent greater window strength adapts these windows to a wide range of use within the detention window field.

Protection Windows are made to order and can be built in sizes, glass areas, muntin and ventilator arrangements to suit conditions.

Standard sizes and customary ventilator areas are those as indicated on the opposite page, the ventilator areas being those as shown within the heavy outlines. The size, number and location of same, however, are optional and may be specified according to the requirements.

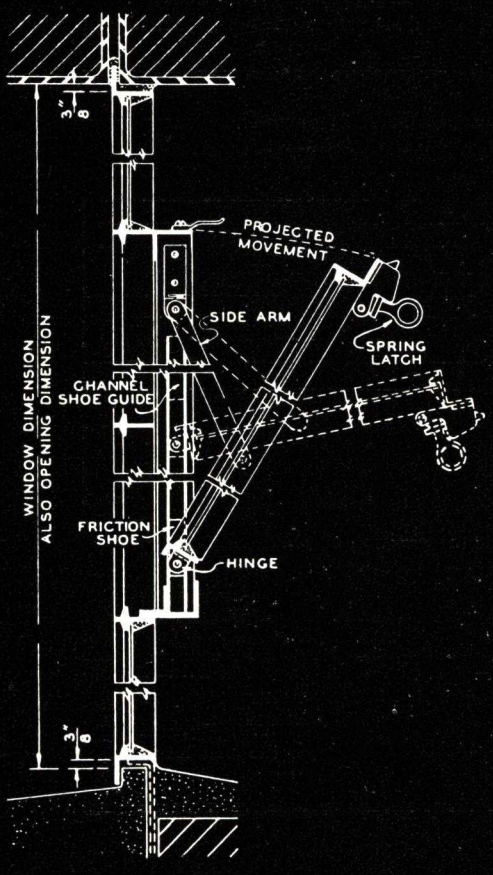
Muntin bar spacings shown are those in the main frame. Muntins in the ventilators are supplied in accordance with glass area limits per light of 540 square inches. Construction drawings are supplied with each job indicating muntin arrangements in detail.

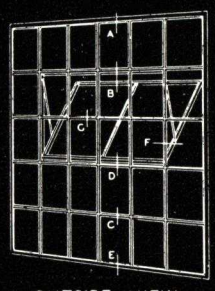
Ventilators are made from 3 lights wide x 2 lights high up to 8 lights wide x 4 lights high.

The sizes shown on the opposite page are masonry openings based on standard 6″ x 9″ glass sizes. These opening dimensions are taken to the points as shown on page 25. Anchorage is provided over and above opening dimensions.

Strong rust-proof spring latch hardware is supplied with all these windows, which are shipped heavily painted.

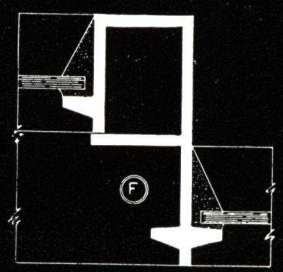
Flat outside screens can be supplied.

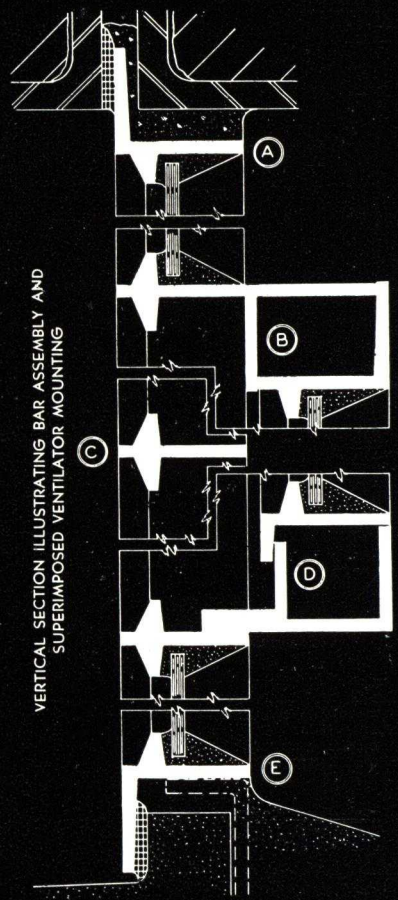




OUTSIDE VIEW OF TYPICAL WINDOW

INSIDE PUTTY GLAZING IS STANDARD

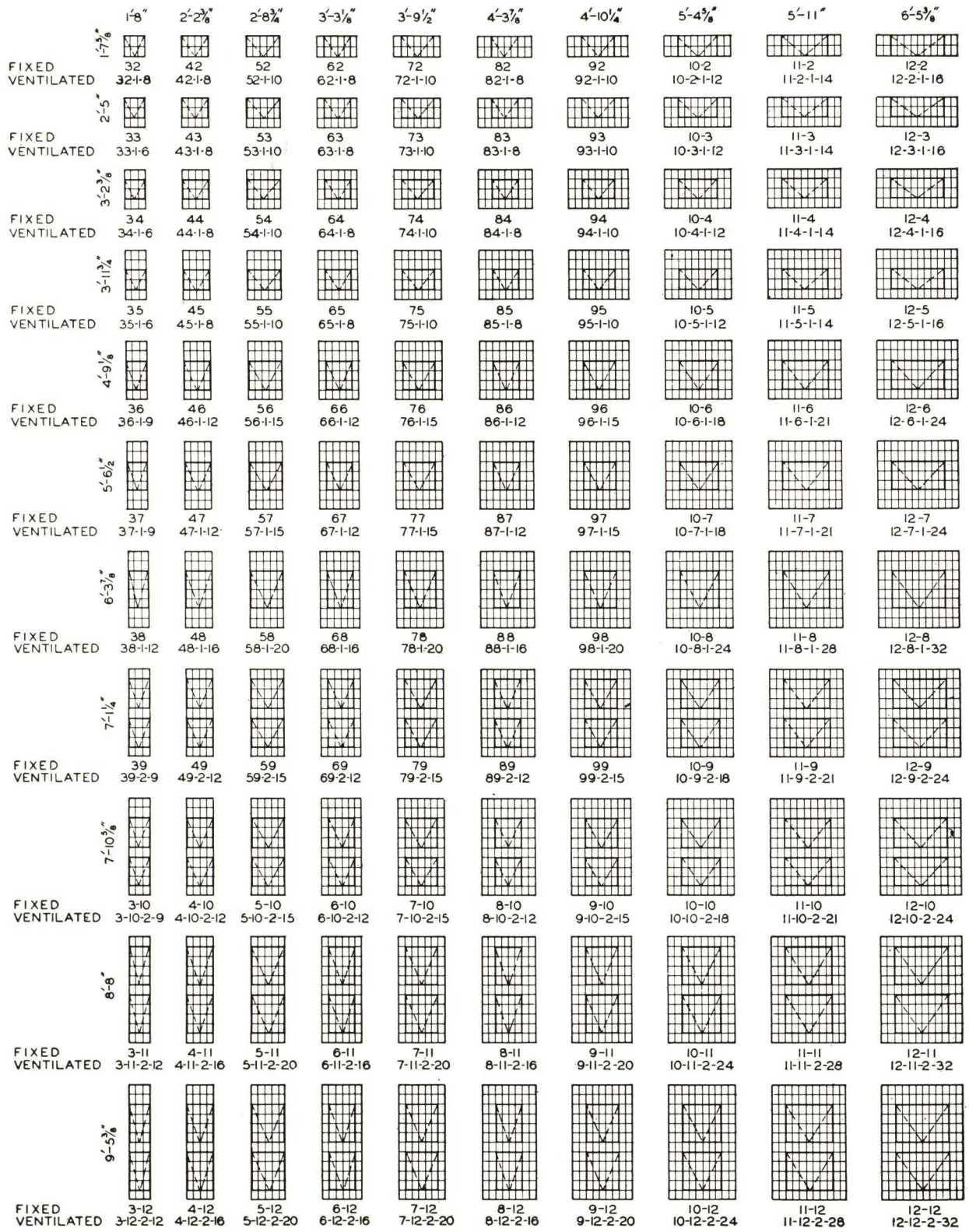




VERTICAL SECTION ILLUSTRATING BAR ASSEMBLY AND SUPERIMPOSED VENTILATOR MOUNTING

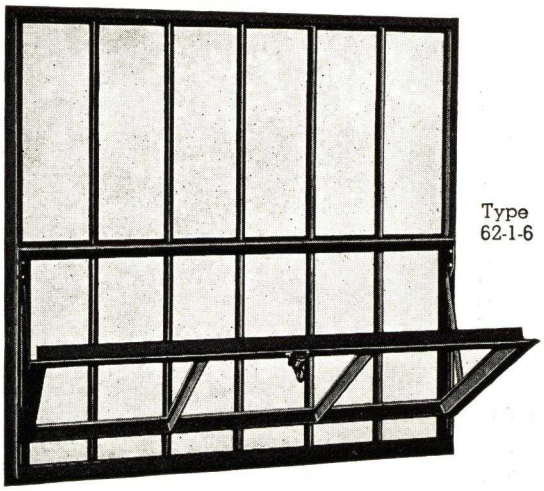
PROTECTION WINDOWS

STANDARD TYPES AND SIZES

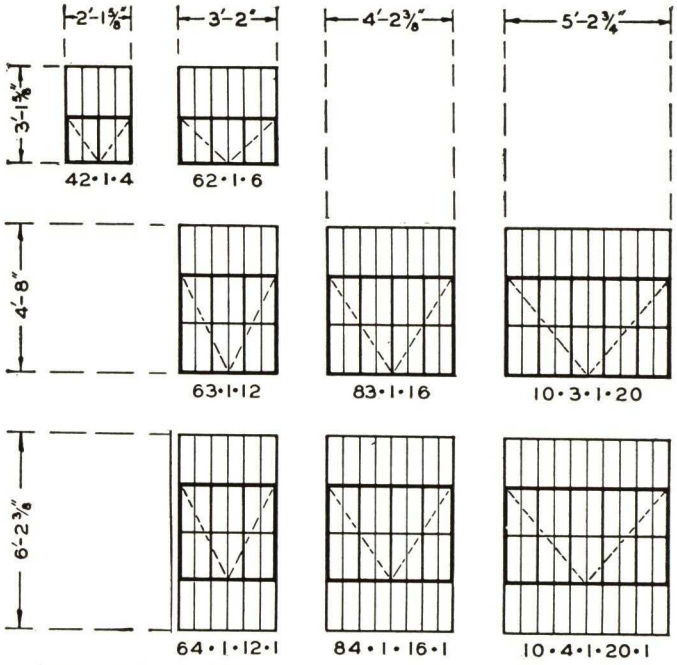


	1'-8"	2'-2 3/8"	2'-8 3/4"	3'-3 1/8"	3'-9 1/2"	4'-3 7/8"	4'-10 1/4"	5'-4 5/8"	5'-11"	6'-5 3/8"
1'-7 3/8"										
FIXED	32	42	52	62	72	82	92	10-2	11-2	12-2
VENTILATED	32-1-8	42-1-8	52-1-10	62-1-8	72-1-10	82-1-8	92-1-10	10-2-1-12	11-2-1-14	12-2-1-16
2'-5"										
FIXED	33	43	53	63	73	83	93	10-3	11-3	12-3
VENTILATED	33-1-6	43-1-8	53-1-10	63-1-8	73-1-10	83-1-8	93-1-10	10-3-1-12	11-3-1-14	12-3-1-16
3'-2 3/8"										
FIXED	34	44	54	64	74	84	94	10-4	11-4	12-4
VENTILATED	34-1-6	44-1-8	54-1-10	64-1-8	74-1-10	84-1-8	94-1-10	10-4-1-12	11-4-1-14	12-4-1-16
3'-11 3/4"										
FIXED	35	45	55	65	75	85	95	10-5	11-5	12-5
VENTILATED	35-1-6	45-1-8	55-1-10	65-1-8	75-1-10	85-1-8	95-1-10	10-5-1-12	11-5-1-14	12-5-1-16
4'-9 1/8"										
FIXED	36	46	56	66	76	86	96	10-6	11-6	12-6
VENTILATED	36-1-9	46-1-12	56-1-15	66-1-12	76-1-15	86-1-12	96-1-15	10-6-1-18	11-6-1-21	12-6-1-24
5'-6 1/2"										
FIXED	37	47	57	67	77	87	97	10-7	11-7	12-7
VENTILATED	37-1-9	47-1-12	57-1-15	67-1-12	77-1-15	87-1-12	97-1-15	10-7-1-18	11-7-1-21	12-7-1-24
6'-3 7/8"										
FIXED	38	48	58	68	78	88	98	10-8	11-8	12-8
VENTILATED	38-1-12	48-1-16	58-1-20	68-1-16	78-1-20	88-1-16	98-1-20	10-8-1-24	11-8-1-28	12-8-1-32
7'-1 1/4"										
FIXED	39	49	59	69	79	89	99	10-9	11-9	12-9
VENTILATED	39-2-9	49-2-12	59-2-15	69-2-12	79-2-15	89-2-12	99-2-15	10-9-2-18	11-9-2-21	12-9-2-24
7'-10 5/8"										
FIXED	3-10	4-10	5-10	6-10	7-10	8-10	9-10	10-10	11-10	12-10
VENTILATED	3-10-2-9	4-10-2-12	5-10-2-15	6-10-2-12	7-10-2-15	8-10-2-12	9-10-2-15	10-10-2-18	11-10-2-21	12-10-2-24
8'-8"										
FIXED	3-11	4-11	5-11	6-11	7-11	8-11	9-11	10-11	11-11	12-11
VENTILATED	3-11-2-12	4-11-2-16	5-11-2-20	6-11-2-16	7-11-2-20	8-11-2-16	9-11-2-20	10-11-2-24	11-11-2-28	12-11-2-32
9'-5 3/8"										
FIXED	3-12	4-12	5-12	6-12	7-12	8-12	9-12	10-12	11-12	12-12
VENTILATED	3-12-2-12	4-12-2-16	5-12-2-20	6-12-2-16	7-12-2-20	8-12-2-16	9-12-2-20	10-12-2-24	11-12-2-28	12-12-2-32

VENTO SECURITY WINDOWS—STANDARD SIZES



Type
62-1-6



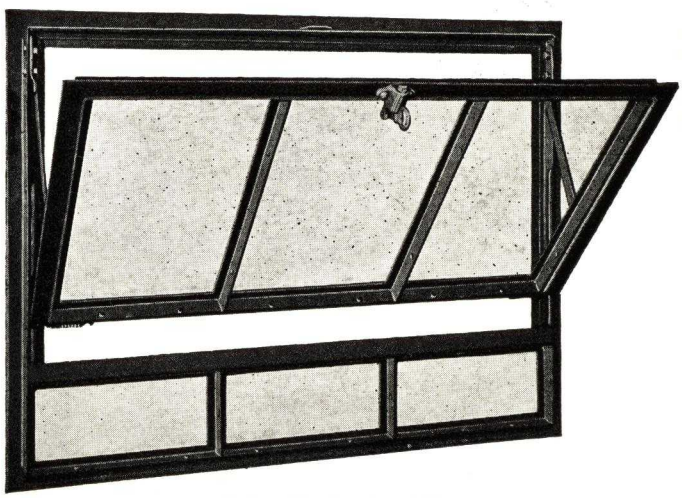
The Vento Security window is a specially designed stock type to serve the same purpose for which barred windows have heretofore been used. The heavy, fully welded construction will provide adequate protection under ordinary circumstances for all commercial requirements.

The construction in general is the same as for Protection windows illustrated on page 26 except that the lights in the Security windows are 6″ x 18″ approximately corresponding to the spacing of bars in the type of windows ordinarily used for this purpose. Ventilator is of regular size light superimposed on inside of main frame, swinging in at the top and operating through concealed retaining arms that hold the ventilator in any open position.

This window usefully serves all protection requirements for installation in rear or alley elevations of stores and other similar commercial construction.

Shipped complete, heavily painted, with rust-proof spring latch hardware, erection fittings, wire glazing clips and main frames prepared to receive flat outside screens.

AREAWAY AND UTILITY WINDOWS



Vento Areaway Window

Made in one size only, for masonry openings 32⅛ x 24⅛ in.

The areaway window is of special size and arrangement. It is specially designed for basement areaway openings. The ventilator extends nearly to the bottom leaving a fixed panel to exclude dirt, leaves and snow.

Same construction as our standard commercial windows. Double contact weathering. Inward projected movement with bronze shoes and adjustable friction. Spring latch pole ring, solid bronze hardware. These are dependable weather-tight windows of superior construction. Both types are drilled and tapped for standard flat outside screens.

Vento Utility Window

The utility window in addition to its use for home garages, has a wide application for stores, laundries, creameries, service stations and other commercial structures.

Made in two sizes:
6 light—10 x 16 in.—opening 32¼ x 35⅞ in.
6 light—12 x 20 in.—opening 40¼ x 43⅞ in.
Both sizes fit concrete blocks.

VENTO PREMIER BASEMENT WINDOWS •

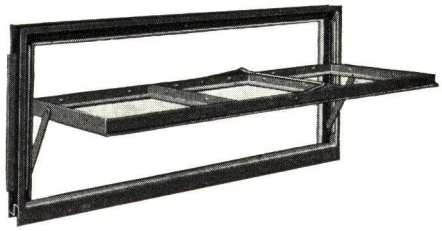
First Open Position Giving Overhead Ventilation With Air Currents Deflected Up and Over Without Direct Draft

- **HEAVY DUTY CHANNEL FRAME**
- **ELECTRICALLY WELDED THROUGHOUT**
- **VERSILATOR OPERATION (Patented)**
- **PUTTYLESS GLAZING**
- **DOUBLE CONTACT WEATHERING**
- **WATERTIGHT : : : WEATHERPROOF**
- **PATENTED LOCKING BAR OPERATES WINDOW FROM BOTTOM**

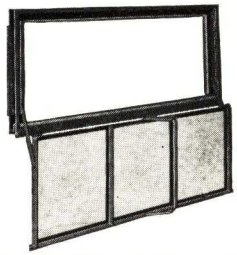
Versilator Operation.

An exclusive design feature of Vento PREMIER windows. This simple and reliable device gives either overhead or direct ventilation in any selected degree, with positive automatic locking at each stage. Sash is instantly removable from frame in any position.

Intermediate Top Hung Position. Both Top and Bottom Ventilation With Downward Deflection

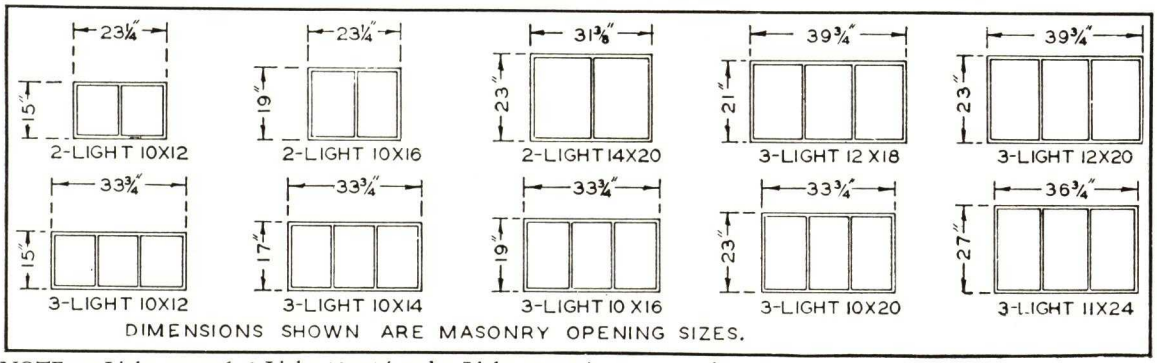


Merely Raising the Sash From the Intermediate Position Locks the Window in Fully Open Position. No Ceiling Hook Required



Sash Lifts Off Sill and Hangs Down Inside the Wall Giving Full Opening for Use as a Coal Window or Other Purposes

WINDOW SIZES AND MASONRY OPENINGS—"PREMIER" BASEMENT WINDOWS



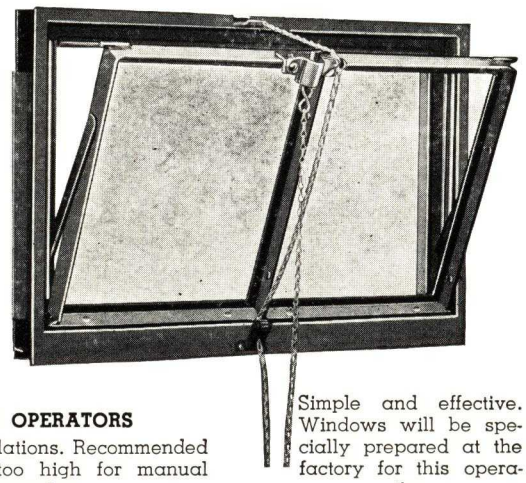
NOTE—2-Light 10 x 16, 3-Light 10 x 14 and 3-Light 11 x 14 are non-stock sizes.

BARRED WINDOWS

For efficient protection ½-in. bars are welded into frame. Recommended for cellars and rear or alley elevations of commercial buildings. See also Security Windows, page 28

SCREENS, SCREEN GUARDS AND STORM SASH STOCKED FOR ALL WINDOW SIZES

Basement windows can be mullioned together for installation under show windows, above shelving or over laundry tubs.



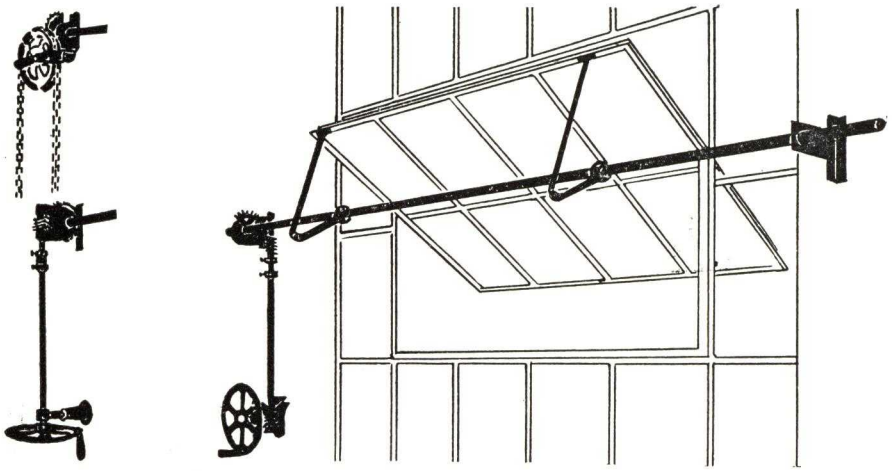
CHAIN OPERATORS

For high installations. Recommended for locations too high for manual operation

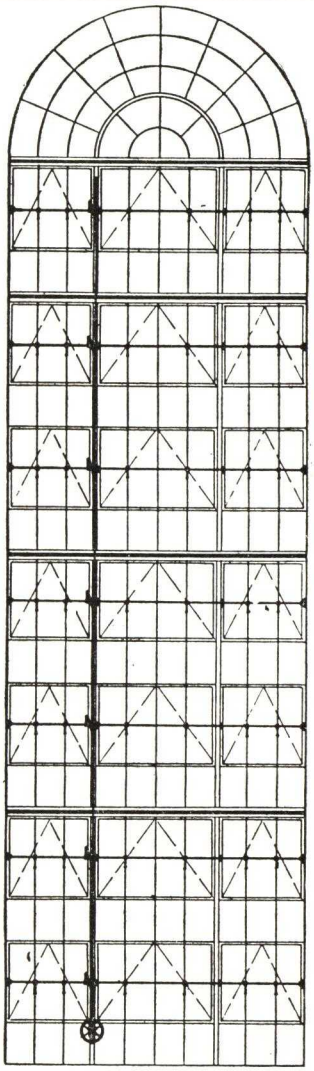
Simple and effective. Windows will be specially prepared at the factory for this operation

VENTO MECHANICAL OPERATORS

FOR GROUP CONTROL OF WINDOWS



Powers Should Not Be Placed More Than Sixty Feet From Ends of Run



Screw Type Operator for Large Sash Groups in Auditoriums, Power Houses, etc.

Typical installation above is of the torsion type operator with marginal illustrations of other types of powers, i. e.,—chain control, horizontal wheel and bevel gear.

Type of power should be specified. Where conditions prevent control points being under a window, chains can be run over idlers or rod can be run through universal joints to the walls.

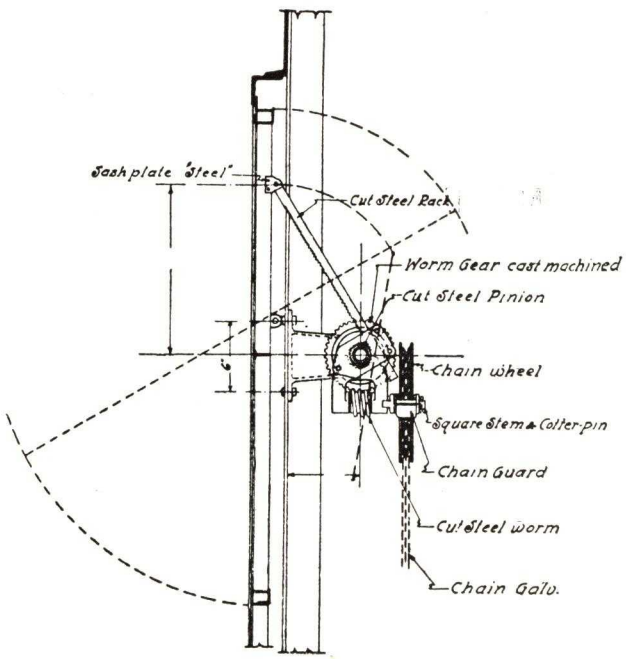
NOTE—Mechanical operators are largely designed and supplied to job requirements. Our engineering department will submit designs to suit.

A folder of engineering design plates fully detailing all types of operators is available on request.

For Tension Type Operator see page 31.

• RACK AND PINION OPERATORS •

These are for heavy duty service giving easy operation and positive action. Chain, rod or electrical control—see the table below.



Where structural interference prohibit the use of straight races, convex races are supplied.

CAPACITY TABLE TORSION OPERATORS, WORM AND GEAR

Type of Vents	Size Vents Lts. Wide	Lts. High	No. Vents	Length of Run	Power to End of Run	Control
Hor. Pivoted..	2	2	12	80′	40′	Chain and Wheel Rod and Hor. Wheel Rod and Vert. Wheel
Hor. Pivoted..	3	2	12	80′	40′	
Hor. Pivoted..	4	2	12	80′	40′	
Projected	2	2	12	80′	40′	
Projected	3	2	12	80′	40′	
Top Pivoted...	2	2	8	60′	30′	
Bot. Pivoted...	3	2	8	60′	30′	
Top Hinged...	4	2	8	60′	30′	
Bot. Hinged...						

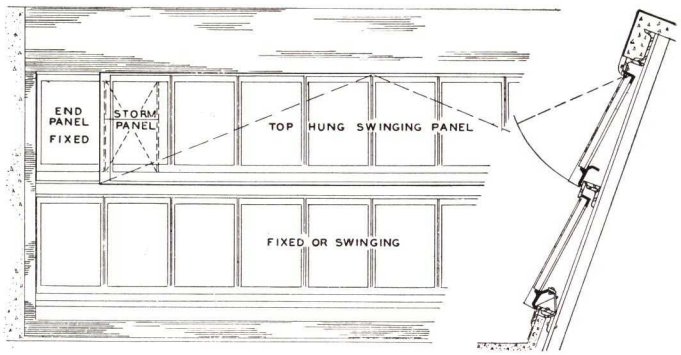
RACK AND PINION

Hor. Pivoted..	2	2	24	160′	80′	Chain and Wheel Rod and Hor. Wheel Rod and Vert. Wheel
Hor. Pivoted..	3	2	24	160′	80′	
Hor. Pivoted..	4	2	24	160′	80′	
Projected	2	2	20	100′	50′	
Projected	3	2	20	100′	50′	
Top Pivoted...	2	2	16	80′	40′	
Bot. Pivoted...	3	2	16	80′	40′	
Top Hinged...	4	2	16	80′	40′	
Bot. Hinged...						

VENTO TOP HUNG CONTINUOUS WINDOWS

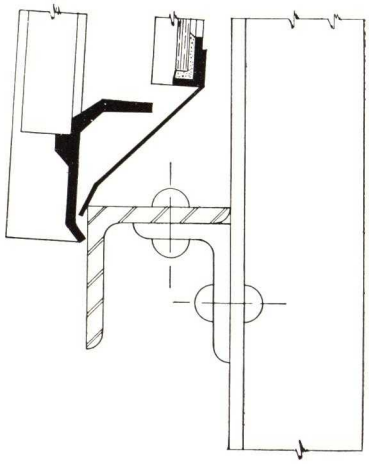
FOR HEAVY INDUSTRIAL CONSTRUCTION

Top Hung Window with Tension Operator



Nominal spacing of muntins 2'-0" sash panels made in lengths of 2 ft multiples up to maximum length of 20 ft.

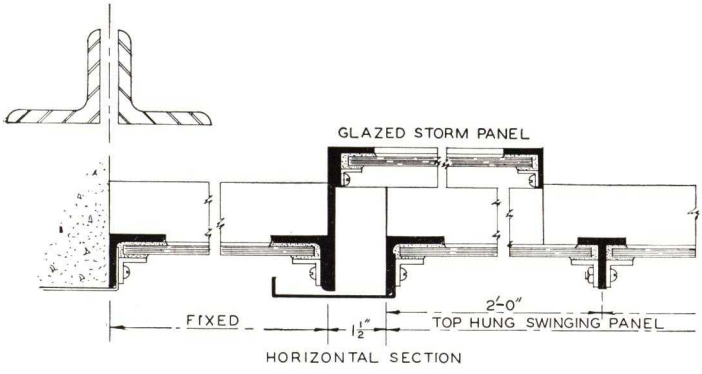
Standard Panel Heights Are 3, 4, 5 and 6 Ft.



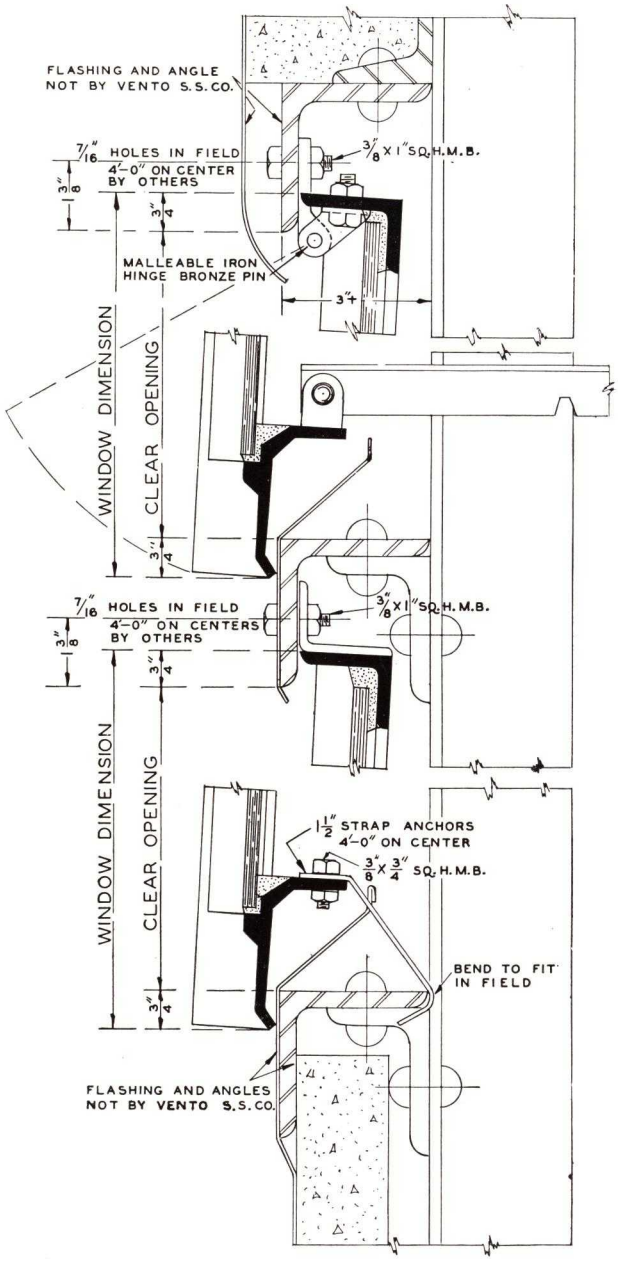
SECTION AT SILL OF STORM PANEL

General structural details are as shown herewith. This type of window, however, is detailed according to the requirements of the individual job and the specific structural layout.

Storm panels are especially recommended with sloping continuous windows, allowing the continuous windows to be opened during heavy rainfall without the danger of damage to the interior of the building.



HORIZONTAL SECTION



WINDOWS
by
VENTO

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Andersen

COMPLETE · WINDOW · UNITS

CASEMENT
WINDOWS

•

NARROLINE
DOUBLE HUNG
WINDOWS

•

BASEMENT
WINDOWS

•

Andersen
CORPORATION
BAYPORT, MINN.

ANDERSEN CASEMENT WINDOW

A Complete Unit Including

FRAME • SASH • HARDWARE • SCREEN • DOUBLE GLASS
WEATHER STRIPPED • FACTORY FITTED • TREATED

THE ANDERSEN CASEMENT is an improved wood casement window that successfully combines the advantages of weathertight wood construction with the beauty of modern, narrow line design. It harmonizes pleasingly with all types of architecture and gives added charm and value to any building in which it is used.

Effective weatherstripping, double glazing, and leakproof frame construction make the Andersen Casement Window exceptionally leakproof and weathertight and **especially suited to the requirements of air conditioning** and gas or electric heat.

Now you can have the full benefit of casement ventilation without any of the usual drawbacks. The Andersen Casement is convenient and easy to operate. It is exceptionally weathertight. It is simple in construction and easy to install. It is well proportioned and unusually attractive in appearance.

In no other casement, wood or metal, will you find all these distinctive features. It will pay you to examine them.

LEAKPROOF FRAME—Made of clear Pine, chemically preserved, with the Andersen Leakproof Locked Sill Joint, weathertight wide blind stop and mortar clinch grooves. Narrow mullion posts, transom bar and exterior moulding provide modern lines and permit large glass area. Standard design is suitable for all types of wall construction and any kind of interior and exterior wall finish.

Inside wood stops, mullion casings, and transom bar casings of pine or hardwoods are included.

IMPROVED SASH—New design prevents sticking or binding and provides two point contact. Factory fitted and glazed with either DSA or SSA labeled glass. Made of clear Pine chemically preserved, with exposed end wood eliminated by improved reinforced joints. Dividing or muntin bars are either solid aluminum (Style A), which are easy to clean and require no finishing, or attractively designed wood (Style W). Sash with horizontal muntin bars only or with special leaded glass panels can be furnished on order.

WEATHERTIGHT—Spring phosphor bronze weatherstrips insure a tight seal under most severe weather conditions. This improved weatherstrip is an outstanding development in casement construction.

Infiltration tests made at the University of Wisconsin show an air leakage of only 4.6 cubic feet per hour per foot of sash perimeter with a wind velocity of 15 miles per hour.

The American Society of Heating and Ventilating Engineers in a recent bulletin reports an infiltration of 16 cubic feet for the average weatherstripped double hung window under the same conditions. Note also how the above figure compares with similar tests made on other casements as reported in the 1936 Guide of the Society.

COMPLETE HARDWARE—New . . . . improved design. Easy to install. Includes:

Extension Hinges—Cadmium plated steel with brass bearings.

Under Screen Sash Operators—Choice of two designs. Illustrated on page 2.

Worm Gear Type — With solid bronze housing and handle.

Bar Type—Steel, bronze finish over cadmium plating.

Locking Latch—Solid bronze handle. Closes sash tightly; locks it securely. Independent of screen. Automatic ejection of sash insures easy opening.

Hardware with all parts made of solid bronze can be furnished on special order.

INSIDE SCREEN—Fitted and ready to slip in place with spring bolt fasteners attached. Solid aluminum frame with 16 mesh aluminum wire cloth or wood frame (Pine) with 16 mesh bronze wire.

REMOVABLE DOUBLE GLAZING—Fits on the inside of the sash. Has an aluminum frame and spring bronze seal. Glazed with DSA labeled glass. Easily and quickly slipped in place or removed from the inside. May be left in place the year round. Reduces heat loss by radiation 60 per cent. *Controls condensation.* Particularly suited to meet the requirements of air conditioning both in winter and summer.

TREATED WOOD—All wood parts of frame and sash are protected against decay and termites with a tested chemical preservative recommended as one of the best available by wood treating authorities. The toxic agent used gives positive protection against termites and a high resistance to decay, rendering the treated wood exceptionally durable.

Protection against moisture during construction and before painting and added protection thereafter is provided by the addition of a Water Repellent Compound to the solution.

The wood is not discolored and any customary finish can be applied.

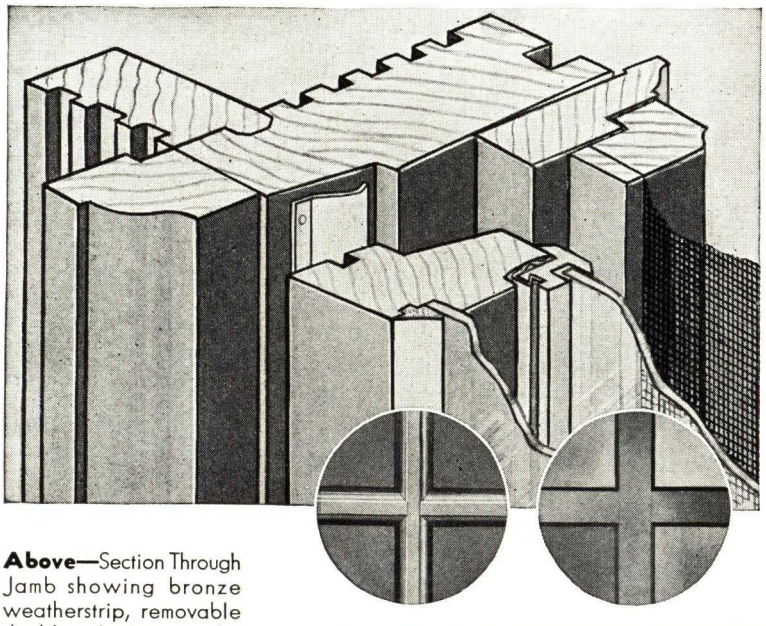
Complete technical information will be furnished on request.

Nationally Distributed Through Lumber and Millwork Dealers

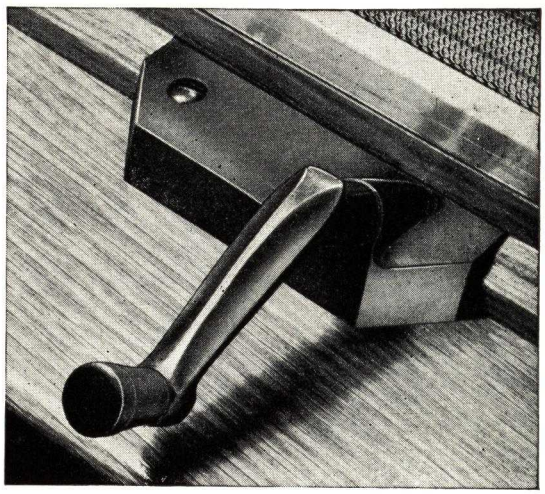
Andersen Corporation

ANDERSEN CASEMENT WINDOW

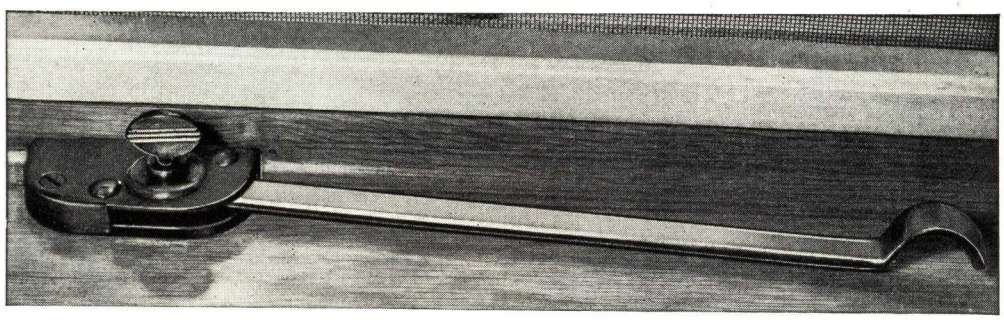
Outstanding Features



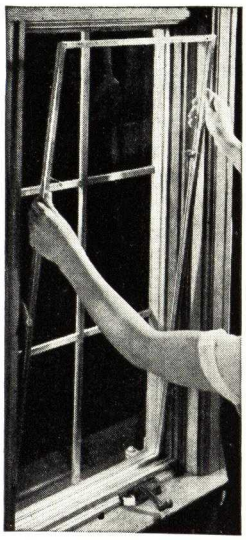
Above—Section Through Jamb showing bronze weatherstrip, removable double glazing on the inside of the sash, and wood frame screen. Note the special design of frame and sash that eliminates sticking and binding, also the anchor strip and mortar clinch grooves to insure weathertight joining with wall in either frame or masonry construction. Inserts in circles show, left, the wood muntin bar and, right, the aluminum muntin bar.



Worm Gear Sash Operator—Solid bronze handle and case. Adjusts and automatically locks sash in any position. Powerful and easy to operate. Independent of screen. Does not interfere with drapes, shades or Venetian Blinds. Note aluminum frame screen.



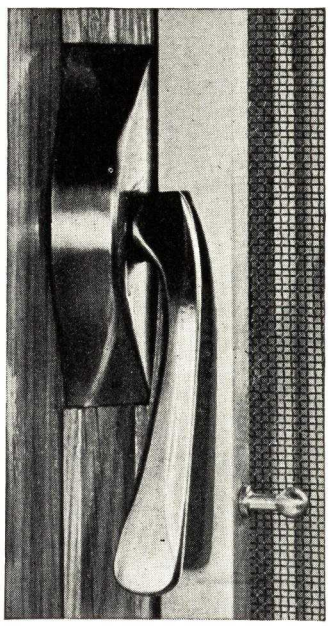
Bar Sash Operator—Bronze finish over cadmium plating. Works easily and smoothly. Holds sash securely in any position. A very satisfactory low priced operator. Note wood frame screen in this illustration.



Left—the Double Glass is easily and quickly slipped in place or removed for cleaning. No tools are required.

Right—Extension Hinges permit the easy cleaning of outside glass from the inside.

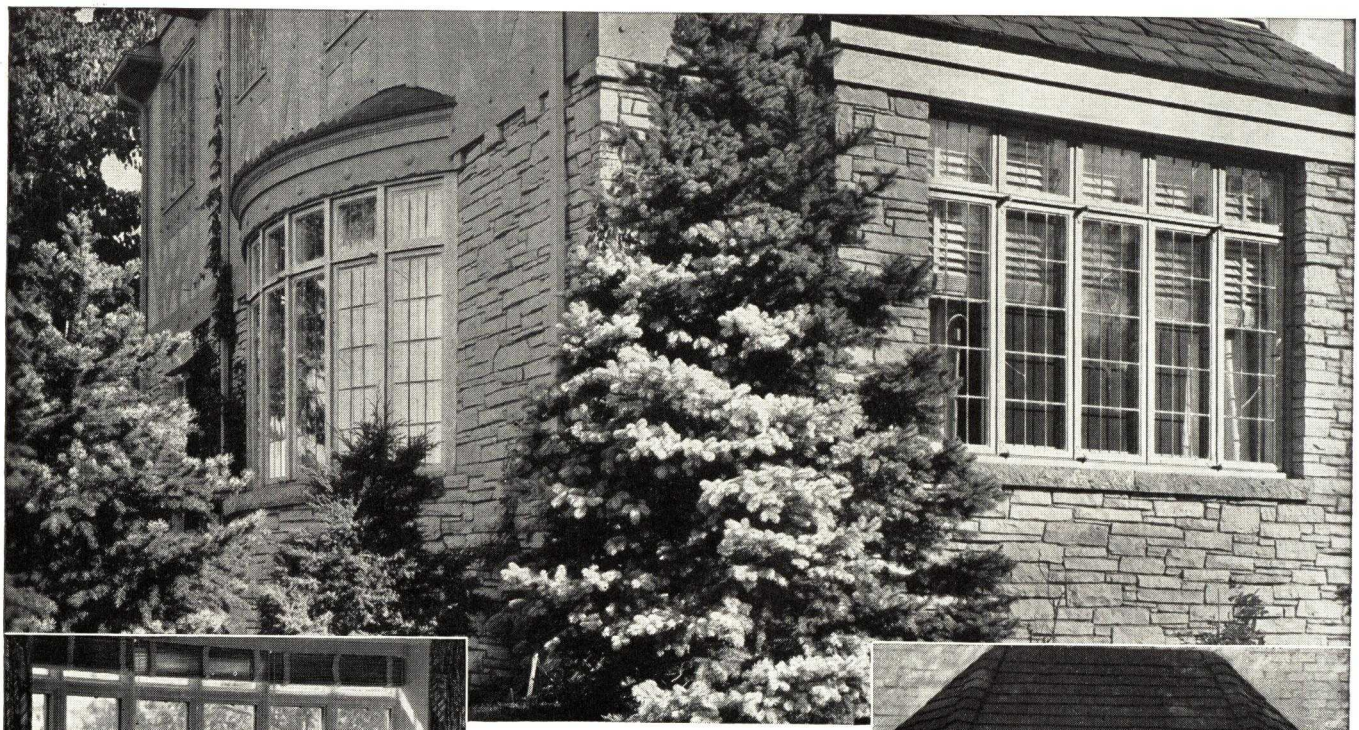
Right—Sash Lock pulls the sash completely shut and locks it securely when closed without opening or removing the screen. Also forcibly ejects the sash when opened.



Andersen Corporation

ANDERSEN CASEMENT WINDOW

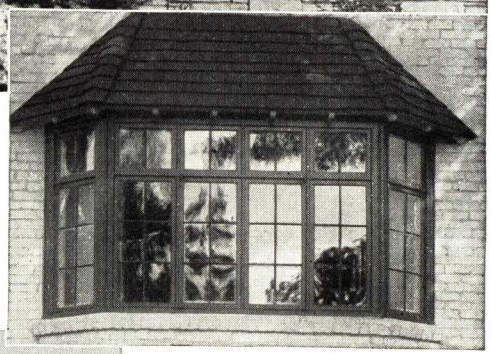
Typical Installations



Above—Leaded Glass Panels in stock units in place of regular glass layout. The radial bay at left is standard construction, see detail on page 9.

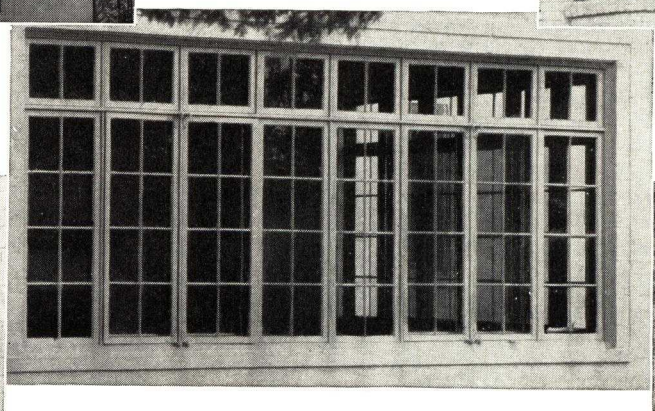
Above—Typical radial bay. Horizontal bars are standard.

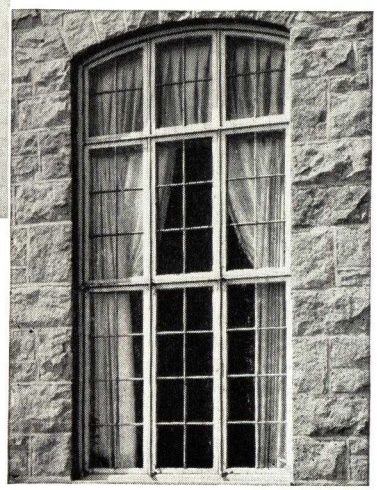
Below—A gable end living room window, unit 6538.



Above— Typical Angle bay. Stock units 8446 and 2416.

Below—Studio window from stock units with special segment head.





Andersen Casements give added charm and beauty to the exterior of any home. They are well proportioned and graceful, yet sturdy in appearance. Note the effective use of stock size units in the typical installations on this page.

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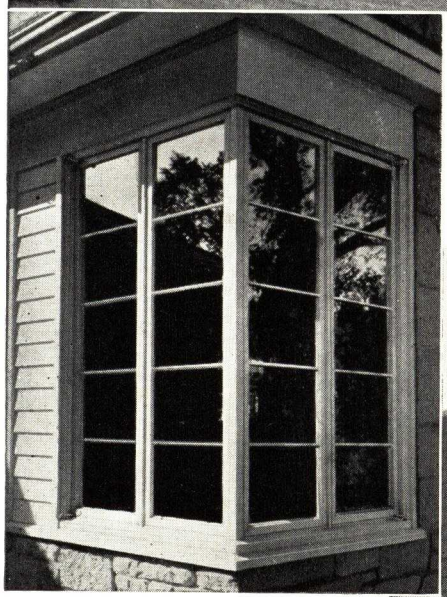
Andersen Corporation

ANDERSEN CASEMENT WINDOW

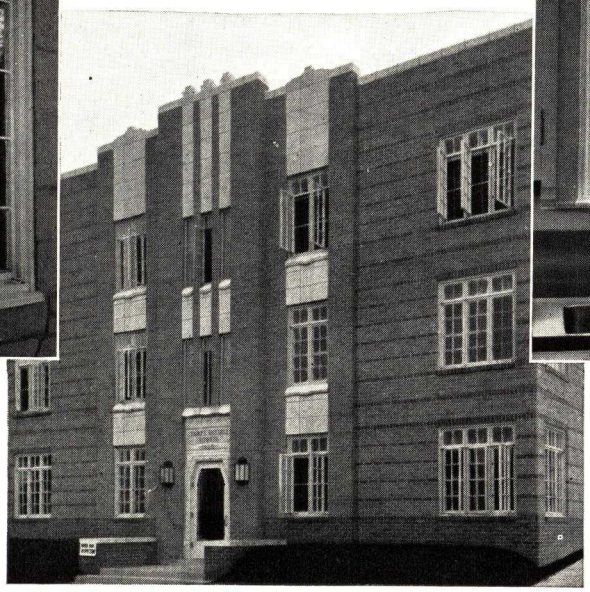
Typical Installations

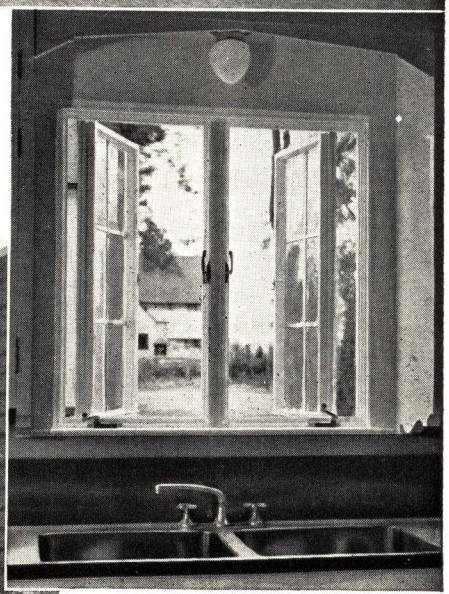


Above—A typical corner window installation with stationary sash at the corner. See detail on page 9.

Above—Colonial homes equipped with ANDERSEN Wood Casements retain the symmetrical beauty inherent in colonial design.

Below—ANDERSEN casements make ideal windows for apartments and public buildings.



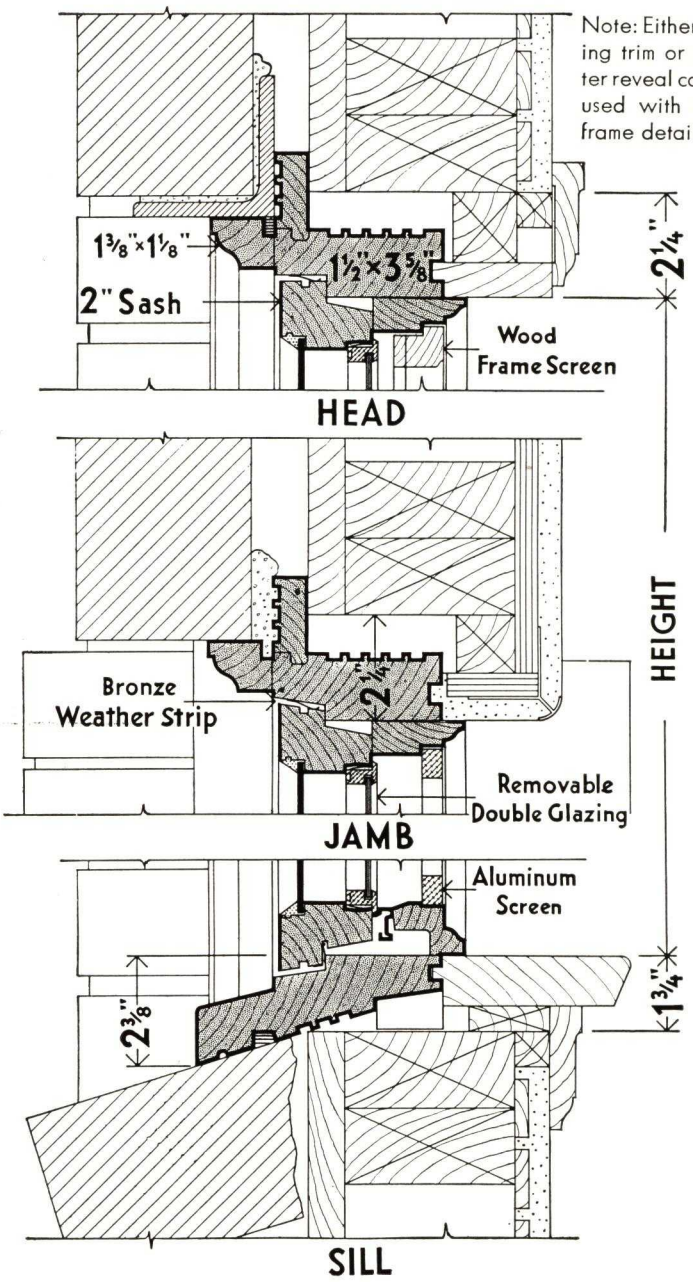


Above—Standard kitchen unit 4326 over double sink. For a wider opening use triple unit 6336. See page 10.

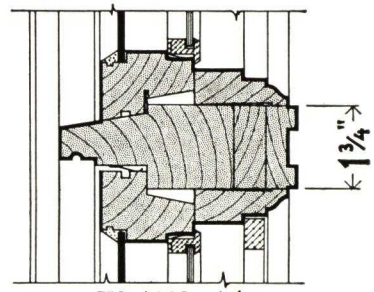
ANDERSEN CASEMENT WINDOW

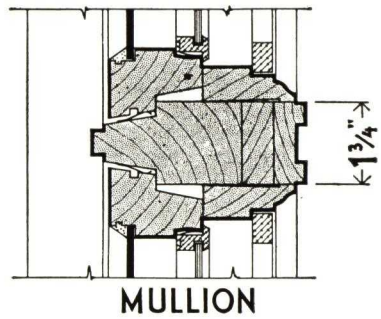
Detail of Complete Unit

Brick veneer wall with wind break outside of sheathing



Scale—Three Inches Equal One Foot.
Patents Nos. 17,552,-1,648,712,-1,879,005,-2,003,982





NOTES

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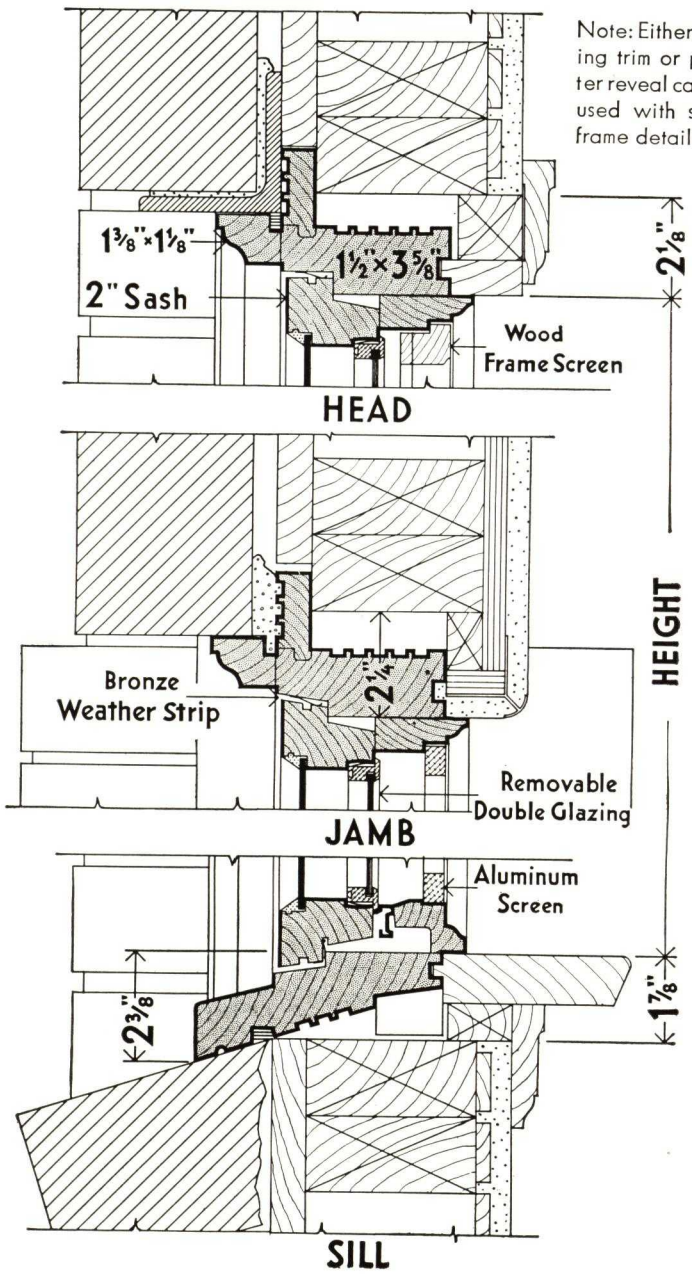
3. All inside finish stops, mullion and transom inside casing as shown on this detail are furnished as part of the unit. These parts are furnished in clear Pine unless otherwise specified. These can be furnished in other woods at an extra charge.
4. Finish moulding with screen rabbet shown in sill detail is for swinging sash only. For stationary sash the same moulding as shown at head and jamb is used at the sill.
5. BRONZE WEATHERSTRIP as shown is furnished for all openings, applied to the head and sides of the frame and the bottom rail of the sash.
6. For full size details or details showing adaptation of standard unit to special requirements, see local millwork dealer or write Andersen Corporation, Bayport, Minn.

ANDERSEN CASEMENT WINDOW

Detail of Complete Unit

Brick veneer wall with wind break flush with sheathing



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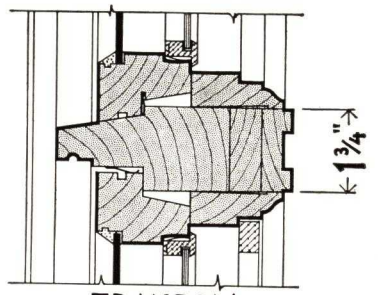

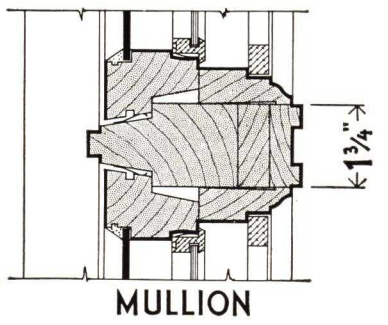

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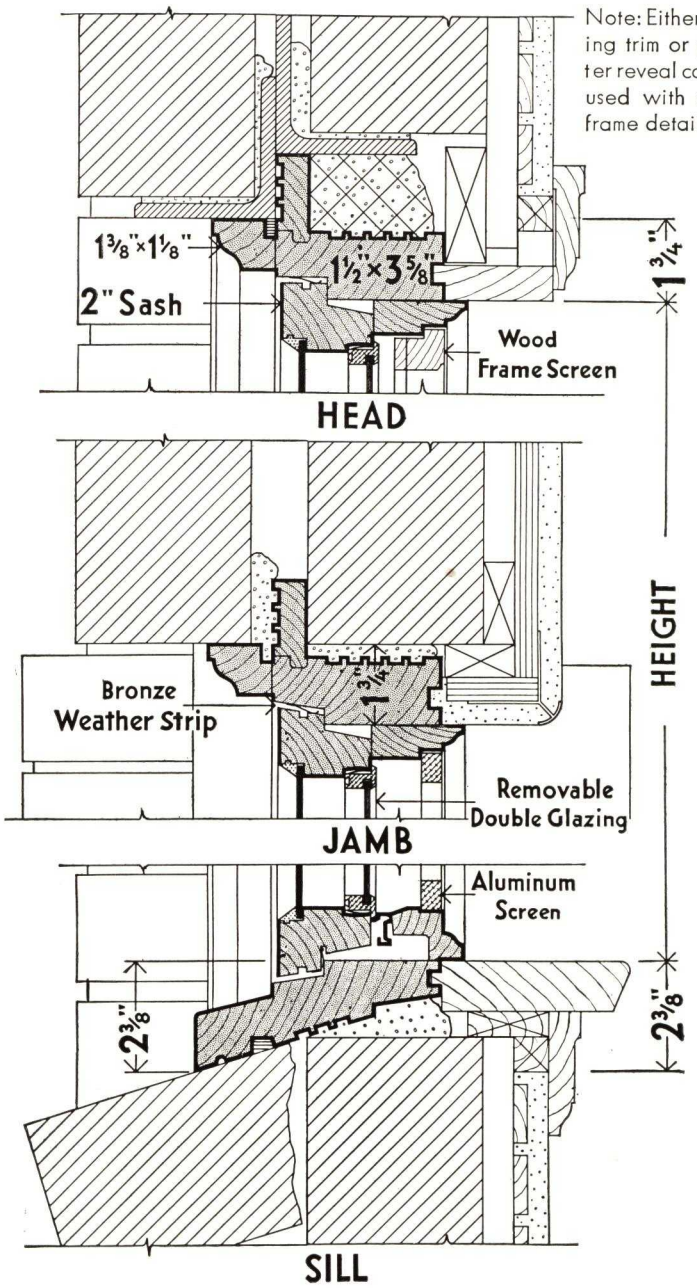
Andersen Corporation

ANDERSEN CASEMENT WINDOW

Detail of Complete Unit

Solid masonry wall—standard 8″ wall—Detail similar for thicker wall



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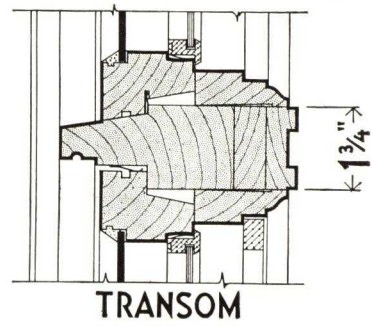
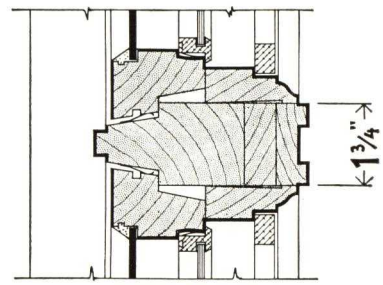
Patents Nos. 17,552,-1,648,712,-1,879,005,-2,003,982



TRANSOM



MULLION

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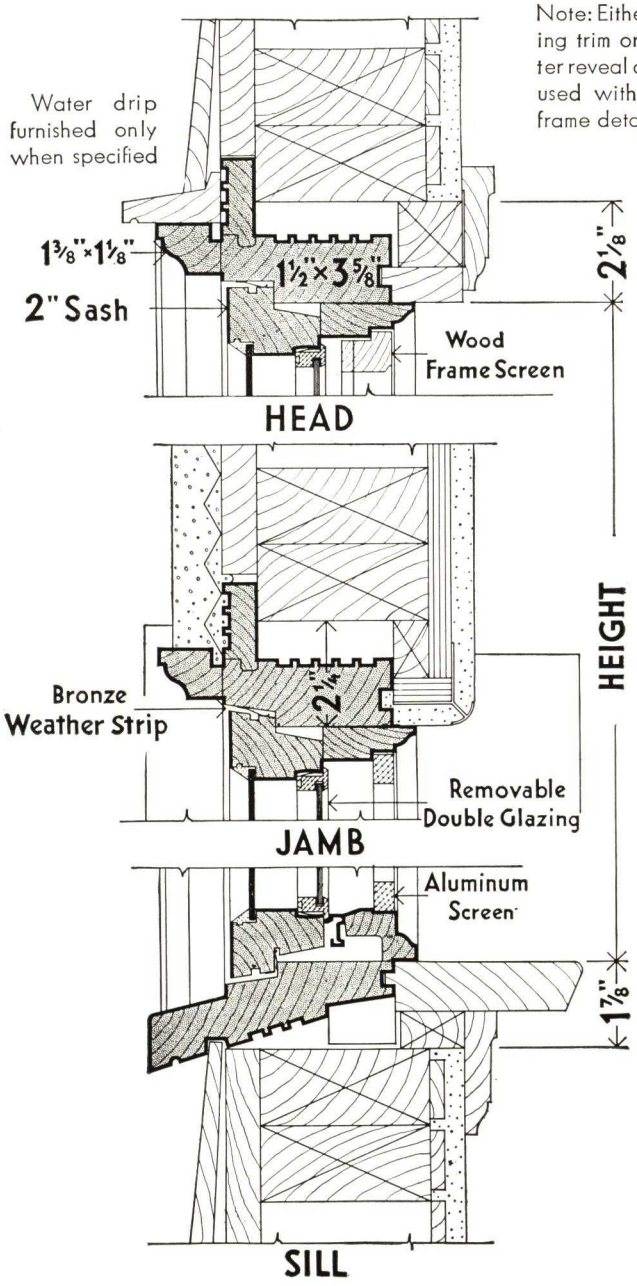
ANDERSEN CASEMENT WINDOW

Detail of Complete Unit

Frame wall construction with wood siding or stucco



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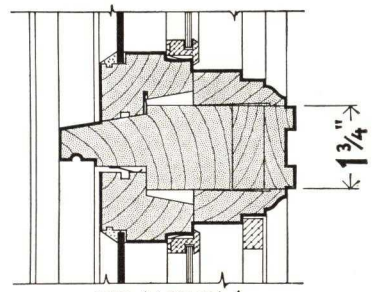

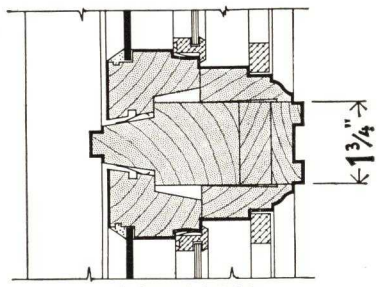

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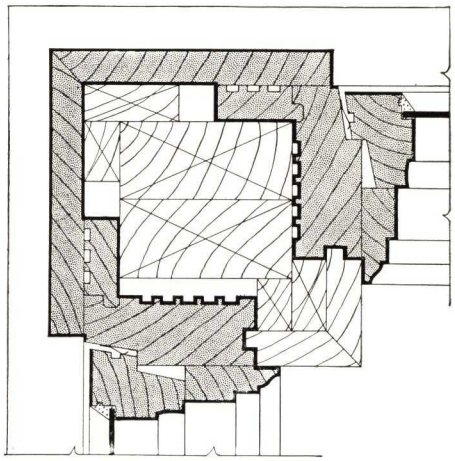
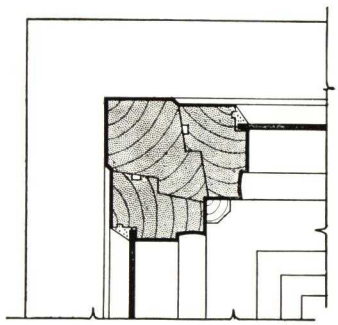
ANDERSEN CASEMENT WINDOW

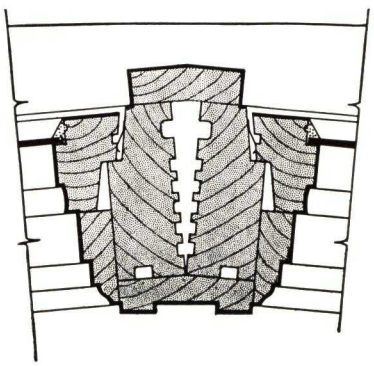
Special Adaptations



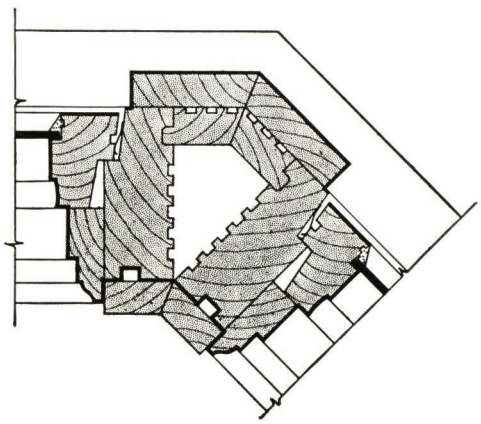
CORNER WINDOW DETAIL NO. 1, 1/4 SCALE—Showing typical corner section for use where support is required above. Angle iron or I beam can be used in place of 2x4's. Exterior casings may be of metal or wood. Sash may be swinging or stationary.



CORNER WINDOW DETAIL NO. 2, 1/4 SCALE—Used where load bearing members are not required at corner. Has special corner mullion post with stationary sash next to corner. Three inches between glass. The rest of casement unit is same as standard detail shown on page 3.



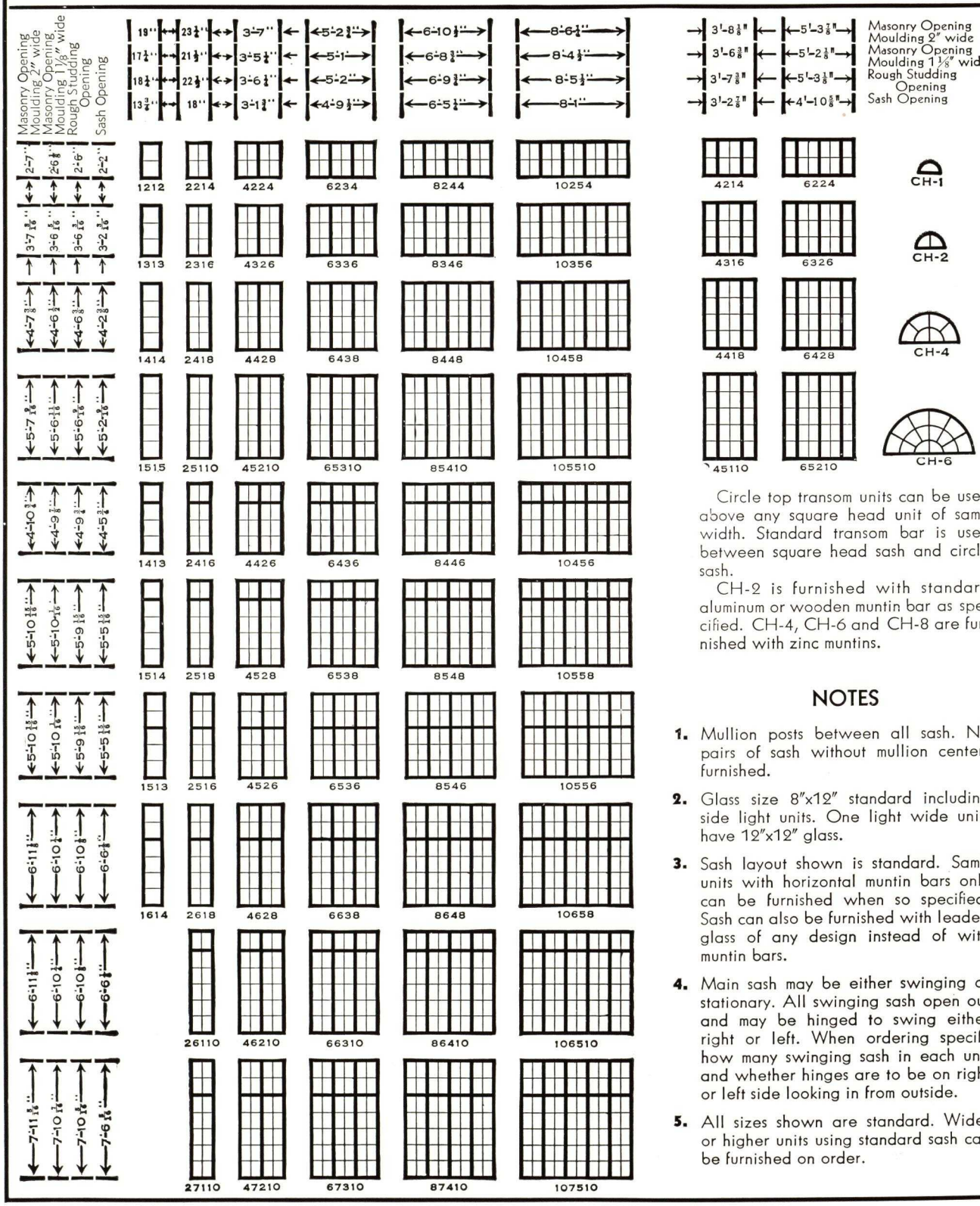
RADIAL BAY WINDOW DETAIL, 1/4 SCALE—Showing section through mullion between sash, using standard straight sash with outside edge of sill and head staff bead cut to any radius. Furnished only on special order.



ANGLE BAY DETAIL, 1/4 SCALE—Showing section through typical angle mullion. All parts are standard stock design and construction except the exterior casing. The inside casing is not furnished as part of the unit.

ANDERSEN CASEMENT WINDOW

Table of Sizes



Circle top transom units can be used above any square head unit of same width. Standard transom bar is used between square head sash and circle sash.

CH-2 is furnished with standard aluminum or wooden muntin bar as specified. CH-4, CH-6 and CH-8 are furnished with zinc muntins.

NOTES

1. Mullion posts between all sash. No pairs of sash without mullion centers furnished.
2. Glass size 8″x12″ standard including side light units. One light wide units have 12″x12″ glass.
3. Sash layout shown is standard. Same units with horizontal muntin bars only can be furnished when so specified. Sash can also be furnished with leaded glass of any design instead of with muntin bars.
4. Main sash may be either swinging or stationary. All swinging sash open out and may be hinged to swing either right or left. When ordering specify how many swinging sash in each unit and whether hinges are to be on right or left side looking in from outside.
5. All sizes shown are standard. Wider or higher units using standard sash can be furnished on order.

ANDERSEN NARROLINE WINDOW

A Complete Double Hung Unit

The Andersen NARROLINE Double Hung Window is furnished as a complete double hung window with modern narrow mullions and casings, yet it retains the time-tested counterbalancing principle to insure dependable and trouble-free sash operation throughout the life of the building. It is effectively weatherstripped and is exceptionally leakproof and weathertight.

CONSTRUCTION FEATURES

FRAME—A leakproof Andersen Master Frame of improved design. See detail on page 13. All parts of the frame are treated with a chemical preservative and water repellent compound, the same as the Casement Window Unit as described on page 1 under the heading "Treated Wood."

COUNTERBALANCING EQUIPMENT—After experiments with many different devices for operating the sash, the time tested principle of counterbalancing weights has been retained. A specially designed flat weight with a pulley wheel permits the use of only one weight on each side in place of two. Standard equipment includes weights, sash chain cut to length and with fasteners attached and Andersen Noiseless Pulleys. The sash chain has short, heavy links especially designed for quiet operation. Tests have proved that dependable and trouble-free sash operation is assured for more than an ordinary lifetime.

FITTED SASH AND SCREENS—The NARROLINE Unit takes standard double hung sash, screens, and storm sash customarily furnished by millwork dealers. These can be obtained completely fitted and ready to install.

HARDWARE—Storm sash and screen hardware is optional equipment and includes the Andersen Automatic Storm Sash Operator, hangers for both storm sash and screens and hooks for the screen. Any standard type of hardware can also be used.

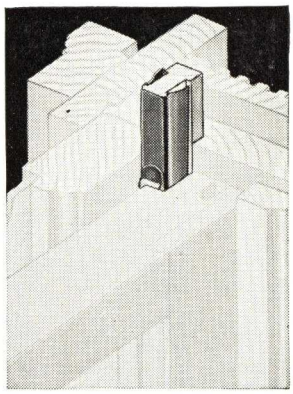
EASY TO INSTALL—The NARROLINE is simple in design and construction and is exceptionally easy to assemble and install.

WEATHERSTRIPS—The NARROLINE Window Unit is completely weatherstripped at the sides, head, check rail and bottom rail with Andersen Bronze Weatherstrips. A standard test made in July, 1935 at the University of Wisconsin by D. W. Nelson, Engineer in charge of Air Leakage Tests, shows that Andersen Weatherstrips for double hung windows reduce air leakage 86.2%.

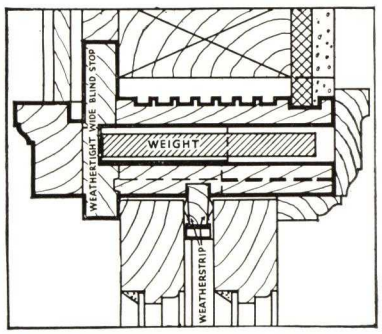
Comparative figures for air leakage in cubic feet per hour per foot of sash perimeter with a wind velocity of 15 miles per hour are as follows:

	Cubic Feet
Unweatherstripped window	51.5
Same with Andersen Weatherstrips	7.1
*Average for weatherstripped double hung windows	16.0

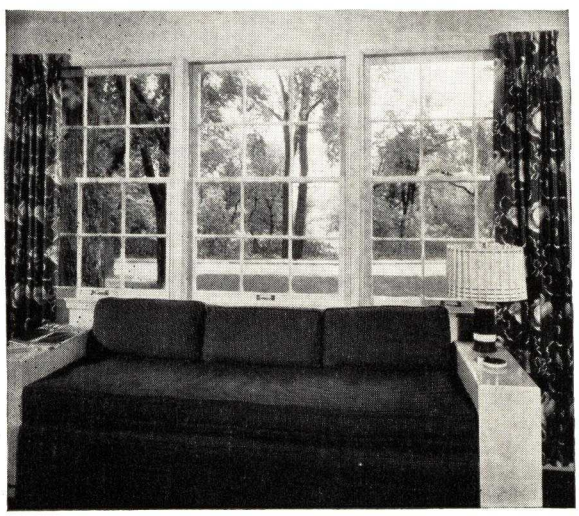
*From the Journal of American Society of Heating & Ventilating Engineers.

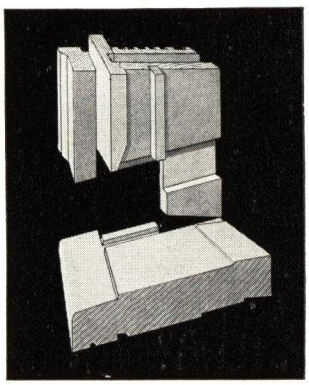


Andersen Weatherstripped Parting Stop in side jamb showing spring bronze metal on wood stop and bronze check rail block.

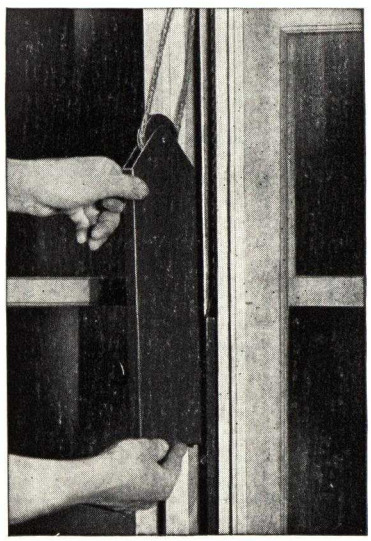


Inside casing can be as narrow as 2½ inches. Exterior moulding is suitable for siding, stucco or brick. Any other moulding or casing can be substituted.





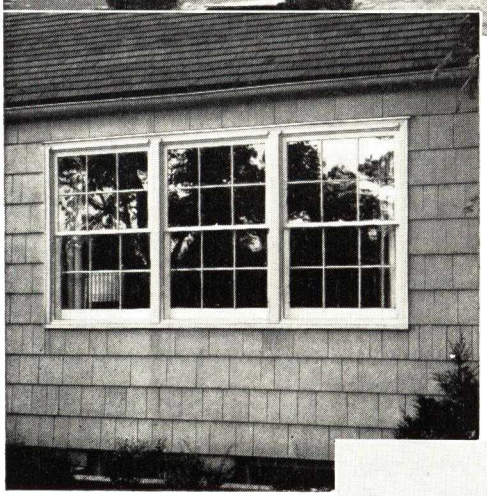
The famous ANDERSEN LEAKPROOF LOCKED SILL JOINT with steep sill slope.



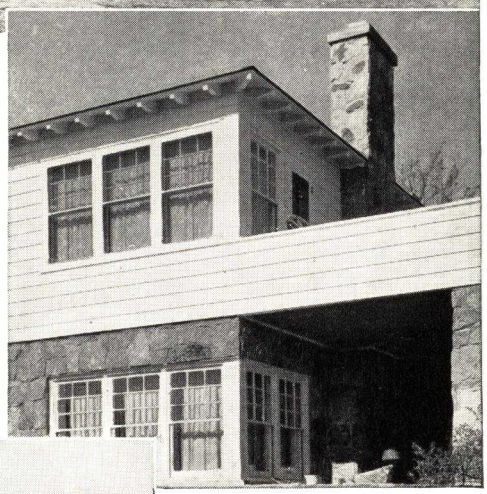
Andersen Corporation

ANDERSEN NARROLINE WINDOW

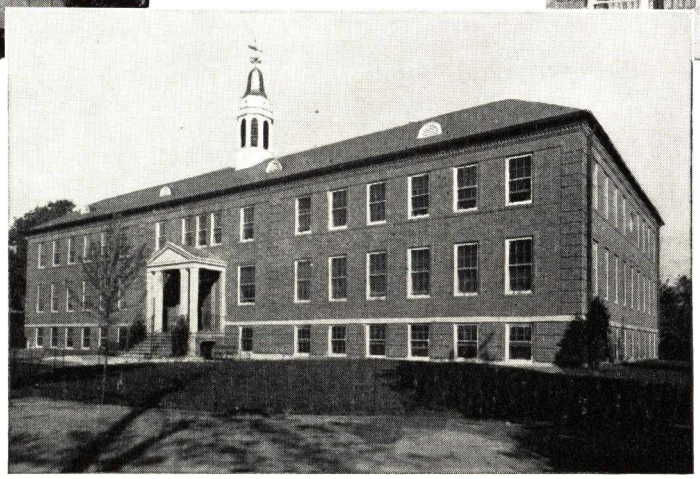
Typical Installations



The design and construction of the NARROLINE Window make it ideal for all Double Hung Window requirements in both single and multiple openings and any type of wall construction.



Above, Left, and Right— Note how the narrow mullions and graceful exterior mouldings improve the appearance of typical double hung multiple windows from the outside.

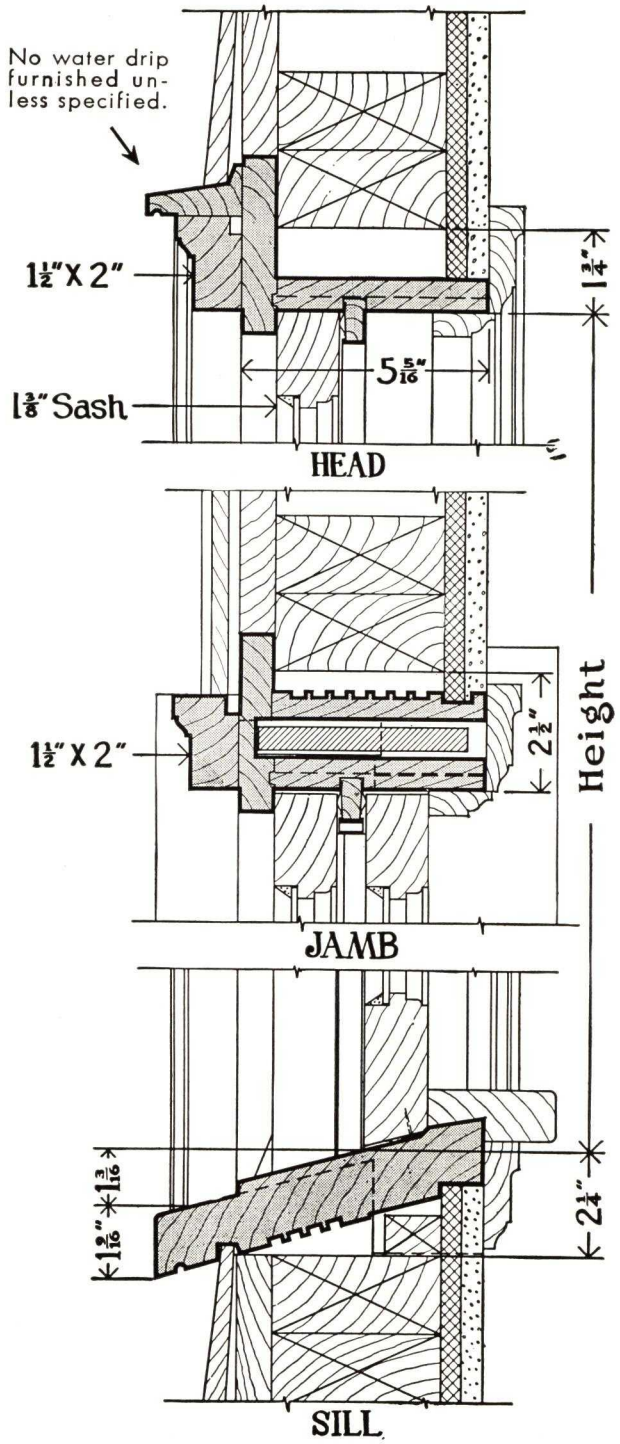


Dependability — both in operation and weathertightness—and simplicity of design make ANDERSEN NARROLINE Windows particularly suited to public buildings as illustrated at the left.

Nationally Distributed Through Lumber and Millwork Dealers

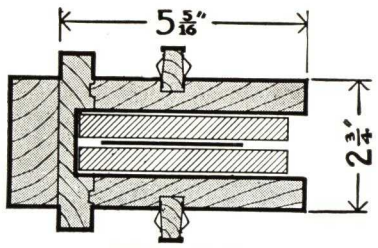
ANDERSEN NARROLINE WINDOW

Double Hung Master Frame No. 600



SCALE—Three Inches Equal One Foot

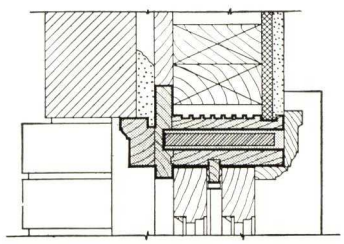
Patents Nos. 1,735,559,-1,879,005,-Re 16,594,-Re 17,552



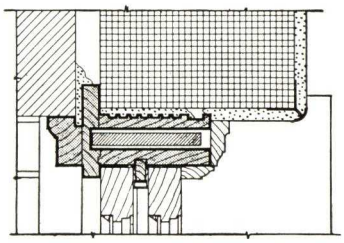
MULLION

NOTES

1. Water drip No. 923 shown on head brick moulding furnished only when specified.
2. Andersen Weatherstrip for complete opening, including bronze strip for check rail and bottom rail furnished as standard equipment.
3. Special weights and sash chain cut to correct length with fasteners furnished for each opening.
4. Exterior moulding No. 908, shown on detail, is standard on all frames. Any other Andersen brick moulding or casing furnished on special order.
5. Available in all standard sash opening sizes.
6. The Standard detail No. 600 can be used in any type of wall construction.



Detail ⅛ size showing frame No. 600 in brick veneer wall. Moulding 1½" thick permits adequate space between brick and sheathing with same jamb width.



Same frame in masonry wall with plaster reveal finish. Extension jamb and casing trim may be used in the regular way.

ANDERSEN NARROLINE WINDOW

Double Hung Master Frame No. 600

STANDARD SIZES—FRAME NO. 600 FOR 1⅜" SASH

Standard Sash Wood Allowance—Width 4 inches, Height 6 inches

Glass Size	WIDTHS					HEIGHTS				
	Sash Opening	Rough Studding Opening			Masonry or Brick Opening			Glass Size	Sash Opening	Rough Studding Opening	Masonry or Brick Opening
		Single	Mullion ($2\frac{3}{4}$" Wide)	Triple	Single	Mullion	Triple				
12" 2 Lt	1'-4"	1'-9"	3'-4"	4'-11"	1'-8"	3'-2¾"	4'-9½"	12" 2 Lt	2'-6"	2'-10"	2'-10¾"
14" 2 Lt	1'-6"	1'-11"	3'-8"	5'-5"	1'-10"	3'-6¾"	5'-3½"	14" 2 Lt	2'-10"	3'-2"	3'-2¾"
16" 2 Lt	1'-8"	2'-1"	4'-0"	5'-11"	2'-0"	3'-10¾"	5'-9½"	15" 2 Lt	3'-0"	3'-4"	3'-4¾"
18" 2 Lt	1'-10"	2'-3"	4'-4"	6'-5"	2'-2"	4'-2¾"	6'-3½"	16" 2 Lt	3'-2"	3'-6"	3'-6¾"
20" 2 Lt	2'-0"	2'-5"	4'-8"	6'-11"	2'-4"	4'-6¾"	6'-9½"	18" 2 Lt	3'-6"	3'-10"	3'-10¾"
10" 4 Lt	2'-1"	2'-6"	4'-10"	7'-2"	2'-5"	4'-8¾"	7'-0½"	20" 2 Lt	3'-10"	4'-2"	4'-2¾"
22" 2 Lt	2'-2"	2'-7"	5'-0"	7'-5"	2'-6"	4'-10¾"	7'-3½"	21" 2 Lt	4'-0"	4'-4"	4'-4¾"
24" 2 Lt	2'-4"	2'-9"	5'-4"	7'-11"	2'-8"	5'-2¾"	7'-9½"	22" 2 Lt	4'-2"	4'-6"	4'-6¾"
12" 4 Lt	2'-5"	2'-10"	5'-6"	8'-2"	2'-9"	5'-4¾"	8'-0½"	24" 2 Lt	4'-6"	4'-10"	4'-10¾"
26" 2 Lt	2'-6"	2'-11"	5'-8"	8'-5"	2'-10"	5'-6¾"	8'-3½"	26" 2 Lt	4'-10"	5'-2"	5'-2¾"
27" 2 Lt	2'-7"	3'-0"	5'-10"	8'-8"	2'-11"	5'-8¾"	8'-6½"	28" 2 Lt	5'-2"	5'-6"	5'-6¾"
28" 2 Lt	2'-8"	3'-1"	6'-0"	8'-11"	3'-0"	5'-10¾"	8'-9½"	30" 2 Lt	5'-6"	5'-10"	5'-10¾"
14" 4 Lt	2'-9"	3'-2"	6'-2"	9'-2"	3'-1"	6'-0¾"	9'-0½"	32" 2 Lt	5'-10"	6'-2"	6'-2¾"
30" 2 Lt	2'-10"	3'-3"	6'-4"	9'-5"	3'-2"	6'-2¾"	9'-3½"	34" 2 Lt	6'-2"	6'-6"	6'-6¾"
32" 2 Lt	3'-0"	3'-5"	6'-8"	9'-11"	3'-4"	6'-6¾"	9'-9½"	36" 2 Lt	6'-6"	6'-10"	6'-10¾"
34" 2 Lt	3'-2"	3'-7"	7'-0"	10'-5"	3'-6"	6'-10¾"	10'-3½"	38" 2 Lt	6'-10"	7'-2"	7'-2¾"
36" 2 Lt	3'-4"	3'-9"	7'-4"	10'-11"	3'-8"	7'-2¾"	10'-9½"	40" 2 Lt	7'-2"	7'-6"	7'-6¾"
38" 2 Lt	3'-6"	3'-11"	7'-8"	11'-5"	3'-10"	7'-6¾"	11'-3½"				
40" 2 Lt	3'-8"	4'-1"	8'-0"	11'-11"	4'-0"	7'-10¾"	11'-9½"				
42" 2 Lt	3'-10"	4'-3"	8'-4"	12'-5"	4'-2"	8'-2¾"	12'-3½"				
44" 2 Lt	4'-0"	4'-5"	8'-8"	12'-11"	4'-4"	8'-6¾"	12'-9½"				
48" 2 Lt	4'-4"	4'-9"	9'-4"	13'-11"	4'-8"	9'-2¾"	13'-9½"				

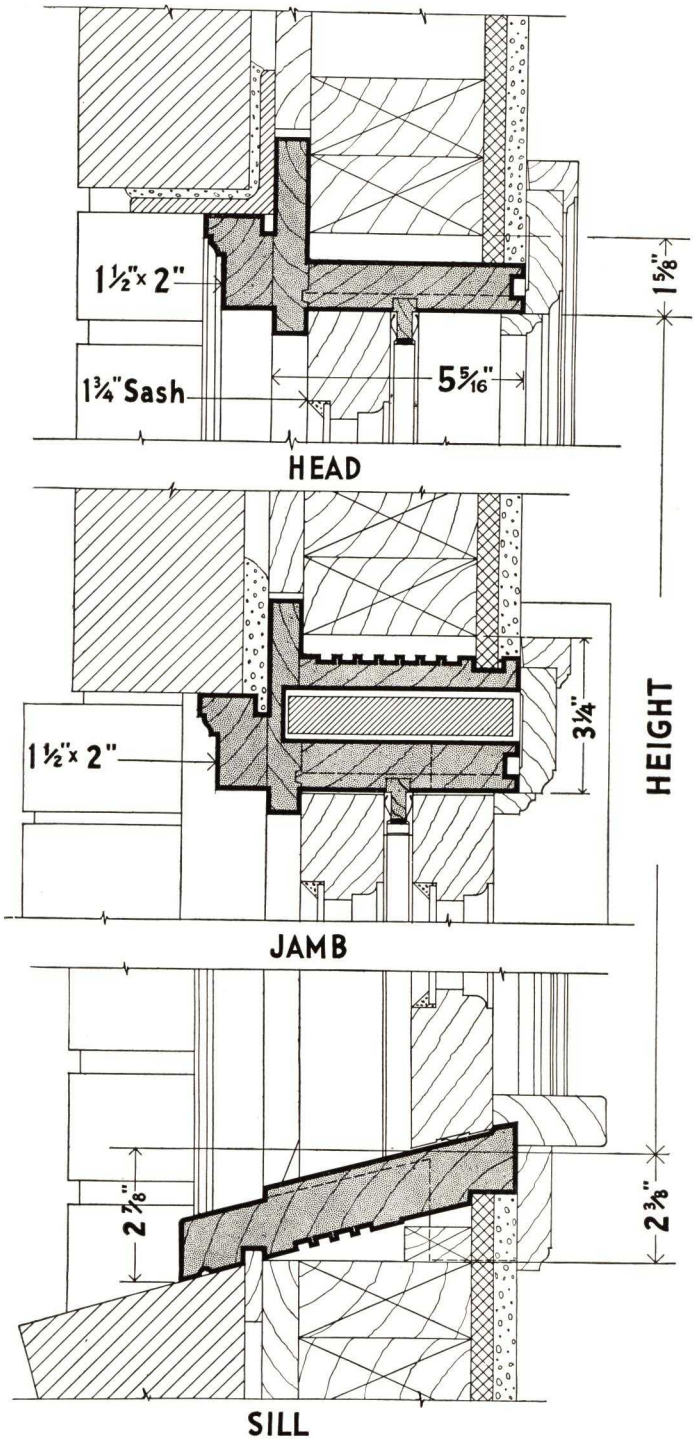
SHEATHING NOTE—If sheathing is applied before setting the frames, be sure to allow for the WEATHERTIGHT WIDE BLIND STOP. Set sheathing back at least one inch from the edge of the studding at the sides, two inches above the face of the header at the top and flush with the plate at the bottom. See detail on opposite page.

NOTES

1. Any width may be used with any height.
2. Quadruple and quintuple units also furnished on order. Rough studding and masonry openings can be figured from above.
3. Above sizes are the most popular and most commonly used. However, other sizes can be furnished on order.
4. These are New York or Western opening sizes. Baltimore and Ohio opening sizes furnished on order.
5. Frames for 1¾ inch sash furnished on special order.

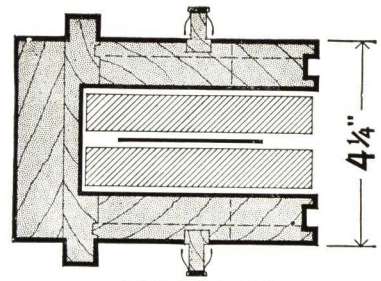
ANDERSEN NARROLINE WINDOW

Double Hung Master Frame No. 634

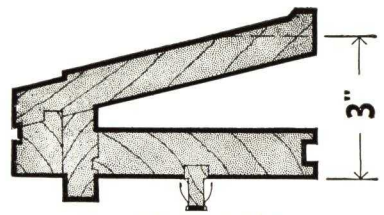


SCALE—Three Inches Equal One Foot

Patent Nos. 1,735,559,-1,879,005,-Re 16,594,-Re 17,552



MULLION



TRANSOM

NOTES

1. This standard unit is used in all types of frame or masonry wall construction and with any style of exterior or interior wall finish. Detail shows standard brick veneer construction.
2. Andersen Weatherstrip for complete opening, including bronze strip for check and bottom rail furnished as standard equipment.
3. Special weights and sash chain cut to correct length with fasteners furnished for each opening.
4. Exterior moulding No. 908 shown on detail is standard on all frames. Any other Andersen brick moulding or casing furnished on Special Order.
5. Water drip No. 923 to fit above head exterior moulding for frame wall construction furnished only when specified.
6. All parts are treated with Andersen Chemical Preservative and Moisture Repellent, same as Frame No. 600.
7. Available in all standard frame sizes.

ANDERSEN NARROLINE WINDOW

Double Hung Master Frame No. 634

STANDARD SIZES—FRAME NO. 634 FOR 1¾″ SASH

Standard Sash Wood Allowance—Width 4 inches, Height 6 inches

WIDTHS								HEIGHTS			
Glass Size	Sash Opening	Rough Studding Opening			Masonry or Brick Opening			Glass Size	Sash Opening	Rough Studding Opening	Masonry or Brick Opening
		Single	Mullion (4¼″ Mullion)	Triple	Single	Mullion (4¼″ Mullion)	Triple				
12″ 2 Lt	1′–4″	1′–10½″	3′–7″	5′–3½″	1′–8″	3′–4¼″	5′–0½″	12″ 2 Lt	2′–6″	2′–10″	2′–10⅞″
14″ 2 Lt	1′–6″	2′–0½″	3′–11″	5′–9½″	1′–10″	3′–8¼″	5′–6½″	14″ 2 Lt	2′–10″	3′–2″	3′–2⅞″
16″ 2 Lt	1′–8″	2′–2½″	4′–3″	6′–3½″	2′–0″	4′–0¼″	6′–0½″	16″ 2 Lt	3′–2″	3′–6″	3′–6⅞″
18″ 2 Lt	1′–10″	2′–4½″	4′–7″	6′–9½″	2′–2″	4′–4¼″	6′–6½″	18″ 2 Lt	3′–6″	3′–10″	3′–10⅞″
20″ 2 Lt	2′–0″	2′–6½″	4′–11″	7′–3½″	2′–4″	4′–8¼″	7′–0½″	20″ 2 Lt	3′–10″	4′–2″	4′–2⅞″
22″ 2 Lt	2′–2″	2′–8½″	5′–3″	7′–9½″	2′–6″	5′–0¼″	7′–6½″	22″ 2 Lt	4′–2″	4′–6″	4′–6⅞″
24″ 2 Lt	2′–4″	2′–10½″	5′–7″	8′–3½″	2′–8″	5′–4¼″	8′–0½″	24″ 2 Lt	4′–6″	4′–10″	4′–10⅞″
26″ 2 Lt	2′–6″	3′–0½″	5′–11″	8′–9½″	2′–10″	5′–8¼″	8′–6½″	26″ 2 Lt	4′–10″	5′–2″	5′–2⅞″
28″ 2 Lt	2′–8″	3′–2½″	6′–3″	9′–3½″	3′–0″	6′–0¼″	9′–0½″	28″ 2 Lt	5′–2″	5′–6″	5′–6⅞″
30″ 2 Lt	2′–10″	3′–4½″	6′–7″	9′–9½″	3′–2″	6′–4¼″	9′–6½″	30″ 2 Lt	5′–6″	5′–10″	5′–10⅞″
32″ 2 Lt	3′–0″	3′–6½″	6′–11″	10′–3½″	3′–4″	6′–8¼″	10′–0½″	32″ 2 Lt	5′–10″	6′–2″	6′–2⅞″
34″ 2 Lt	3′–2″	3′–8½″	7′–3″	10′–9½″	3′–6″	7′–0¼″	10′–6½″	34″ 2 Lt	6′–2″	6′–6″	6′–6⅞″
36″ 2 Lt	3′–4″	3′–10½″	7′–7″	11′–3½″	3′–8″	7′–4¼″	11′–0½″	36″ 2 Lt	6′–6″	6′–10″	6′–10⅞″
38″ 2 Lt	3′–6″	4′–0½″	7′–11″	11′–9½″	3′–10″	7′–8¼″	11′–6½″	38″ 2 Lt	6′–10″	7′–2″	7′–2⅞″
40″ 2 Lt	3′–8″	4′–2½″	8′–3″	12′–3½″	4′–0″	8′–0¼″	12′–0½″	40″ 2 Lt	7′–2″	7′–6″	7′–6⅞″
42″ 2 Lt	3′–10″	4′–4½″	8′–7″	12′–9½″	4′–2″	8′–4¼″	12′–6½″	42″ 2 Lt	7′–6″	7′–10″	7′–10⅞″
44″ 2 Lt	4′–0″	4′–6½″	8′–11″	13′–3½″	4′–4″	8′–8¼″	13′–0½″	44″ 2 Lt	7′–10″	8′–2″	8′–2⅞″
46″ 2 Lt	4′–2″	4′–8½″	9′–3″	13′–9½″	4′–6″	9′–0¼″	13′–6½″	46″ 2 Lt	8′–2″	8′–6″	8′–6⅞″
48″ 2 Lt	4′–4″	4′–10½″	9′–7″	14′–3½″	4′–8″	9′–4¼″	14′–0½″	48″ 2 Lt	8′–6″	8′–10″	8′–10⅞″

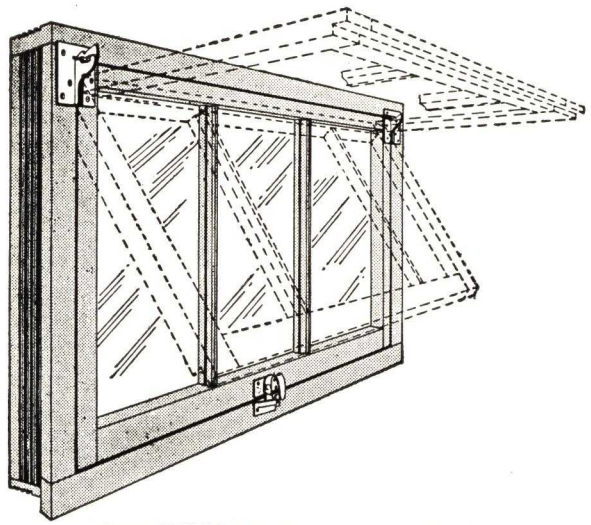
NOTES—1. Any width may be used with any height.
2. Quadruple and quintuple units furnished on order.
3. Above sizes are most commonly used. Other sizes furnished on order.

SHEATHING NOTE—If sheathing is applied before setting the frames, be sure to allow for the WEATHERTIGHT WIDE BLIND STOP. Set sheathing back at least one inch from the edge of the studding at the sides, two inches above the face of the header at the top and flush with the plate at the bottom. See detail on opposite page.

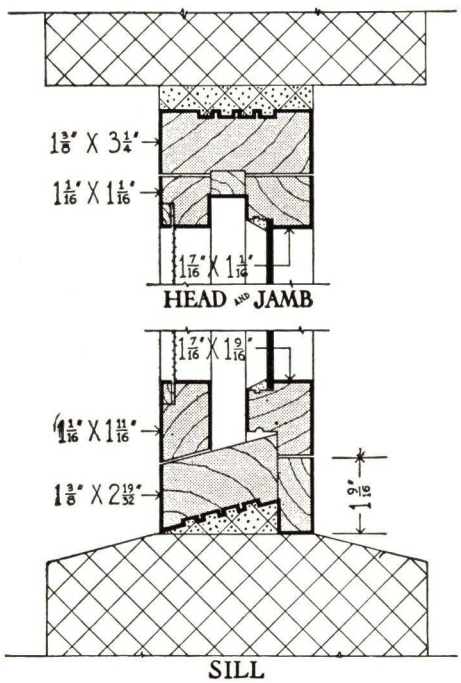
ANDERSEN BASEMENT WINDOW

A Complete Unit Including

FRAME • SASH • HARDWARE • SCREEN



FROM THE INSIDE—Note two open positions in which sash is automatically held. Sash is easily removed when open by simply lifting it out of the frame. The strong lock holds the sash tightly in the closed position.



Scale—Three Inches Equal One Foot.
Patent No. 1,879,005

FRAME—Manufactured of Clear Pine. The design of the frame makes it suitable for any wall. Mortar clinch grooves anchor the frame and eliminate leaking of water, dust, and air around the frame. The frame is set up and all hardware is applied at the factory.

SASH—Glazed and Factory Fitted. Stiles and Rails are designed for sturdiness and to give maximum light. Bottom rail is rabbetted to make watertight joint between sash and sill. The sash is hung in frame at factory.

SCREEN—Factory Fitted, 16 mesh Bronze Screen Cloth. Installed in frame at factory.

HARDWARE—Hinges automatically hold sash securely in two open positions without rattling. Cam lock closes sash tightly; also automatically ejects it for easy opening. Special inside screen fasteners can also be used for storm sash. All hardware parts are cadmium plated.

TERMITE AND DECAY PROTECTION—All wood parts of frame, sash, and screen are protected against decay, termites, and moisture absorption with a chemical preservative with the addition of a water repellent compound the same as the Casement and Narroline Units.

The treatment used is that fully described on page 1 under the heading "Treated Wood." The wood is not discolored and any customary finish can be applied over it.

The toxic agent in the preservative gives positive protection against termites and a high resistance to decay, and the water repellent compound protects against moisture during construction.

PACKING—The complete assembled unit is shipped in a carton with double protection for the glass.

STANDARD SIZES

Glass Sizes	No. of Lights	Masonry Opening Size
8x12 in.	Two Light	1′– 9″ x1′– 5 3/8″
10x12 in.	Two Light	2′– 1″ x1′– 5 3/8″
10x16 in.	Two Light	2′– 1″ x1′– 9 3/8″
12x16 in.	Two Light	2′– 5″ x1′– 9 3/8″
12x18 in.	Two Light	2′– 5″ x1′–11 3/8″
12x20 in.	Two Light	2′– 5″ x2′– 1 3/8″
8x10 in.	Three Light	2′– 5 1/4″x1′– 3 3/8″
8x12 in.	Three Light	2′– 5 1/4″x1′– 5 3/8″
9x10 in.	Three Light	2′– 8 1/4″x1′– 3 3/8″
9x12 in.	Three Light	2′– 8 1/4″x1′– 5 3/8″
9x18 in.	Three Light	2′– 8 1/4″x1′–11 3/8″
10x12 in.	Three Light	2′–11 1/4″x1′– 5 3/8″
10x14 in.	Three Light	2′–11 1/4″x1′– 7 3/8″
10x16 in.	Three Light	2′–11 1/4″x1′– 9 3/8″
10x18 in.	Three Light	2′–11 1/4″x1′–11 3/8″
10x20 in.	Three Light	2′–11 1/4″x2′– 1 3/8″
12x18 in.	Three Light	3′– 5 1/4″x1′–11 3/8″

Nationally Distributed Through Lumber and Millwork Dealers

Andersen Corporation

ANDERSEN WINDOW UNITS

Suggested Specifications

Note: *Words or clauses in italic type within brackets are selective. Choose and include that which applies.*

ANDERSEN CASEMENT WINDOWS

All casement windows shall be standard Andersen Casement Windows manufactured by Andersen Corporation, Bayport, Minnesota. Each shall include the following:

(a) All wood parts shall be given the Andersen Chemical Preservative and Moisture Proofing Treatment.

(b) Frame with (*standard* 1⅜ *in. x* 1⅛ *in.*) (*special detail*) exterior casings.

(c) Sash with (*aluminum*) (*wood*) muntin bars glazed with (*SSA*) (*DSA*) glass.

(d) Complete bronze weatherstripping, factory applied.

(e) Complete hardware for out-swinging sash, including (*worm gear*) (*bar*) type sash operator.

(f) Screen, (*aluminum frame with 16 mesh aluminum wire cloth*) (*wood frame with 16 mesh bronze wire cloth*) for all swinging sash.

(g) Inside stops (*and mullion*) (*and transom bar*) (*inside casings*) of (*clear Pine*) (*specify other wood*).

(h) Removable Double Glazing for all sash.

(i) These casements shall be assembled before delivery to the job with frame set up, sash hung (*removable double glazing installed in sash*), and all hardware applied, except metal sockets for screen bolts. Inside stops and (*mullion center*)(*and*)(*transom bar*) casings, and screens shall be delivered separately to be applied by the carpentry contractor after plastering or other inside wall finish is complete.

ANDERSEN BASEMENT WINDOWS

All basement windows shall be standard Andersen Basement Window units as manufactured by Andersen Corporation, Bayport, Minnesota. Each shall include the following:

(a) All wood parts shall be given the Andersen Chemical Preservative and Moisture Proofing Treatment.

(b) Frame; sash glazed with SSB glass; screen with 16 mesh bronze wire cloth; complete hardware.

(c) Units shall be completely factory assembled with sash and screen fitted into set-up frame and all hardware applied.

ANDERSEN NARROLINE DOUBLE HUNG WINDOW FRAMES

All double hung window frames shall be Andersen NARROLINE Frames (*No. 600 for* 1⅜ *in. sash*) (*No. 634 for* 1¾ *in. sash*) manufactured by Andersen Corporation, Bayport, Minnesota. Each shall include the following:

(a) All wood parts shall be given the Andersen Chemical Preservative and Moisture Proofing Treatment.

(b) Frame with (*standard* 1 7/16 *in. x* 2 *in.*) (*with water drip*) (*special design*) exterior casings.

(c) Complete Andersen Weatherstrips.

(d) Flat type cast iron sash weights with wood bushed pulley wheel, Special Andersen Noiseless Sash Pulleys, Copper finished steel sash chain, cut to length, with fasteners.

Note: *The NARROLINE is made for stock windows, screens, and storm sash of standard design and construction. These can be furnished prefitted and with check rail and bottom rail weatherstrips applied or they can be taken from stock and fitted on the job in the usual way. If prefitting is desired, the following should be added to the customary specifications for these items:*

(e) Windows, screens, and storm sash shall be furnished prefitted in accordance with Andersen specifications.

(f) Double-hung sash shall have Andersen Bronze Weatherstrips applied to check and bottom rails.

If complete assembly before delivery to the job is desired, include the following.

(g) Units shall be furnished with frames set up, complete with prefitted double-hung sash hung with chains and weights with sash and weights blocked in place before delivery to the job in accordance with the manufacturers' instructions.

Andersen

COMPLETE · WINDOW · UNITS

CASEMENT
WINDOWS

•

NARROLINE
DOUBLE HUNG
WINDOWS

•

BASEMENT
WINDOWS

•

Andersen
CORPORATION
BAYPORT, MINN.

CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

A Department of
CURTIS COMPANIES INCORPORATED
Clinton, Iowa

WITH PLANTS AND SALES OFFICES AT

CHICAGO, ILL. CLINTON, IOWA SIOUX CITY, IOWA TOPEKA, KAN. LINCOLN, NEB. WAUSAU, WIS. MINNEAPOLIS, MINN.

PRODUCTS

SILENTITE PRE-FIT DOUBLE-HUNG and CASEMENT WINDOW UNITS, MITERTITE DOOR and WINDOW TRIM.

Exterior and Interior Doors, Entrances, Windows, Frames, Trim, Moldings, Sectional Kitchen Cabinet Units, Cabinet Work, Mantels, Stairways, Garage Doors, Screens, Shutters, Storm Doors and Windows.

For our pages on Curtis Standard Kitchen Units and Curtis Doors and Woodwork, see File Index.

Advantages

Six years of use under all conditions and in all climates, preceded by one year of field and laboratory testing, have proved the unusual values of this complete window unit, frame, sash, storm sash, screen and trim—all pre-fitted at the factory, all harmonized into a single, integrated unit. Silentite offers these outstanding advantages:

(1) A sturdy double-hung wood window designed in sound architectural traditions and correct with all architectural styles, yet providing new achievements in the beauty of narrow trim and mullions.

(2) A material economy resulting from the far lower cost of installing windows entirely pre-fit at the factory to tolerances usually found only in machinery. Unlike any other window in this respect, the sizes of frames, windows, storm sash and screens are all controlled by Curtis—a firm recognized for quality, accuracy in production, and rigid inspection of the product.

(3) Simplified specifications, buying, and installation resulting not only from factory-fitting of all component parts, but because *one basic frame fits all types of wall construction.* All parts are carton packed.

(4) Unprecedented ease of operation as a result of perfect fit and new type weatherstripping. Silentite Windows operate easily, winter or summer, year in and year out. Homeowners report fuel savings as high as 25%.

(5) A greater degree of weathertightness and heat insulation. Infiltration is prevented between window and frame and between frame and wall. Thus, Silentite is ideal for use in up-to-date insulated homes and air-conditioned houses. Or it provides greater comfort in remodeled buildings.

(6) Longer life and lower depreciation as a result of toxic preservative oil dip made from a special Curtis formula, laboratory tested.

CURTIS WOODWORK SILENTITE Pre-fit FRAME, WINDOW, SCREEN AND STORM SASH — THE "INSULATED" WINDOW

Spring Balanced and Fully Weatherstripped

Two revolutionary improvements are combined in the Silentite Window: the elimination of clumsy weights in favor of tempered, non-corrosive steel springs inserted in the jambs; and the provision of full metal-to-metal contacts between sash and frame to assure permanent ease of operation, compensation for swelling of wood, and maximum weathertightness. Actual laboratory tests show the Silentite Window to be several times as weathertight as ordinary double-hung sash, while the dust-storm areas have provided much evidence as to the practical tightness of these windows.

One Basic Detail for All Wall Types

Effective standardization permits use of the Silentite Window in any type of wall, simply by a change in jamb liners and brick mold. Shown herewith is the basic frame detail (Fig. 4) and a frame (Fig. 5) as adapted for use in a masonry wall and a frame (Fig. 6) for use in a brick veneer wall. It will be noted that the outside casing, the blind stop, the jamb, and the parting stop are the same. Only the jamb liner and mold differ.

Standardized Silentite frames are available for the following wall types:

Frame No.	For Wall Type
C-1515	$3\frac{5}{8}$″ stud wall—siding or shingles.
C-1516	$3\frac{3}{4}$″ stud wall—siding or shingles.
C-1517	$3\frac{5}{8}$″ stud wall—siding or shingles, insulation inside.
C-1519	$3\frac{5}{8}$″ stud wall—stucco with $\frac{3}{4}$″ furring.
C-1520	$3\frac{5}{8}$″ stud wall—stucco with $\frac{3}{8}$″ furring.
C-1521	$3\frac{5}{8}$″ stud wall—stucco with $\frac{3}{8}$″ furring, insulation outside.
C-1523	Brick veneer, $5\frac{3}{16}$″ jambs. Can also be used in masonry wall.
C-1524	Brick veneer, $5\frac{13}{16}$″ jambs.
C-1526	Masonry $4\frac{7}{8}$″ jambs with sub-jambs.
C-1527	Masonry $5\frac{11}{16}$″ jambs with sub-jambs.
C-1528	Masonry $5\frac{5}{16}$″ jambs with sub-jambs.

Varying widths of stops are available for the frames tabulated above.

Fig. 1. Narrow, Graceful Mullions Made Possible by Silentite Window Design—No Bulky Weight Boxes

This means more window area, less space wasted in trim—or conversely, less sacrifice of wall area to secure a desired amount of fenestration

Fig. 2. Silentite Is a Complete Wood Window Unit

Frame, sash, and trim—even storm sash and screen—are all harmonized into a single unit. All wood parts are given a preservative toxic dip to add longer life

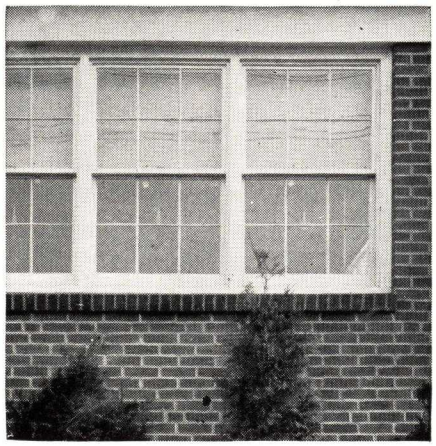


Fig. 3. Silentite Windows Fit the Architectural Beauty of Stone, Brick, Wood and Masonry Exteriors

You are never restricted in the use of Silentite. The same basic frame is used regardless of wall construction

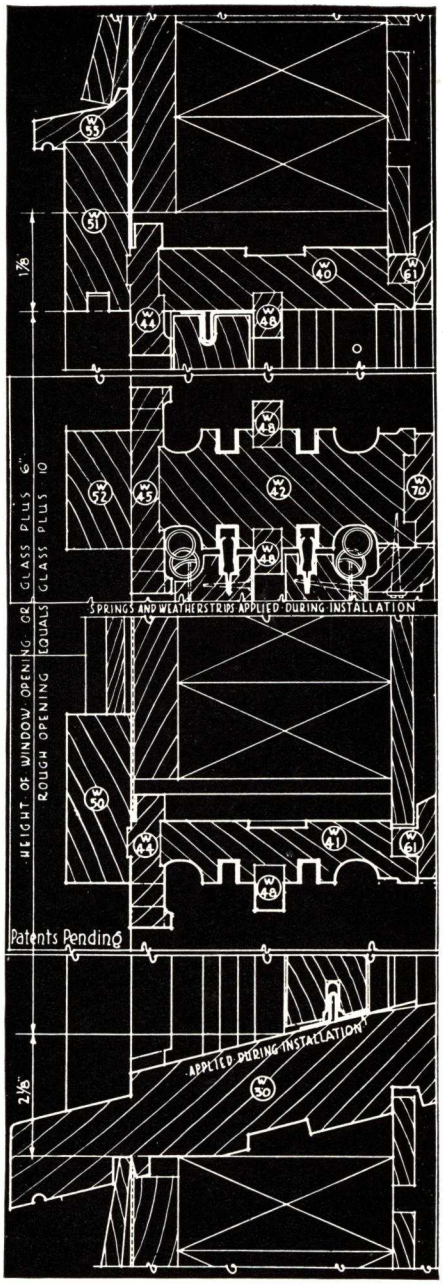


Fig. 4. Basic Construction of Silentite Window Unit

Detail above shows the frame for a 3⅝-in. stud wall, siding or shingles, 5 3/16-in. jamb. Note small space required for spring counterbalances making possible narrow, solid mullion. Note metal-to-metal contacts between sash and frame, with a full 3/16-in. clearance to compensate for the necessary coats of paint, and movement in the wood of sash or frame and to prevent bothersome paint-binding

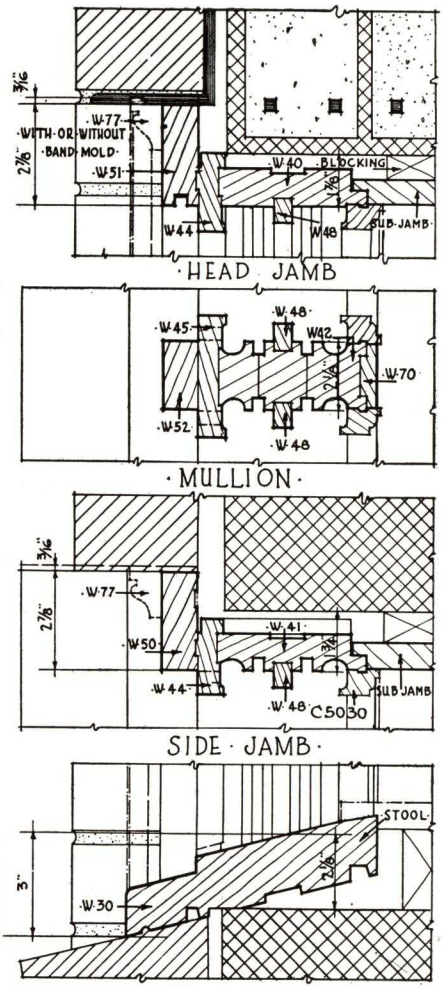


Fig. 5. In Masonry Walls

This detail (above) shows application of Silentite in masonry wall construction. Drip cap (W55) and jamb lines (W61) are omitted. May be used with or without band mold (W77). Spring suspension insures constant, easy operation with no clanging weights or broken cords. Pre-fitting windows with allowance for expansion and contraction eliminates sticking and binding. No dust, dirt, or water leakage

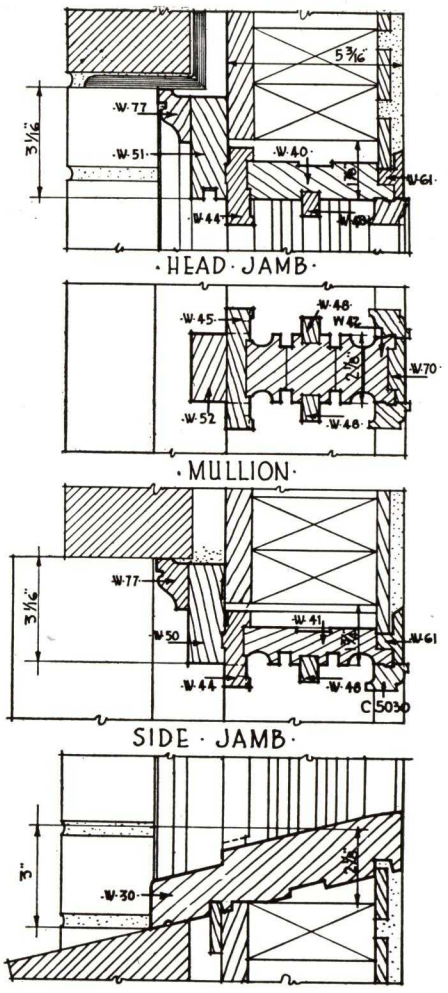


Fig. 6. In Brick Veneer Walls

This detail (above) shows how Silentite frames are readily adapted to brick veneer walls by simply eliminating drip cap (W55) and adding band mold (W77).

Practically all infiltrating air is kept out by the tight frame and double-contact metal-to-metal weatherstripping. Silentite is much tighter than the ordinary non-weatherstripped window. Homeowners report fuel savings which average 25%

Storm Sash and Screens

—pre-fit at the factory and harmonized with the windows are available for all Silentite Windows. Installation costs are lower and permanent fit assured. Quickly hung from inside, with simplified hardware.

Curtis Protectorvent Storm Sash for use with Silentite Windows permits better control of ventilation plus the great advantage of being able to introduce fresh air at either top or bottom, without moving the storm sash itself. Homeowners like this feature very much.

Dipped to Assure Longer Life

Frame and sash are of Ponderosa pine, dipped before glazing in a special toxic oil, made from an exclusive Curtis formula and tested by prominent laboratories, to render them proof against wood-destroying fungi. Pores are sealed against moisture, shrinkage and swelling are minimized, a better base provided for painting. This dipping operation "fills in" between installation and priming for all frame and sash should be primed before being installed.

Literature and Architects' Details

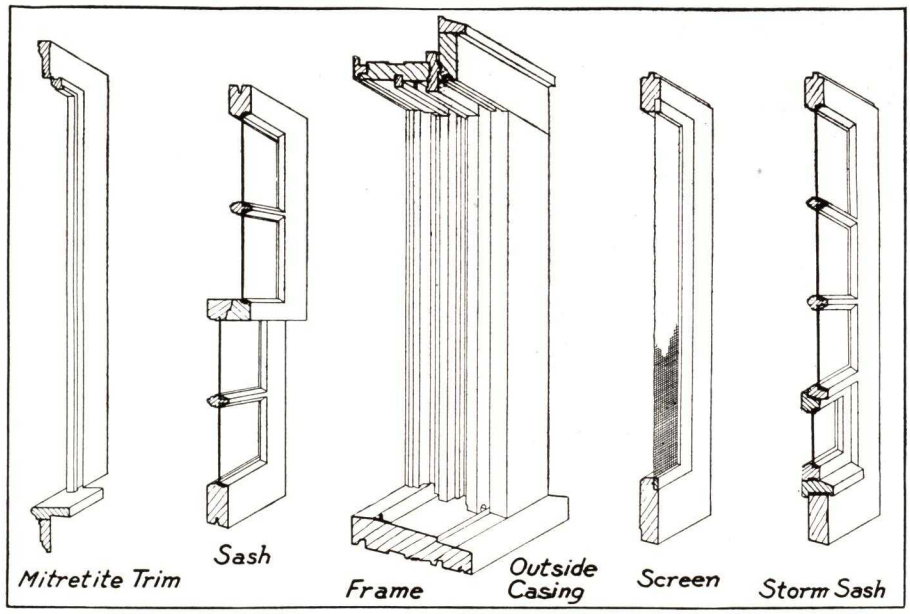
Complete literature is available upon request. Silentite Window Units are on display at most Curtis dealers. Architects' Detail Sheets and Catalog may be secured through the Curtis dealer in your city. Write us for his name.

Mitertite Trim

A new trim finished with the greatest accuracy and available in pre-fit form for use with Silentite Windows. As an indication of how much simpler Mitertite is to install, a single side of Mitertite trim can be applied in 13 minutes as compared with 55 minutes required for the preparation and application of ordinary cut-to-length or lineal trim.

Head casing and head stop are cut to exact length and mitered. Side casing and side stops are each mitered on top side and cut 1 in. longer than required to permit of fitting perfectly at stool. Stool and apron are cut to exact length and both returned on the solid. The stool is notched.

Mitertite is narrower and better looking. Mitertite eliminates open, unsightly joints. A new patented joint construction is more than twice as strong as the ordinary butt miter reinforced with a clamp nail or spline. Mitertite is also used for door trim. Once installed, it "stays put." Made in several attractive designs.



Frame, sash, trim—even storm sash and screen—have all been harmonized into a single, integrated unit in the Silentite Window. Every part is pre-fit at the factory.

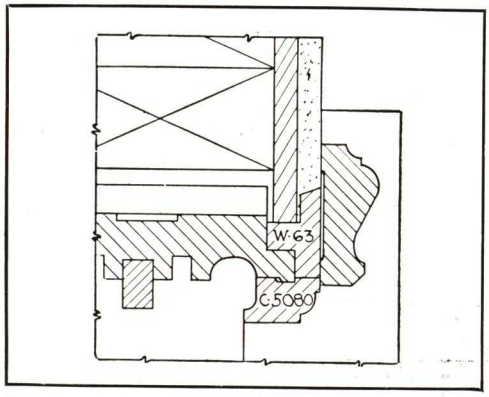
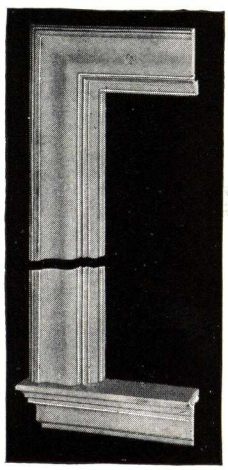


Fig. 7. Application of Mitertite Trim to Silentite Frame

Note narrowness and nailing surface—direct to stud. This design, the Madison, finishes ¾ x 2¼ in. Here liner (W63) provides jamb width necessary to accommodate full 3¾-in. studs with lath and plaster.

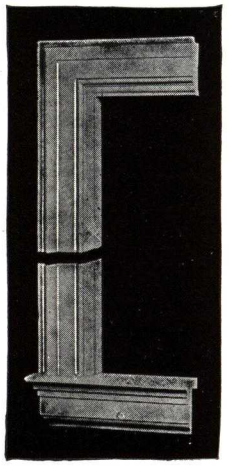


York

Right:
A popular Mitertite trim design. Finishes ¾ x 2¼ in. Pine, oak, birch. The Curtis dealer has samples of this new trim.

Avon

Left:
This design finishes ¾ x 2¾ in.—a half-inch wider than "York." Made in pine, oak, birch.



OPENINGS REQUIRED FOR STOCK SIZES OF SILENTITE DOUBLE-HUNG WINDOWS

Window Opening Size	Two Light Glass Size	Twelve Light Glass Size	ROUGH OPENINGS REQUIRED — Stud Wall Opening: Single	Stud Wall Opening: Twin	Stud Wall Opening: Triple	Masonry Wall Opening: Single	Masonry Wall Opening: Twin	Masonry Wall Opening: Triple
1- 8x3- 0	.....	.....	1-11½x3- 4	3-9⅝x3- 4	5-7¾x3- 4	2-1¾x3- 5⅞	3-11⅞x3 -5⅞	5-10x3- 5⅞
3 -6	.....	.....	3-10	3-10	3-10	3-11⅞	3-11⅞	3-11⅞
3-10	16x20	.....	4- 2	4- 2	4- 2	4- 3⅞	4- 3⅞	4- 3⅞
4- 6	.....	.....	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4-10	.....	.....	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
1-10x2- 6	18x12	.....	2- 1½x2-10	4-1⅝x2-10	6-1¾x2-10	2-3¾x2-11⅞	4- 3⅞x2-11⅞	6- 4x2-11⅞
4- 6	.....	.....	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
2- 0x3- 0	20x15	6⅜ x 7½	2- 3½x3- 4	4-5⅝x3- 4	6-7¾x3- 4	2-5¾x3- 5⅞	4- 7⅞x3- 5⅞	6-10x3- 5⅞
3- 6	18	9	3-10	3-10	3-10	3-11⅞	3-11⅞	3-11⅞
3-10	20	10	4- 2	4- 2	4- 2	4- 3⅞	4- 3⅞	4- 3⅞
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7⅞	4- 7⅞	4- 7⅞
4- 6	24	12	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4-10	26	13	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
5- 2	28	14	5- 6	5- 6	5- 6	5- 7⅞	5- 7⅞	5- 7⅞
2- 4x2- 6	.....	.....	2- 7½x2-10	5-1⅝x2-10	7-7¾x2-10	2-9¾x2-11⅞	5- 3⅞x2-11⅞	7-10x2-11⅞
3- 0	24x15	8 x 7½	3- 4	3- 4	3- 4	3- 5⅞	3- 5⅞	3- 5⅞
3- 6	18	9	3-10	3-10	3-10	3-11⅞	3-11⅞	3-11⅞
3-10	20	10	4- 2	4- 2	4- 2	4- 3⅞	4- 3⅞	4- 3⅞
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7⅞	4- 7⅞	4- 7⅞
4- 6	24	12	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4- 8	.....	.....	5- 0	5- 0	5- 0	5- 1⅞	5- 1⅞	5- 1⅞
4-10	24x26	8 x13	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
5- 2	28	14	5- 6	5- 6	5- 6	5- 7⅞	5- 7⅞	5- 7⅞
5- 6	.....	.....	5-10	5-10	5-10	5-11⅞	5-11⅞	5-11⅞
2- 7x2- 6	.....	.....	2-10½x2-10	5-7⅝x2-10	8-4¾x2-10	3-0¾x2-11⅞	5- 9⅞x2-11⅞	8- 7x2-11⅞
3- 0	27x15	9 x 7½	3- 4	3- 4	3- 4	3- 5⅞	3- 5⅞	3- 5⅞
3- 6	18	9	3-10	3-10	3-10	3-11⅞	3-11⅞	3-11⅞
3-10	20	10	4- 2	4- 2	4- 2	4- 3⅞	4- 3⅞	4- 3⅞
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7⅞	4- 7⅞	4- 7⅞
4- 6	24	12	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4-10	26	13	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
5- 2	28	14	5- 6	5- 6	5- 6	5- 7⅞	5- 7⅞	5- 7⅞
5- 6	.....	.....	5-10	5-10	5-10	5-11⅞	5-11⅞	5-11⅞
2-10x2- 6	30x12	.....	3- 1½x2-10	6-1⅝x2-10	9-1¾x2-10	3-3¾x2-11⅞	6- 3⅞x2-11⅞	9- 4x2-11⅞
3- 0	15	10 x 7½	3- 4	3- 4	3- 4	3- 5⅞	3- 5⅞	3- 5⅞
3- 6	.....	9	3-10	3-10	3-10	3-11⅞	3-11⅞	3-11⅞
3-10	20	10	4- 2	4- 2	4- 2	4- 3⅞	4- 3⅞	4- 3⅞
4- 2	...	11	4- 6	4- 6	4- 6	4- 7⅞	4- 7⅞	4- 7⅞
4- 6	24	12	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4-10	26	13	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
5- 2	30x28	10 x14	3- 1½x5- 6	6-1⅝x5- 6	9-1¾x5- 6	3-3¾x5- 7⅞	6- 3⅞x5- 7⅞	9- 4x5- 7⅞
5- 6	.....	.....	5-10	5-10	5-10	5-11⅞	5-11⅞	5-11⅞
3- 0x3-10	.....	10⅜ x10	3- 3½x4- 2	6-5⅝x4- 2	9-7¾x4- 2	3-5¾x4 -3⅞	6- 7⅞x4- 3⅞	9-10x4- 3⅞
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7⅞	4- 7⅞	4- 7⅞
4- 6	32x24	12	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4- 8	.....	.....	5- 0	5- 0	5- 0	5- 1⅞	5- 1⅞	5- 1⅞
4-10	26	13	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
5- 2	.....	14	5- 6	5- 6	5- 6	5- 7⅞	5- 7⅞	5- 7⅞
5- 6	.....	.....	5-10	5-10	5-10	5-11⅞	5-11⅞	5-11⅞
3- 4x3-10	.....	.....	3- 7½x4- 2	7-1⅝x4- 2	10-7¾x4- 2	3-9¾x4- 3⅞	7- 3⅞x4- 3⅞	10-10x4- 3⅞
4- 2	.....	.....	4- 6	4- 6	4- 6	4- 7⅞	4- 7⅞	4- 7⅞
4- 6	.....	.....	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4-10	.....	.....	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞
5- 2	.....	.....	5- 6	5- 6	5- 6	5- 7⅞	5- 7⅞	5- 7⅞
5- 6	.....	.....	5-10	5-10	5-10	5-11⅞	5-11⅞	5-11⅞
3- 8x3-10	.....	.....	3-11½x4- 2	7-9⅝x4- 2	11-7¾x4- 2	4-1¾x4- 3⅞	7-11⅞x4- 3⅞	11-10x4- 3⅞
4- 6	.....	.....	4-10	4-10	4-10	4-11⅞	4-11⅞	4-11⅞
4-10	.....	.....	5- 2	5- 2	5- 2	5- 3⅞	5- 3⅞	5- 3⅞

Those sash opening sizes listed in the first column are all stock sizes for some design of the Silentite window. The stock sizes of the two- and twelve-light windows are listed. Your Curtis dealer can give you a complete list of the stock sizes in which all Silentite designs are available.

We have listed the glass sizes for the two- and twelve-light windows to show the difference between the glass sizes, sash opening sizes and rough opening sizes. Rough openings for single, twin and triple, in both stud and masonry walls are listed above. Your Curtis dealer will help you figure rough opening sizes for any combination of Silentite Windows.

"Stick to Stock Sizes"

THE SILENTITE CASEMENT—Draftless, Troubleproof, Insulated

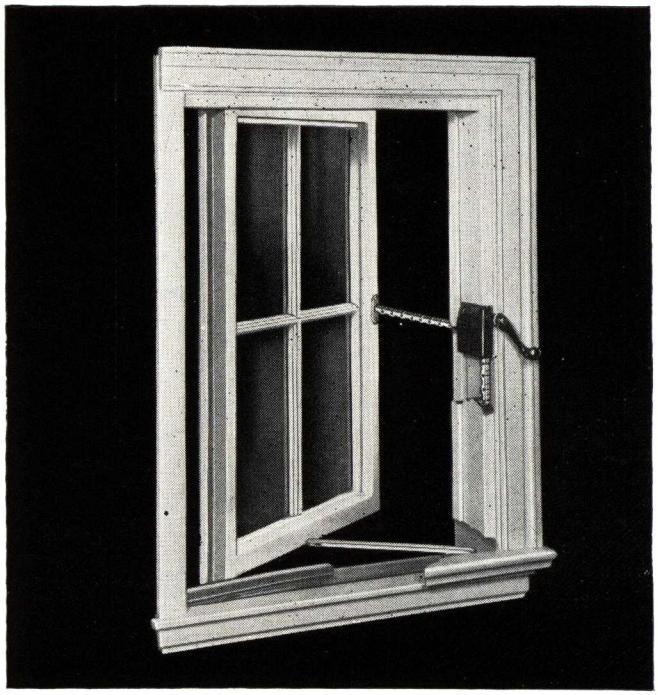
CURTIS SILENTITE WINDOW UNIT

CURTIS WOODWORK SILENTITE Pre-Fit — THE "INSULATED" CASEMENT WINDOW

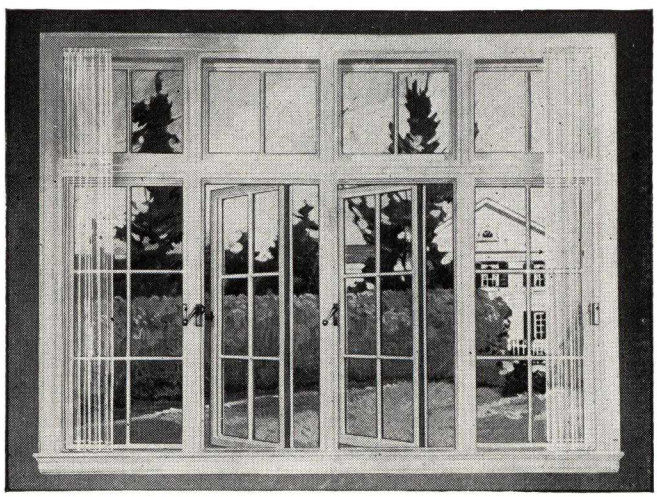
In developing the Curtis Silentite Wood Casement, introduced early in 1937, Curtis disregarded all existing ideas on Casements and "started from scratch." The Silentite Casement is an entirely new idea which meets today's demand for beauty, utility and economy. It is a companion product to the Silentite double-hung window.

Here are some of its features:

(1) Complete pre-fit unit may include operating hardware, screens and insulating glass.
(2) Efficient weather-stripping developed and patented by Curtis.
(3) Helps to lower heating costs—provides greater comfort.
(4) Won't stick, bind or warp.
(5) Can't swing, slam or rattle.
(6) No outside hardware to rust or mar beauty.
(7) No inside projecting hardware.
(8) Self-locking, tamperproof sash.
(9) Operates from inside only without disturbing screen or insulating glass.
(10) Easy, foolproof operation. Sash adjuster at medium height.
(11) Provides draftless ventilation.
(12) Easily cleaned from inside.
(13) All wood parts given exclusive Curtis preservative oil-dip for longer life.
(14) Lower installation costs because of pre-fitting at factory.
(15) Great architectural beauty—to correspond with any type of exterior.

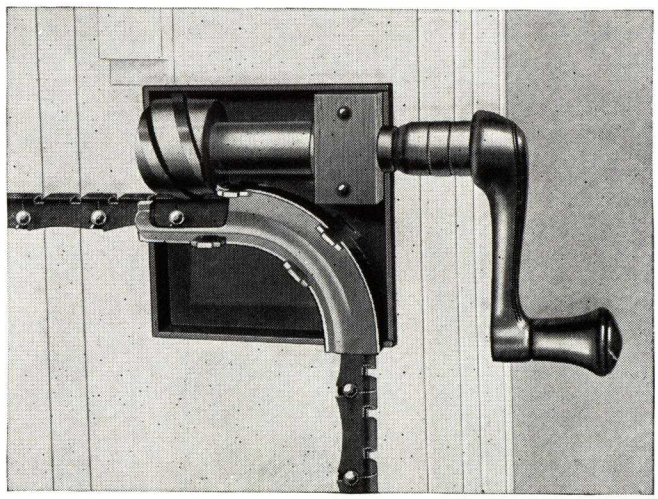


Above is shown a cutaway of a four-light Silentite Casement with part of the trim removed to show how it operates. There are no hinges. The sash "floats" open to a 45° angle which permits entrance of air equal to entire opening area, just as though the entire sash were removed. Sash adjuster provides 15 times greater opening pressure than ordinary lever type. *Note: not a single piece of protruding hardware inside or outside,* except sash adjuster, which is removable.

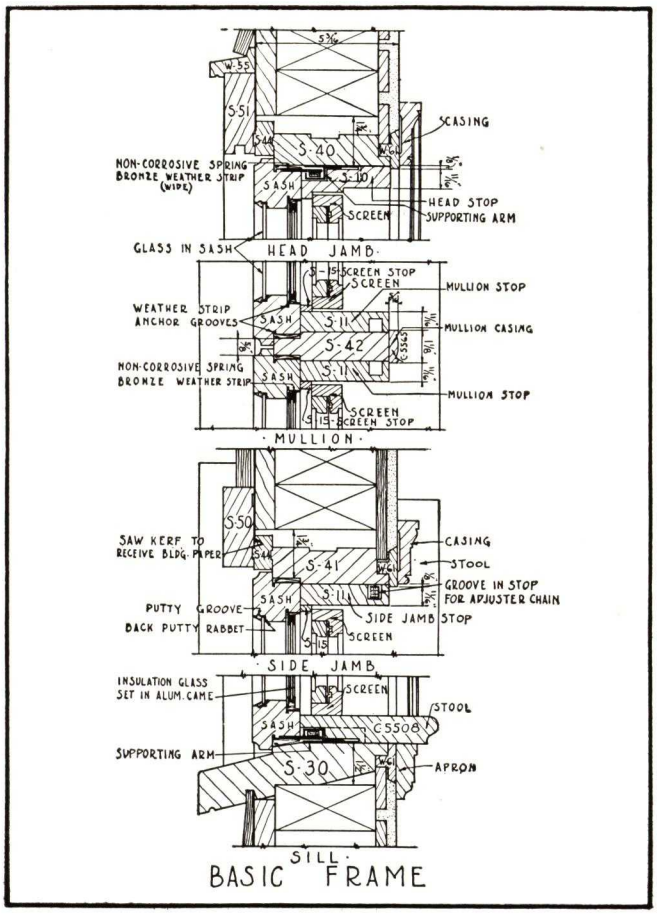


One of Silentite's most important features is its weather-tightness. Pittsburgh Testing Laboratory checked it and other casements to determine air-leakage and heat loss. They found that Silentite leaks *only 15.97 cubic feet* per hour per foot of sash perimeter as compared with 22.10 cubic feet for another wood casement with 32.26 cubic feet as the average of two metal casements included in the test.

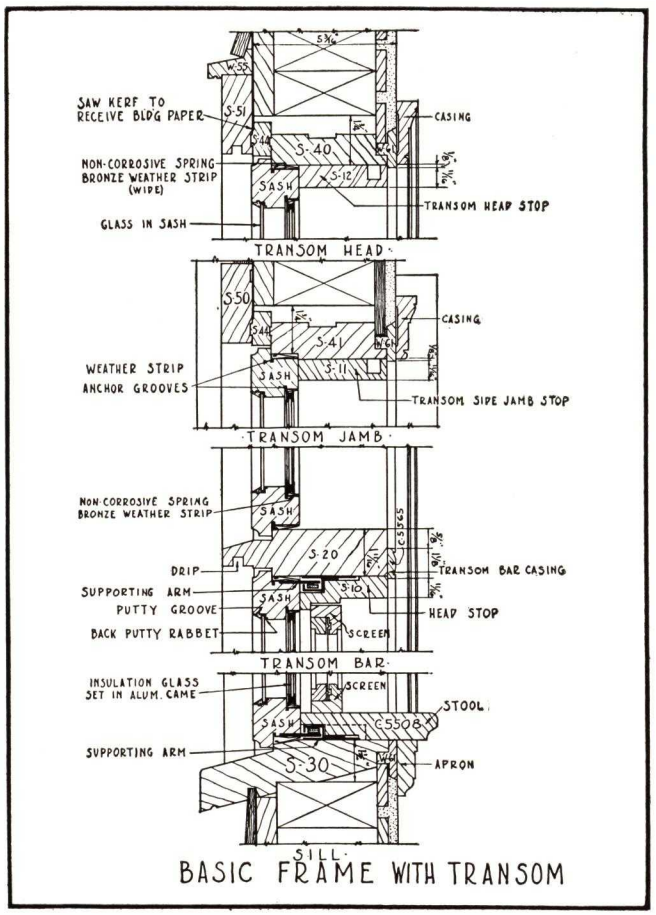
They also found that Silentite Casement allows a *saving of 45%* in air leakage over other types of Casement windows. Let us give you complete details on this remarkable new casement.



Above closeup view, with cover plate removed, shows the compact and sturdy construction of Silentite Casement hardware. There is nothing to get out of order, nothing to interfere with easy operation. Opens and closes as easily as dialing a radio. The worm acts directly upon operating chain and positively eliminates rattling or swinging. Adjustable brake locks sash in any position. Chain is guided to concealed position *within* the frame. All the operating hardware of the Silentite Casement is covered by exclusive Curtis patents.



BASIC FRAME



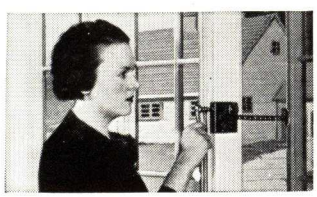
BASIC FRAME WITH TRANSOM

Above you see details of the Silentite Casement Frame, C-1600, without transom and on the right a detail of the same frame with transom. These drawings represent the details of the basic Silentite Casement Frame and they may be adapted to any type of wall construction—siding or shingles, stucco, brick-veneer, brick veneer with extension blind stops, masonry walls.

Curtis recommends the use of insulating glass with the Silentite Casement to take the place of the storm sash used with double-hung windows. Insulating glass cuts heat loss by more than half.

Improved screens are made by Curtis for use with the Silentite Casement. Full details on both screens and insulating glass will be furnished on request.

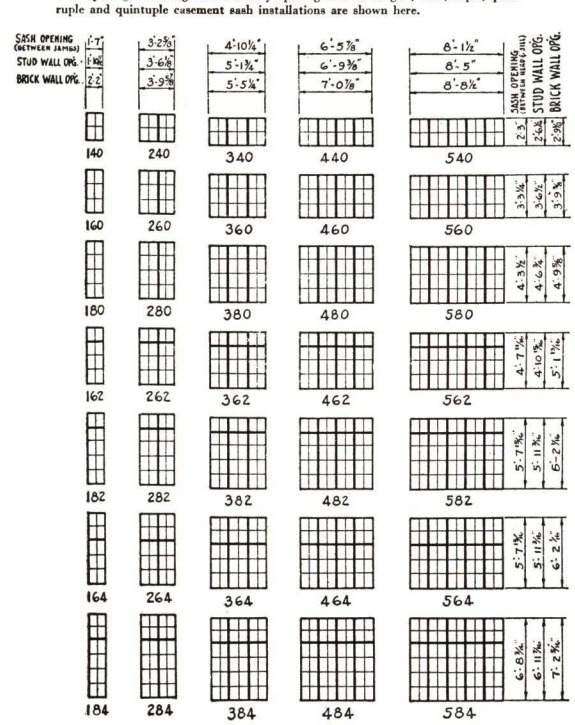
It is no trouble to clean a Silentite Casement from the inside. This sash cannot swing away—it is always locked in position. Screens and insulating glass can be removed in a few seconds.



With little effort—as easy as dialing a radio—a Silentite Casement is opened and closed. The control is off the sill—away from the reach of children. The adjuster may be removed if desired.

SILENTITE CASEMENTS

Sash openings and rough and masonry opening sizes for singles, twin, triple, quadruple and quintuple casement sash installations are shown here.



Any number of casements can be combined in an assembly. Sizes can easily be figured from above chart.

FARLEY & LOETSCHER MFG. CO.

ESTABLISHED 1875

DUBUQUE, IOWA

Products

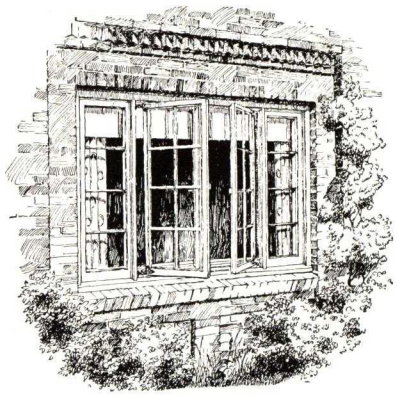
"Qualitybilt" Woodwork of all kinds: "Unipak" Wood Casements; "Unipak Unique" Double Hung Windows; Standard and Special Detail Wood Sash and Frames; Interior and Exterior Doors, hardwood and softwood, flush and panel; "Lithowood" and "Air Slab" Flush Doors; Interior Trim; Mouldings; Stairwork; Cabinet Work; Mantels; Panel Work; Medicine Cases; Ironing Boards; Screens, window and door; Blinds; Shutters; Stairs; Combination Doors; Garage Doors; Standardized Colonial Front Entrances; Basement Sash Units, etc.

For Disappearing Stairways and "Deluxe" Kitchen Units, see File Index.

"UNIPAK" WOOD CASEMENTS

(Trade-Mark) (Patented and Patents Pending)

"Unipak" Wood Casements are complete unit installations, prefitted and with all hardware and accessories supplied. They retain the inherent superior qualities of wood construction and are built on sound, time tested architectural principles to provide a lifetime of trouble free service. The quality is the very finest, backed by our long established reputation for highest grade building woodwork.



Exterior lines of "Unipak" are strictly modern in design. Suitable for any type of wall

Advantages

Outstanding beauty characteristic of casement windows is combined with leakproof assembly between both sash and frame and frame and wall, simple hardware, extension hinges, complete weatherstripping, double glazing, inside screening, precision manufacture, and the revolutionary split frame method of installation which saves time and eliminates the principal causes from which most window troubles result. Units may be completely painted before installing, permitting a more thorough paint job.

The exceptional weather tightness and optional double glazing of "Unipak" Casements meets year 'round air conditioning requirements. Operative units have four points of contact at head and three points at side and sill. There are no open joints around stationary units or transoms.

Locks and screens do not project to interfere with shades or Venetian Blinds.

Construction

"Unipak" frames and sash are carefully and accurately built of clear W. P. Pine, chemically treated to resist moisture and termites and to provide a perfect paint base. They will not corrode, sweat, or scale. Sash are full 2 in. thick, mortise and tenon construction, glued with waterproof glue and pinned. Sash are two types, operative and stationary; in two standard widths, 1 ft. 2 in. (100 series) and 1 ft. 8 in. (200 series); 2 to 7 lights high.

Two optional methods of operation are provided, "Manually" and "Mechanically."

One basic frame is used in all types of wall construction, frame or masonry. Outer Frame consisting of only four parts (head, sill, and two sides) regardless of opening size, is shipped semi-knocked down. Inner Units are shipped completely assembled with sash fitted, weatherstripped and hinges applied, ready to attach to the outer frames with screws. Exclusive split frame method of installation is fully described on following page.

Screens

Screens fit inside, out of weather. Wired with 16-mesh aluminum wire. Require no fitting or painting. Quickly removed or replaced "Manually Operated" units have steel sliding screen with baked aluminum finish. "Mechanically Operated" units have one-piece screens with extruded aluminum frame fitted with spring bolts for fastening in place.

Double Glazing

Double glazing panels have a narrow white metal frame with compression gasket to seal dead air space. Require no fitting or painting. Fit snugly in rabbet on inside of sash, either stationary or operative type. Fastened with clips, easily removed. Left in place the year around and removed only for occasional cleaning between glass. Eliminate sweating or frosting of glass to a large extent and reduce heat loss by radiation 60%. Meet all requirements of air conditioning.

Hardware

Hinges—Special design, made of heavy steel, cadmium-plated. Applied at factory. Extension type used on the 1 ft. 8 in. wide units. Close-in hinges applied on 1 ft. 2 in. wide units.

Sash Operators—"Mechanically Operated" units employ under-the-screen worm and gear type operators, made of heavy cadmium plated steel and die cast zinc. Cranks are statuary bronze over cadmium with brass handles. Either "Thru-Stool" or "Angle Drive" operators are standard optional equipment on "Mechanically Operated" sash. "Manually Operated" sash supplied with special combination pull and keeper, statuary bronze finish, and a cadmium plated safety sliding stay to prevent opening of sash beyond 90-degree angle. No operator is required.

Sash Locks—Special design semi-rotary type, operate without screen interference. Draw sash up tightly. Statuary bronze finish over cadmium plated steel. Drop forged brass handles, statuary bronze finish. Handles project only 7/8 in. from face trim. Do not interfere with shades or Venetian Blinds.

Weatherstripping

Compression type spring bronze weatherstrip is applied at factory, completely around all operative sash. Insures positive seal around entire opening. Double glazing panels fitted with compression gasket which completely seals dead air space.

Compactness

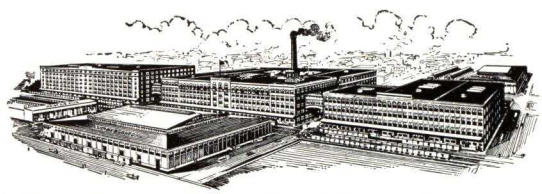
"Unipak" construction is very compact. From outside of glass to screen is only 1 5/8 in. A deep reveal on the outside and a generous plaster return on the inside is secured in standard 2 x 4-in. stud wall. Openings can also be fully cased.

Proved and Tested

Thousands of installations in all parts of the country and in all types of buildings have proved the efficiency of "Unipak" Wood Casements.

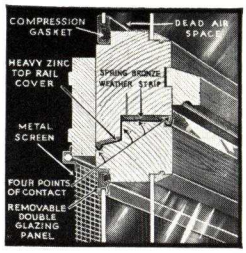
Details and Information

Complete catalog and other descriptive literature with details will be sent on request. Suggestions for unusual installations will be promptly submitted by our Engineering Department.

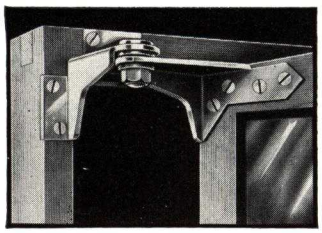


Our modern plant where "Unipaks" are made. Comprises over 21 acres of floor space. One of the largest and most modern woodworking establishments in the world

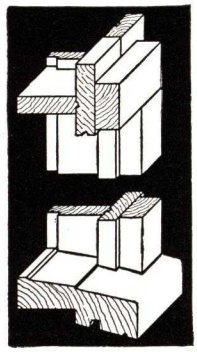
OUTSTANDING "UNIPAK" FEATURES



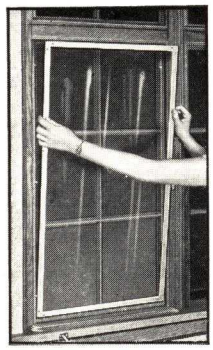
Transom Bar Section
Four points of contact and drip cap prevent any possibility of leakage. Stationary units have same profile but are made with transom bar in one piece without joints. Note heavy zinc cover which protects entire top edge of sash when open.



"Unipak" Extension Hinge
Note angular truss construction and method of attaching for maximum strength and rigidity. See how hinges reenforce members of inner frames and sash. Prevents side play or sagging of sash and positively controls fitting clearance. Close-in hinges, used on narrow units, are same construction but without the extension arms.



Outer Frame
Has wide blind stops and overlapping halved joints at all corners which prevent leakage.



Screens and Double Glazing Panels on Inside
Easily removed or installed in a few minutes.

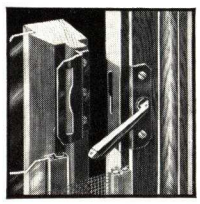
Cleaning
Extension hinges provide 4-in. opening for cleaning outside of sash from inside of building.

OPTIONAL OPERATION METHODS

"Manually Operated" Unipak

Push or pull is applied manually at center line of sash in height, instead of power exerted at bottom of sash. This prevents racking and insures positive control and locking of casement under all conditions

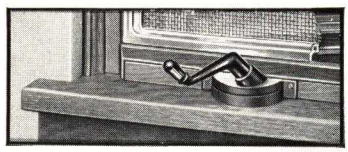
"Manually Operated" Unipaks provide the utmost efficiency at a substantial saving in cost. They dispense with all mechanical operating devices and provide instant, direct, and never failing control of the casement. Sash is opened and closed just like a door. This is made possible by a beautiful streamlined metal sliding screen, only ½ in. thick over-all, which operates without interfering with shades or Venetian Blinds. When closed, you would never guess it to be a sliding screen as the wire of the two panels is almost on the same plane, with only sufficient clearance to permit bottom panel to slide. Swing of sash is controlled by special type friction washers built into the hinges, and safety sliding stay.



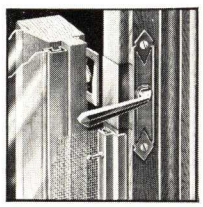
Lock—for "Manually Operated" units.

"Mechanically Operated" Unipak

"Mechanically Operated" Unipaks employ the finest nationally known worm and gear type operators. Automatically hold sash in any desired position. Two types available. "Angle Drive" type sets directly on stool with no notching of stool or boring for crank required. Crank does not project beyond stool line. Particularly desirable for wide stools.

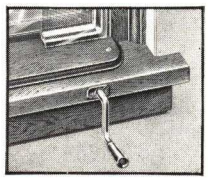


"Angle-Drive" Operator



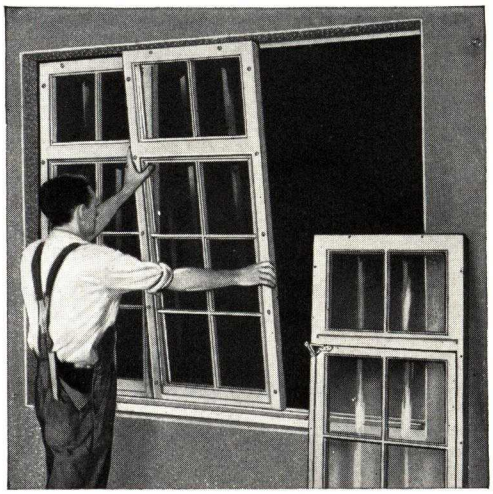
Cam action of lock picks up sash within about ½ in. of closed position, insuring positive locking.

"Thru-Stool" type is fully concealed within stool, which is notched out to form enclosure. A neat removable cover is supplied to conceal notching.



"Thru-Stool" Operator
Illustrations show how operators work independent of screen. Very powerful and positive in action.

When specifying or ordering "Mechanically Operated" Unipaks be sure to state type of operator wanted.



Entire Installation of "Unipak" Inner Units Is Made from Inside of the Building

SPLIT FRAME INSTALLATION METHOD

"Unipak" employs an entirely different principle of installation. Instead of installing the completed window frame with its finished jambs, mullion posts and transom bars and subjecting them to all the inherent abuses of the early construction period and plastering time, "Unipak" eliminates these evils by installing in two parts, as follows:

Outer Frame—The outer frame only, consisting of the minimum parts necessary to frame the opening and having no direct relationship with the operation of the casements, is installed as the walls are erected. *It has no jambs, mullion posts or transom bars. These are formed by inner units when installed later.*

Inner Units—Completely assembled and fitted—stationary units or prefitted sash with their surrounding frames, hinged and weatherstripped at factory, are installed preferably after the plastering is dry, by merely driving a few screws.

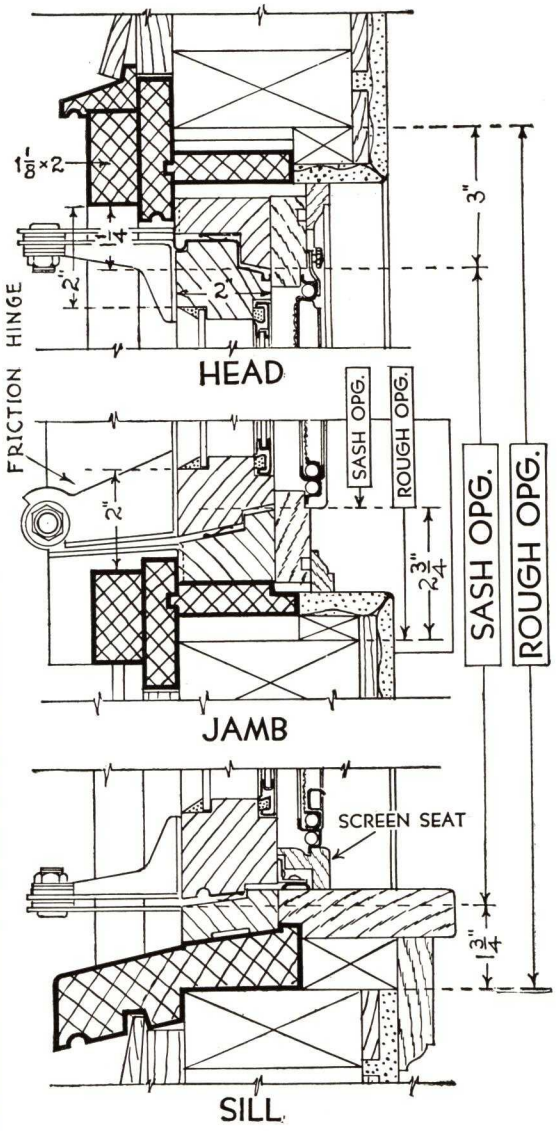
Application of the Interior Trim—This is also of utmost simplicity. As detailed on the following page, mullion casing and transom bar casing consists only of one piece instead of the customary three members. This reduces installation labor two-thirds. Face trim is furnished cut to exact length and notch mortised at intersections, insuring ease and accuracy of installation.

"UNIPAK" CASEMENT INSTALLATION DETAILS

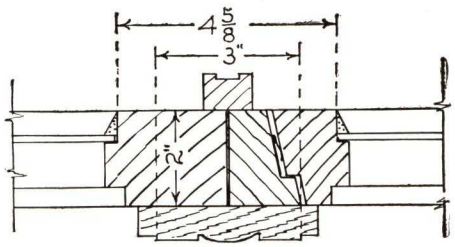
STANDARD OPERATIVE UNIT

SAME FRAME ADAPTED TO ALL TYPES OF FRAME AND MASONRY WALLS

Heavy Lines Indicate Outer Frame



Above basic detail shows installation of "Manually Operated" Sash. No operator is required. "Mechanically Operated" sash are made to exactly the same details, the only difference is in the screen seat and operator cover. See sill details to the right.



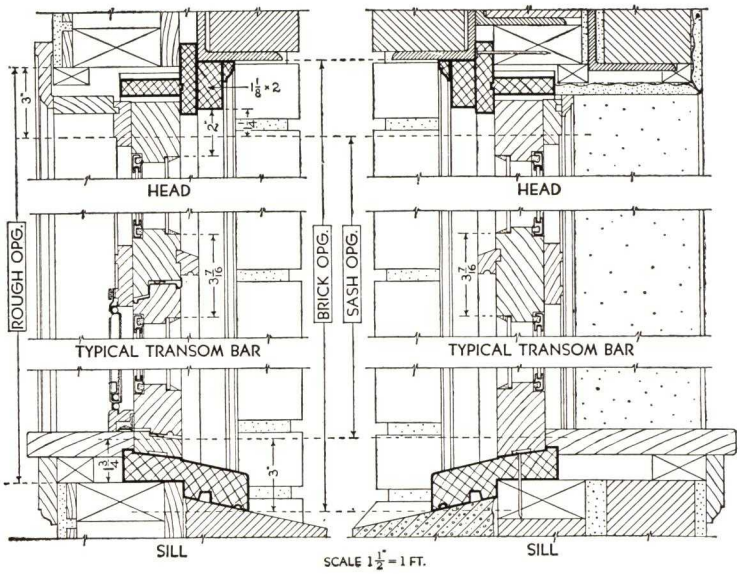
TYPICAL MULLION
BETWEEN HINGED & STATIONARY UNITS

SCALE: 3" — 1'-0"

MASONRY WALLS

BRICK VENEER
Operative Unit with Transom

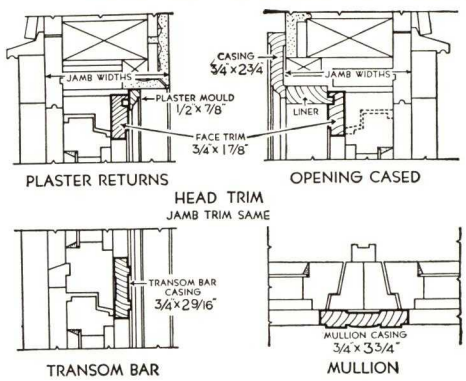
SOLID MASONRY
Stationary Unit with Transom

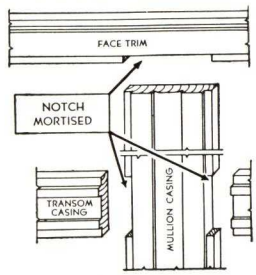


Note absence of opening joints in stationary unit. This eliminates air leakage. Face measurements over all are same as on operative units. All transoms are stationary.

A rough 2 x 4 frame nailed to head, sides and sill of outer frame, should be applied for installations in solid masonry walls. This detail also shows transom head of stationary unit.

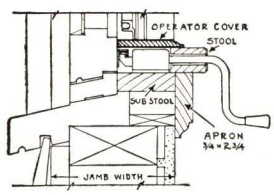
"UNIPAK" INTERIOR TRIM—TYPE "R"



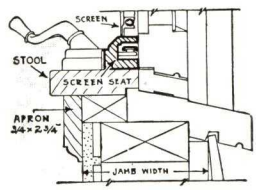


Detail shows how face trim members are notch mortised at all joints. Supplied cut to exact length and provide proper opening for screen. No cutting or fitting required, thus greatly reducing installation costs.

The face trim, including transom bar casings, mullion casings, screen seats, and operator covers (those members shown heavily cross hatched) must never be changed and are always furnished as shown. Any other design room casing and apron or plaster mould may be substituted when specifically ordered. Plaster mould must not be wider than ⅞ in. to allow space for sash lock. Stools must finish 1 1/16 in. in thickness on account of screen opening. Small details show sill trim for "Mechanically Operated" units.



SILL—"Thru-Stool" Operator



SILL—"Angle Drive" Operator

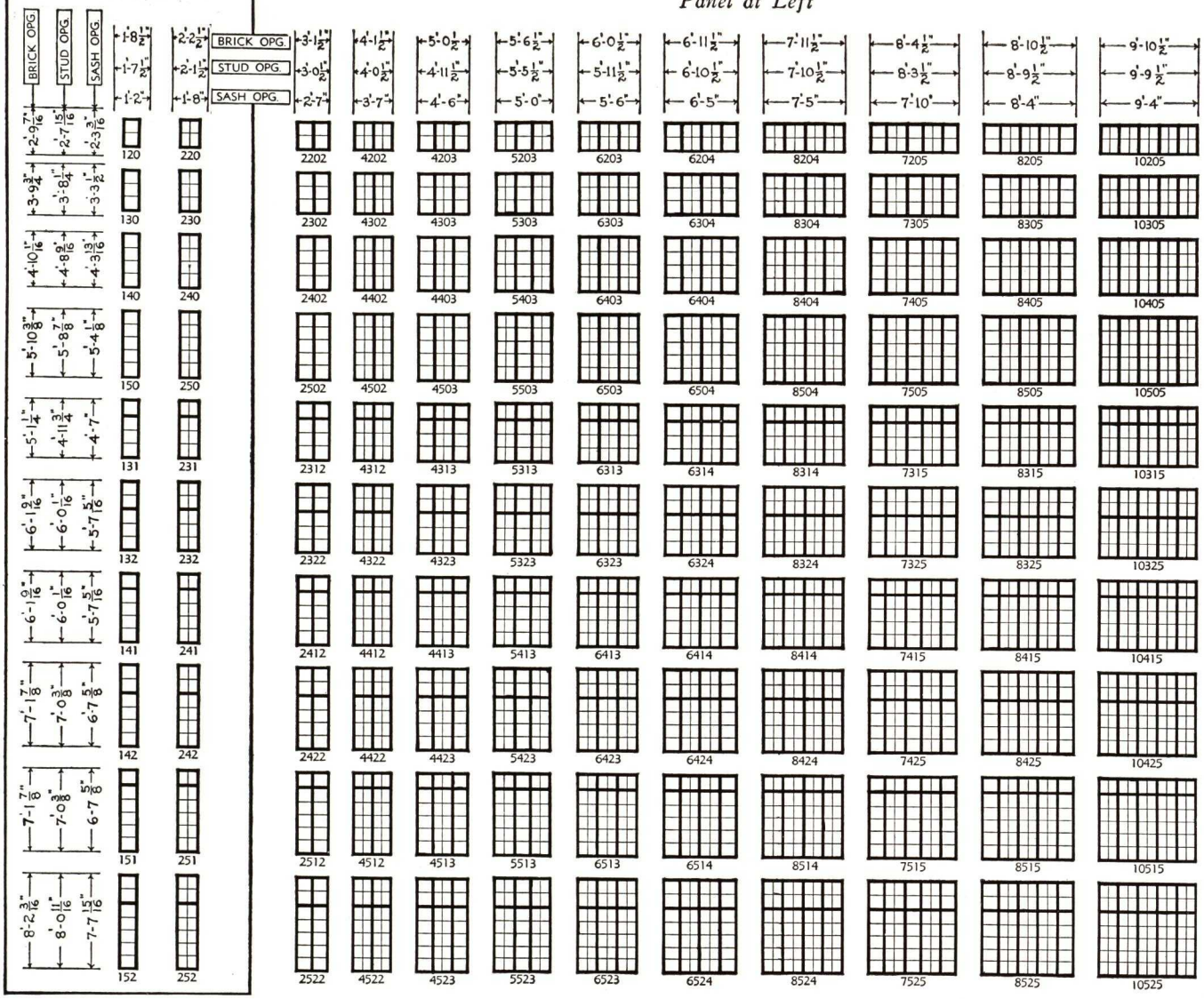
Order Information for Trim

(1) Give jamb width.
(2) Specify whether openings are to be cased or finished with plaster returns.
(3) Specify type of operation, "Manually" or "Mechanically" operated. If "Mechanically Operated," whether "Thru Stool" or "Angle Drive" operator will be used.
(4) Specify kind of wood.

BASIC INNER UNITS

Schedule of UNIPAK CASEMENT Sizes

All Group Installations Below Are Composed of the Basic Inner Units Shown in Panel at Left



All Sizes Shown are Standard

Units of the 100 Series have sash opening 1 ft. 2 in. wide. Glass size $12\frac{5}{16}$x12 in. (See Note.)

Units of the 200 Series have sash opening 1 ft. 8 in. wide. Glass size 9x12 in. (See Note.)

Note: In addition to above sizes, special 3-light high units are available for use over kitchen sinks or work tables. These are made with sash opening 2 ft. 10 in. high—5½ in. shorter than standard 130 and 230 units. When specifying this special height, add "KB" to standard 3-light high units and group numbers as: 130KB, 230KB, 2302KB, 4302KB, etc.

Divisions of glass, other than shown, can be supplied in standard openings, or all muntins may be omitted. Art or Special Glass furnished when so ordered.

Installation

"Unipak" basic Inner Units may be installed as single units or combined to produce the various groups shown.

Units furnished operative and stationary. Both types match.

All operative sash open out.

All transoms are stationary.

Inner Frame Mullions between all sash.

All operative sash are hung to Inner Frame and fully weather-stripped at factory.

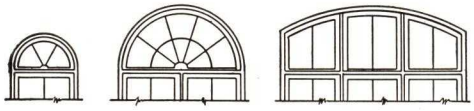
Hardware and accessories including operators, sash locks, screen and double glazing panels shipped with Inner Units. Double glazing panels attached in place.

Order Information Required

(1) Group or unit numbers.
(2) Type of wall construction.
(3) "Manually" or "Mechanically" operated.
(4) Type of operator if mechanically operated: "Thru-Stool" or "Angle Drive."
(5) Kind of glass.
(6) If screens and double glazing are to be included.
(7) Type of interior trim, whether cased or plaster returns. Also kind of wood and wall jamb width.
(8) How many operative sash in each group and whether sash are to be hinged on right or left side as viewed from outside.

Important—In the interest of efficiency and appearance it is usually more desirable to use transom head units for openings over 4 lights high. As an example, units 241 are recommended in preference to units 250 and units 242 in preference to 251.

Irregular Heads



Circle top, segment head or other irregular head treatment, can be had over standard Unipak units. These are made either irregular in and out or square inside as desired. Be sure to specify. Such transoms are always stationary and usually furnished in one section. Installed same as standard units by attaching to outer frame with screws.

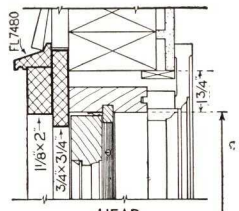
"UNIPAK UNIQUE" DOUBLE HUNG WINDOWS

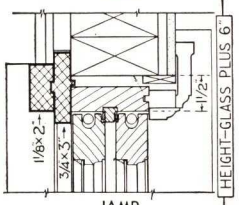
Companion Product to "Unipak" Casements

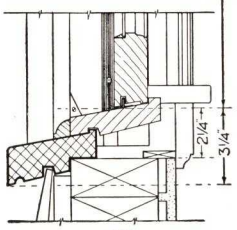
"Unipak Unique" Double Hung Windows are beautifully streamlined with narrow casings and mullions and effectively weatherstripped with built-in, interlocking weatherstrip. They are complete units embodying the same basic principle of weathertight Outer Frame and Inner Unit construction and installation as "Unipak" Wood Casements, described on preceding pages, and may be used in conjunction with them.

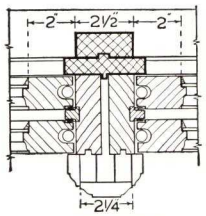
Outer Frame only is installed as walls are erected. It consists merely of wide blind stops, outside casings, and a portion of the sill (heavily outlined on detail).

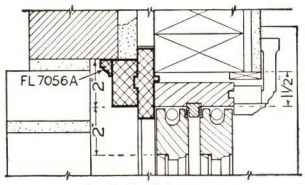
Later, preferably after plaster is completed and dry, Inner Frame is assembled around the prefitted windows and the entire unit is lifted into position against Outer Frame and rigidly screwed in place. Holes for screws are drilled at factory and screws are furnished. As the windows and frames are factory fitted with all weatherstrip completely applied, assembly of unit and its installation requires only a few minutes time. Storm sash or muslin may be used to enclose building at plastering time.



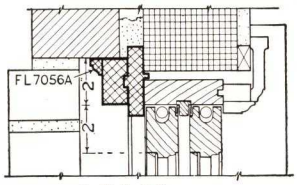




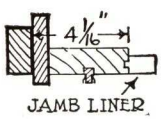




(See note under Rough Openings)



Scale—1½′ = 1′-0″



Jamb Liners

All frames furnished with standardized jambs 4 1/16 in. wide for 1⅜ in. windows. If wall requires 5¼ in. jambs, 1 3/16 in. liners are supplied. Thus, any width jamb is provided for without change in standardized frame. Liners are furnished with inside trim. Merely specify width of jamb over-all required.

All-Purpose Frame

"Unipak Unique" is an all-purpose frame—the same detail used for any type wall, siding, shingles, stucco, brick veneer or solid masonry. Adapted by using either drip FL-7480, or brick mould FL-7056-A. Always specify type of wall. All frames and sash made of clear W. P. Pine, chemically treated to resist moisture and termites and provide perfect paint base. Jambs are 1⅛ in. thick. Shipped semi set up, but completely fitted with all weatherstripping applied.

Interlocking Weatherstrip

Weatherstrip is a specially designed double interlocking type, with metal to metal sliding contact for entire sash travel. Rolled from 9-gauge (.018 in.) cross grained zinc; very strong, yet sufficiently resilient to compensate for ordinary misalignments in sash or frame. It completely covers parting stops, thereby simplifying the painting of window and frame. Head and check rail weatherstrip is compression type.

Smooth and frictionless in operation, this is without doubt the finest and most efficient weatherstrip made.

Sizes

Made in all standard sizes with any divisions of glass for windows. All divided light windows, however, are made to standard opening sizes for regular 2-light windows.

Architects' Specifications

Simply specify: All Double Hung Windows shall be "Unipak Unique" with interlocking weatherstrip as manufactured by Farley & Loetscher Mfg. Co., Dubuque, Iowa. Exterior door frames shall match.

Details for unusual installations will be sent promptly on request.

Rough Openings

Width—Add 7 in. to glass or 3 in. to sash opening.

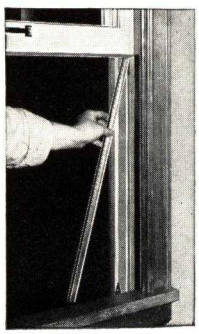
Height—Add 10 in. to glass or 4 in. to sash opening.

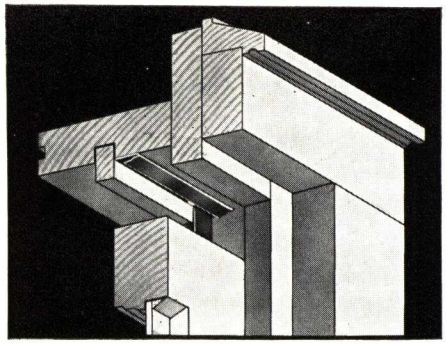
Mullions—Add 6½ in. between glass or 2½ in. between sash.

Note: If brick veneer Outer Frames are set to overlap sheathing, order must so state as wider stops, stool, and liner will be required.

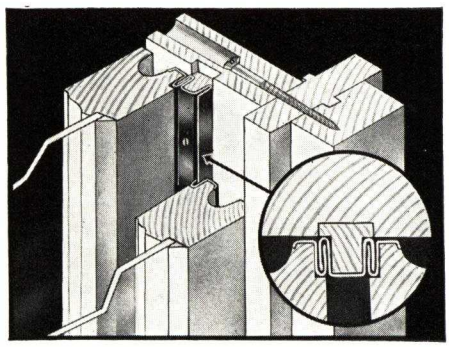
Removal of Window

The weatherstripped parting stop divides at line of window meeting rail. To remove window, after installation, remove the few screws by which parting stops are attached. Parting stop with its weatherstrip can then be pivoted back (as illustrated) into a slot in the jamb at this point, which will automatically disengage the interlocking weatherstrip members and permit window to be removed or replaced without slightest injury to weatherstrip.

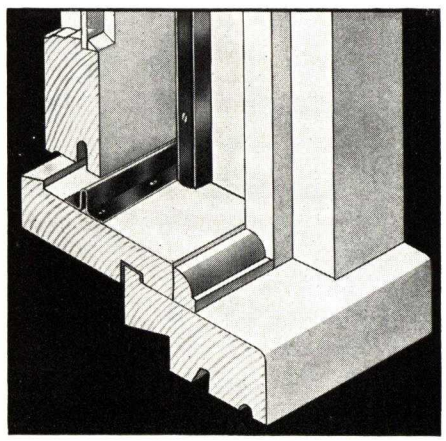




Head



Jambs



Sill

"Unique" Sash Balances

"Unique" Sash Balances are used in "Unipak Unique" Double Hung Windows, eliminating pulleys, weights and cord, pulley holes and pockets.

This is a simple, highly efficient counterbalancing method which has been proved and tested by thousands of installations. It is made of high grade, oil tempered spring steel with a spiral lifting rod, and is fully contained within the runways of the sash. Painting will not affect its operation.

SECTION 15

CONTINUED ⟶

THE MALTA MANUFACTURING COMPANY

Manufacturers of Patented Malta "Supreme" Window and Door Frames

MALTA, OHIO

MALTA "SUPREME" WINDOW FRAMES—DOUBLE HUNG TYPE

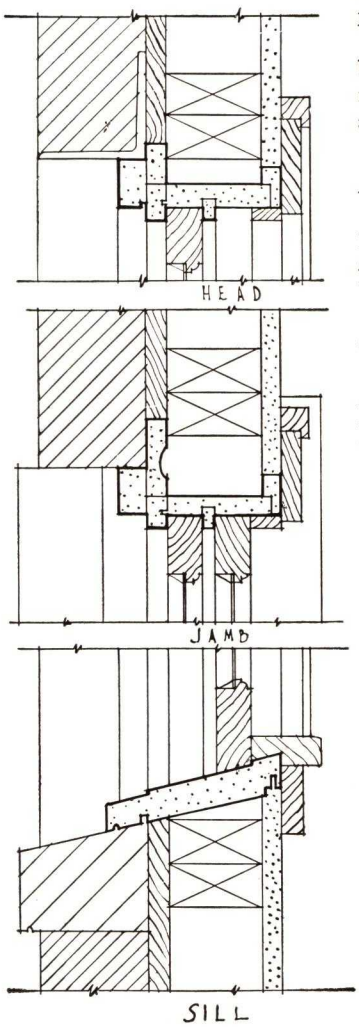
Malta "Supreme" Double Hung Window Frames have earned their strong position in the building trade because of their *extra* strength of construction, ease of maintenance and that they require the minimum time and labor for installation. Made of selected, well seasoned white pine, they are perfectly machined at the factory, and when shipped, are ready for paint.

Malta "Supreme" Frames, with their patented features—locktight, leakproof, double strength jambs and permanent watertight sill joints and permanent sill supports—assure a longer lasting and more perfect frame than has yet been manufactured.

Malta's (patented) construction cannot be changed in assembly or by careless installation. With its inside reversible stop, three jamb widths are provided to suit the requirements of old or modern home construction.

(Detail of Frame House, double hung type, shown on this page. Details of conversion to the Brick Veneer or Brick Box types will be furnished promptly by the factory.)

Pulleys are of the housed ball bearing type but we will furnish Pullman spring balances, if desired.



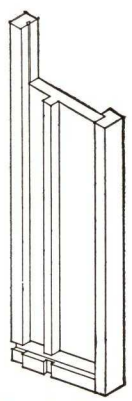
Brick Veneer—Double Hung Type

Right:

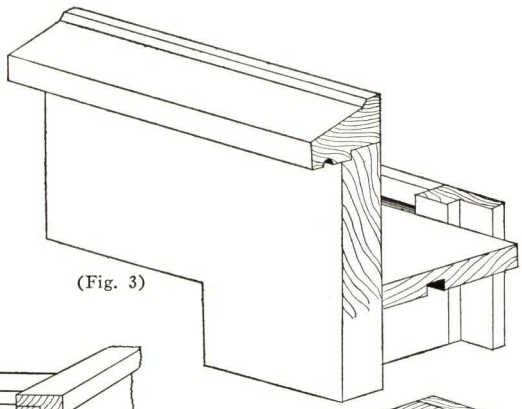
(Fig. 1) Shows Jamb without Inside Reversible Stop. This adjustment provides proper width for wall board construction

(Fig. 2) Shows Jamb with Stop applied for standard construction

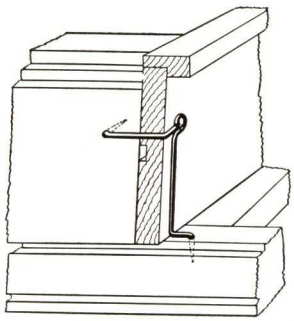
(Fig. 3) Shows Jamb with Stop applied full thickness, to give necessary width where ½-in. plaster is used over Celotex base



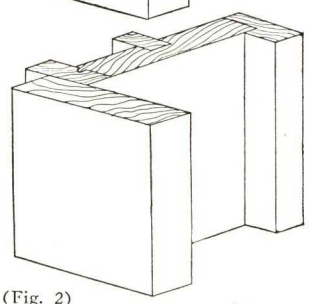
(Fig. 5) Shows sill construction ¾-in. gain in pulley stile with full ¾ in. below the gain which provides necessary support for sill when assembled.



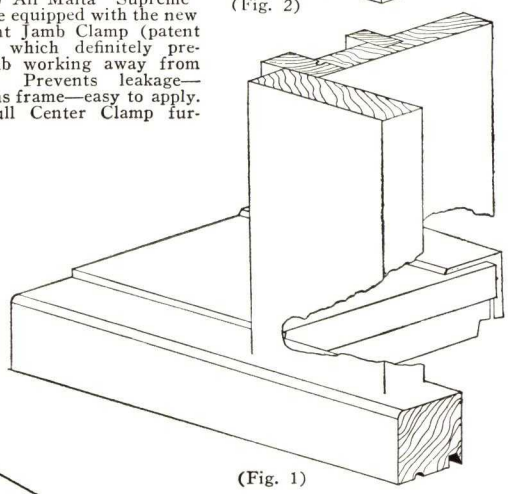
(Fig. 3)



(Fig. 4) All Malta "Supreme" Frames are equipped with the new Three-point Jamb Clamp (patent pending), which definitely prevents jamb working away from sill end. Prevents leakage—strengthens frame—easy to apply. (Also Mull Center Clamp furnished.)

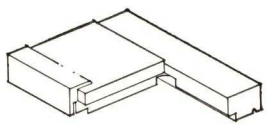


(Fig. 2)



(Fig. 1)

Frame House—Double Hung Type

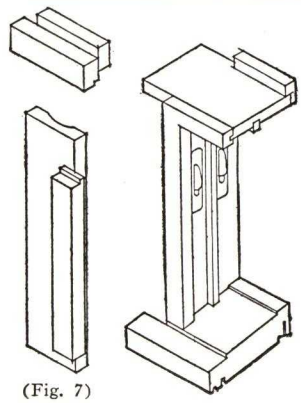


(Fig. 6) Shows tenon on end of sill ¾ in. from bottom of sill. Tenon fits snugly into gain of pulley stile, making a permanently watertight joint.

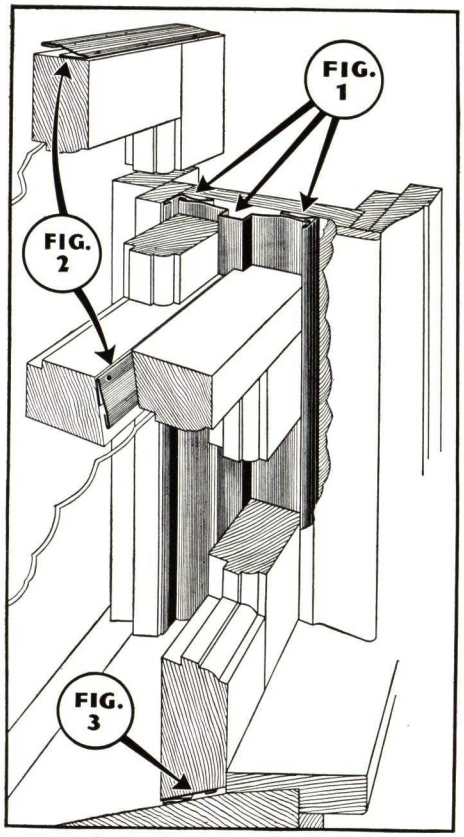
Right:

(Fig. 7) Shows ease with which Frame House Type is converted to Brick Veneer Frame. The 1⅛ x 3¾-in. casing is divided, forming 1⅛ x 1¾-in. brick mould. To this on back side extra ¾ x 3-in. blind stop is securely nailed ¾ in. from one edge. Brick mould is nailed in place. Head-brick mould is assembled same way and Brick Veneer Frame is complete.

All important joints of Malta "Supreme" Frames are treated for rot prevention.



(Fig. 7)



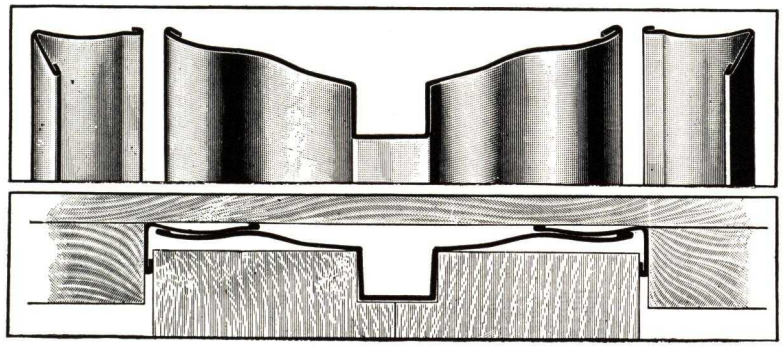


Fig. 1

MALTA "SUPREME" WEATHER-STRIPPED WINDOW FRAMES

Malta "Supreme" Frames are now equipped—when specified — with most efficient-and-economical-to-install weatherstripping.

Illustrated here is this perfected feature, which provides complete—all-weather, all-seasons, all-climates—protection. Its lateral adjustment, of at least ¼-in., takes care of *any* expansion or contraction of sash—assuring a free acting window.

Only *rustproof bronze weatherstripping* used in Malta "Supreme" Frames. No nailing necessary, except on cross members. Side members held in place by one screw at the bottom and by parting stop at head jamb.

Valuable features are: stock sash can be installed; no extra labor for fitting weatherstrip, and overhead balance or unique balance type used.

(Fig. 1) (See left.) Shows weatherstripping in use, on pulley stile. (At top) Members unassembled; also assembled to illustrate contact points, regardless of sash expansion or contraction.

(Fig. 2) Shows weatherstripping attached to top sash, also meeting rail. Small illustrations (right) show this strip.

(Fig. 3) Shows weatherstripping attached to bottom sash. Small illustration (right) shows this strip.

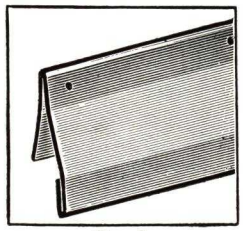


Fig. 2

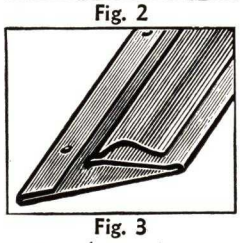


Fig. 3

MALTA "SUPREME" NEW TYPE PATENTED CASEMENT FRAME

The Malta Improved Casement Frame fills an important demand in the casement window field. It is carefully planned and constructed so that it can be installed in minimum time with less labor for maintenance so as to give long service.

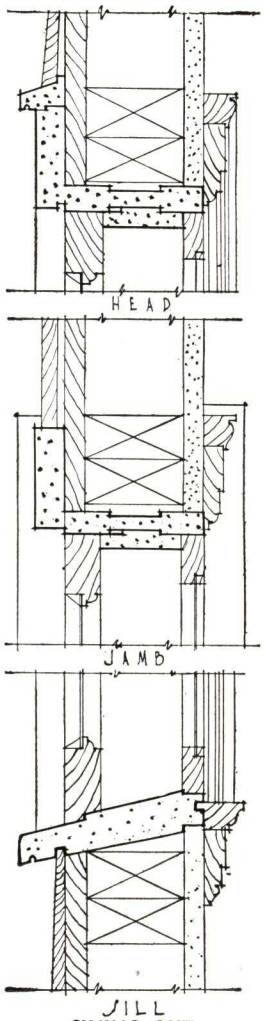
Made of selected white pine. Workmanship and materials (as in Malta Double Hung Frames,) are the best possible. This quality fits them for the highest type of building construction yet they are within reach of the modest home.

The Malta New Type Casement Frame is constructed for either in-swinging or out-swinging sash by means of the adjustable stop which eliminates additional and unnecessary cutting and labor.

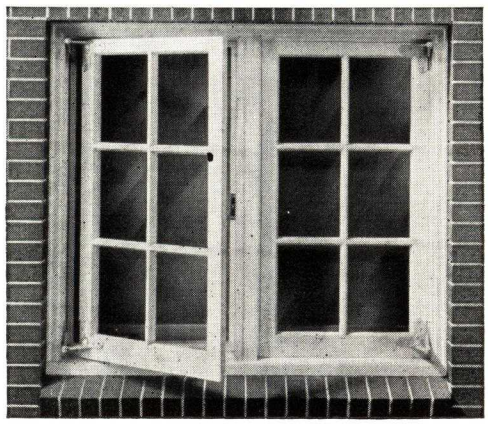
When used for in-swinging sash, the position of the side stop moves forward and downward due to the slope of the sill, giving the effect of lengthening the stop. To make up the difference in stop length, the gain in the head jamb is made deeper on one side.

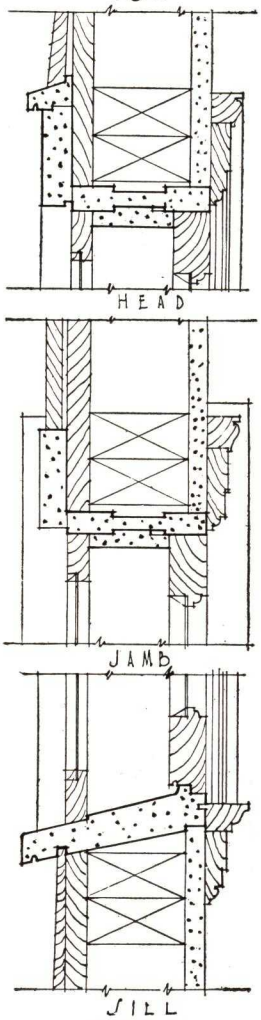
The shallow gain in the head jamb on the reverse side provides for the shorter length stop when in position for out-swinging sash. Stops are proportioned so as to allow for proper thickness of sash on one side and of screen on the other. By cutting the edge of the stop this construction provides for the use of thicker sash up to 1¾ in.

Malta Casement Frames *also* have our special patented sill construction, assuring permanent sill support and permanent weathertight sill joints.



SWING OUT





SWING IN

N. S. W. COMPANY

Non-Stick Windows—No Sash Weights

2137 Gratiot Avenue
DETROIT, MICH.

THE N. S. W. WINDOW—DESCRIPTION

A COMPLETE DOUBLE-HUNG WINDOW UNIT—Consists of "plank" frame, glazed sash hung on overhead spring balances, the whole completely weatherstripped. Frames are primed and sash waterproofed ready for final painting and application of lifts and locks by others.

FACTORY FABRICATED AND FITTED—Primed frames are mill assembled. Weatherstripping is shop-installed; sash are machine grooved and fitted with predetermined clearances, dip impregnated with colorless waterproofing, glazed and hung on properly adjusted balances.

DELIVERY AND ERECTION—As desired, frames may be delivered and built in, after which factory fitted weatherstripping and sash can be installed and adjusted by the manufacturer; or the complete factory assembled, glazed unit can be delivered ready to install.

COMPLETE METAL TO WOOD SASH RUNS—Heavy, accurately formed, factory-fitted, non-corrosive zinc sash runs include parting beads, weatherstripping ribs and returns at blind and inside stops. At no point does sash contact wood prone to shrink and swell.

WEATHERTIGHT—Plank frames and completely housed spring balances eliminate entirely the so-called "elsewhere air leakage". Factory-installed weatherstripping and sash mill-fitted and grooved permanently reduce air infiltration to a surprising minimum.

FRICTIONLESS, NON-STICK OPERATION—Complete, factory-installed metal sash runs coupled with sash machined to accurate clearances assures non-stick operation. While weathertight, sash run so smoothly that only a single spring balance is required per sash.

NOISELESS—The sash are held firmly in the frictionless metal jamb sash runs and glide noiselessly in operation. There is no excess play to cause sash to rattle. The high grade spring balances are permanently noiseless when operating.

GOOD APPEARANCE—Since the sash runs are completely metal faced, no unfinished portions of the frame are exposed. Complete architectural latitude is provided in the design of exterior and interior trim without affecting the basic principles of the sash operation.

NARROW MULLIONS—By the elimination of weight pockets, mullions, usually 7 inches wide, are reduced to 1⅝ inches, assuring the maximum amount of unrestricted light area in multiple window installations and improving the appearance from both within and without.

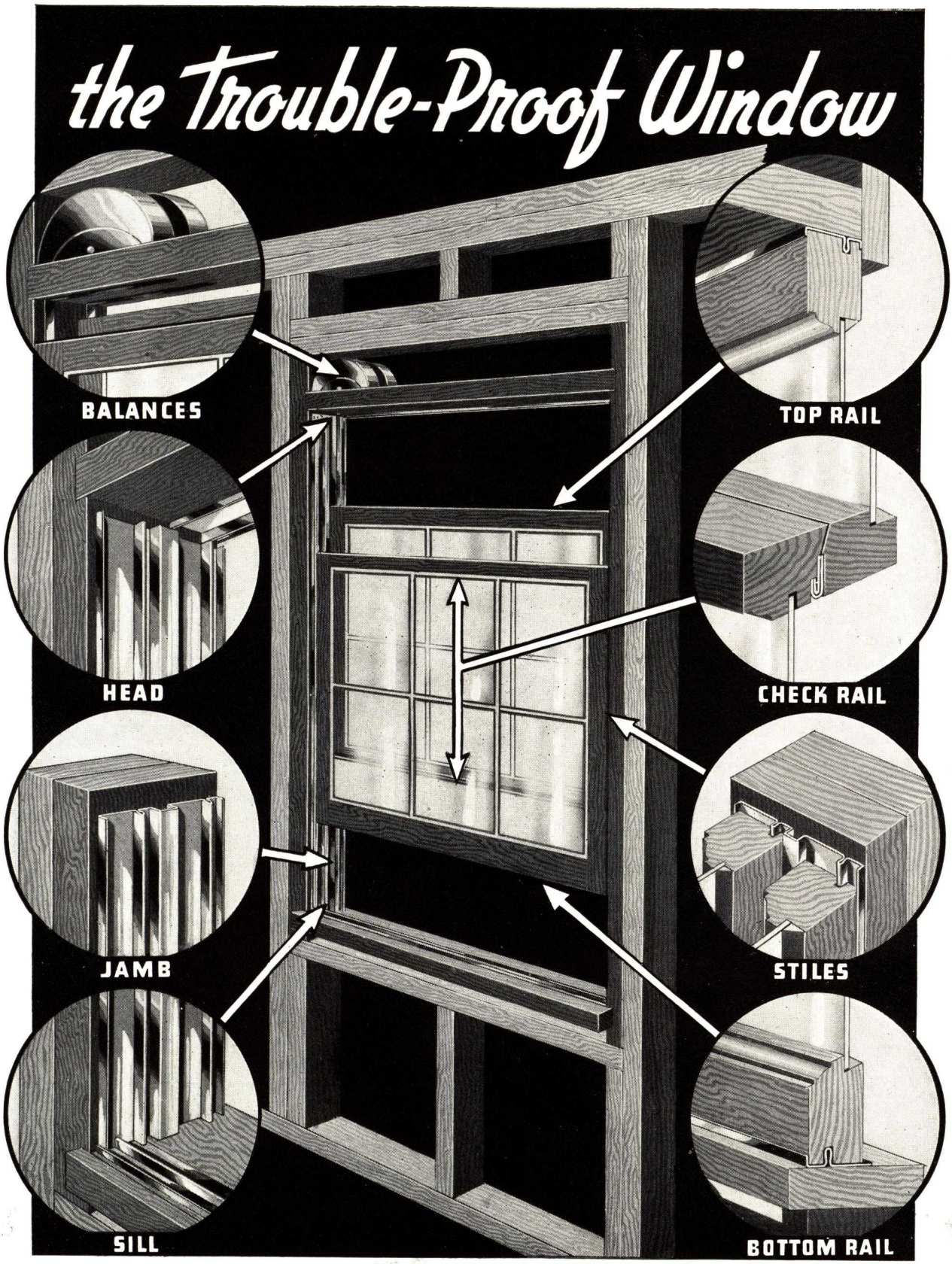
SASH EASILY REMOVED AND REPLACED—By removing the inside stops and eight screws which secure the metal sash runs to the frame, sash and runs are easily removed and replaced as a unit, without danger of damage to the sash assembly.

TAMPER PROOF—Once installed, they require no attention. Spring balances give lifetime service without maintenance. Climatic changes cannot affect predetermined sash clearances. Periodic painting never contacts the sash runways to cause the usual sticking.

SATISFACTORY OPERATION GUARANTEED—N.S.W. Windows have been in successful use for a period of 9 years. Undivided responsibility for not only weathertightness but frictionless, easy operation is guaranteed by selected, licensed manufacturers.

NURSES HOME, MICHIGAN STATE HOSPITAL, KALAMAZOO
Geo. W. Graves, Architect

RESIDENCE OF MORITZ KAHN, DETROIT, MICH.
Member of Firm of Albert Kahn, Architect, Detroit



THE N. S. W. NON STICK WINDOW ABOVE SHOWS THE REGULAR 2 x 4 IN. WINDOW FRAME SET IN STANDARD WOOD STUD CONSTRUCTION. THIS SAME FRAME UNIT WITH THE ADDITION OF GROUNDS IS READILY ADAPTED TO ALL OTHER TYPES OF WALL CONSTRUCTION FOR BOTH 1⅜ IN. AND 1¾ IN. THICK SASH

OUTSTANDING FEATURES

DESIGN LATITUDE—While the details shown on pages 4 and 6 are standard with the various licensed manufacturers of the N.S.W. Windows, the architect may vary the design of the outside trim or staff beads to suit any special requirements of style or construction. Only the plank jambs, yoke and sill need follow the prescribed N.S.W. standard details. Obviously any interior trim may be used.

STURDY PLANK FRAMES—Jambs and yokes of N.S.W. Windows (entirely hidden by metal facing or interior trim) are made from standard 2 x 4 inch studding (1⅝ x 3⅝ inches) of No. 1 Common S4S Douglas Fir or equivalent, dependent on local lumber markets. In wood frame construction, as shown on page 4, the frame jambs take the place of the "cripple" studs in the framed opening—an economy of material. As housed and assembled to accurate template measurements, the frames are particularly strong and weathertight.

Sills, blind stops, and exterior trim (casings or staff beads) are of clear pine.

NARROW MULLIONS—An outstanding feature of the N.S.W. Window is the narrow mullion. This, as detailed on page 6, may be as little as 1⅝ inches in width. In multiple window installations, this materially reduces the span of lintels, increases the effective, uninterrupted light area and adds materially to the appearance both from within and without.

METAL WEATHERSTRIPPING SASH RUNS—The basic, patented feature of N.S.W. Windows is the complete metal sash runways or tracks for both 1⅜ in. and 1¾ in. thick sash. These form complete jamb facings accurately machine rolled from a single strip of No. 9 gauge zinc and include parting bead, weatherstripping ribs, and, most important, return flanges at blind and inside stops. Similar features are provided at sill and head which, together with the interlocking metal members at the sash meeting rails, furnish complete, frictionless operation and weathertightness. The metal work is factory fitted to the window frames. There is no wood to wood contact between sash and frames. The return outer flanges permanently prevent binding due to seasonal climatic changes as well as the usual paint sealing encountered in ordinary construction.

FACTORY-FITTED SASH—The sash, of clear pine, are accurately factory machine grooved and template fitted to the metal jamb, head, and sill members. Not only are true, ideal clearances maintained but the grooving is straight to fit the weatherstripping ribs—a condition seldom accomplished with hand fitted sash and weatherstripping applied at the building.

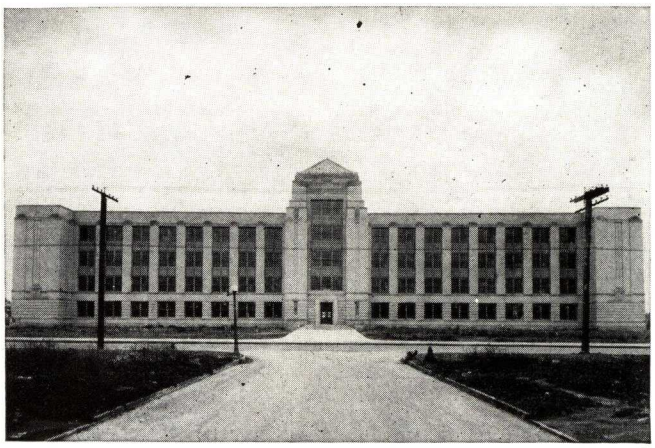
SPRING BALANCES—The spring balances used are the Pullman Sash Balances as made by Pullman Mfg. Corp.—a time-tested product of high quality. The springs are durable, remain uniform in tension and do not require oiling. Balances are guaranteed for the life of the building.

PRIMING AND WATERPROOFING—Frames, after assembly, are completely aluminum primed. This includes unexposed as well as exposed surfaces. The sash after mill fitting are dip-impregnated with a colorless waterproofing compound. This not only permanently seals the usually unfinished edges but protects the sash from moisture damage until final painting. The swelling and shrinkage of sash after accurate mill fitting is prevented.

A BETTER WINDOW AT LESS COST—Standard lumber plank frames equipped with but a single spring balance per sash reduces not only material but mill labor costs as compared to the usual weight-hung box-frame construction. Complete factory fabrication and assembly under ideal working conditions assures a better product at reduced labor costs. All inaccurate, time-consuming hand labor of sash fitting and weatherstrip installation is eliminated. All wood parts are adequately protected against moisture damage.

All these plus values, inherent in N.S.W. Windows, result in less rather than increased cost.

UNDIVIDED RESPONSIBILITY—Factory fabrication and assembly provide undivided responsibility for permanently frictionless operation and weathertightness.

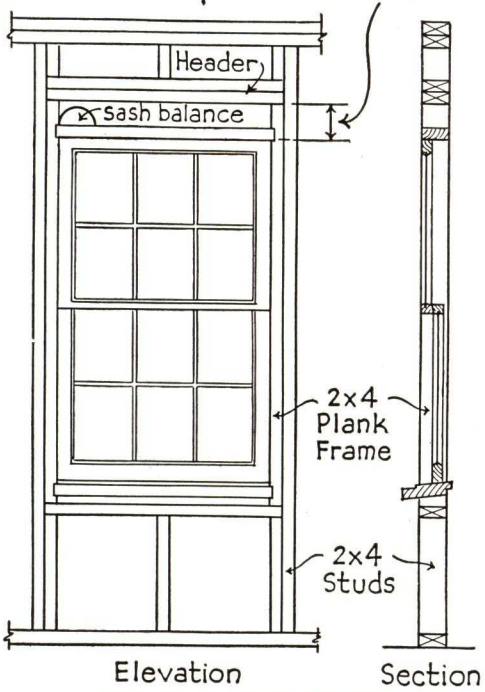


KENSINGTON HIGH SCHOOL, BUFFALO, N. Y.
Daniel McNeil, Architect

STOVER APARTMENTS, BUFFALO, N. Y.
Frederick Backus, Architect

DETAILS OF N.S.W. WINDOW CONSTRUCTION

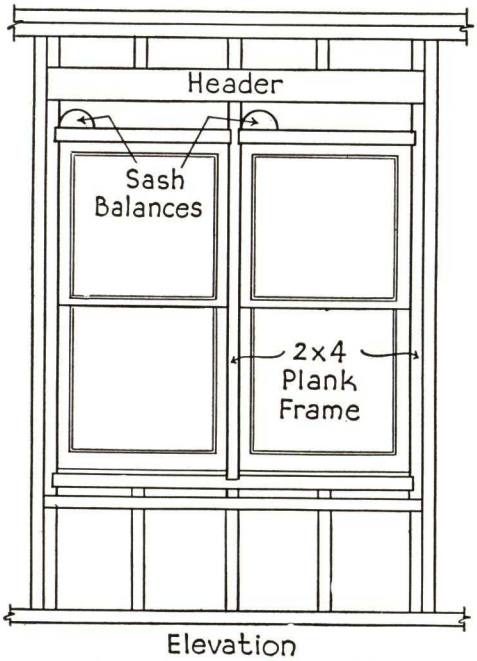
For sash up to 100 lb. = 6¼"
For sash up to 48 lb. = 4¾"
For sash up to 28 lb. = 4"



Elevation Section

SINGLE WINDOW

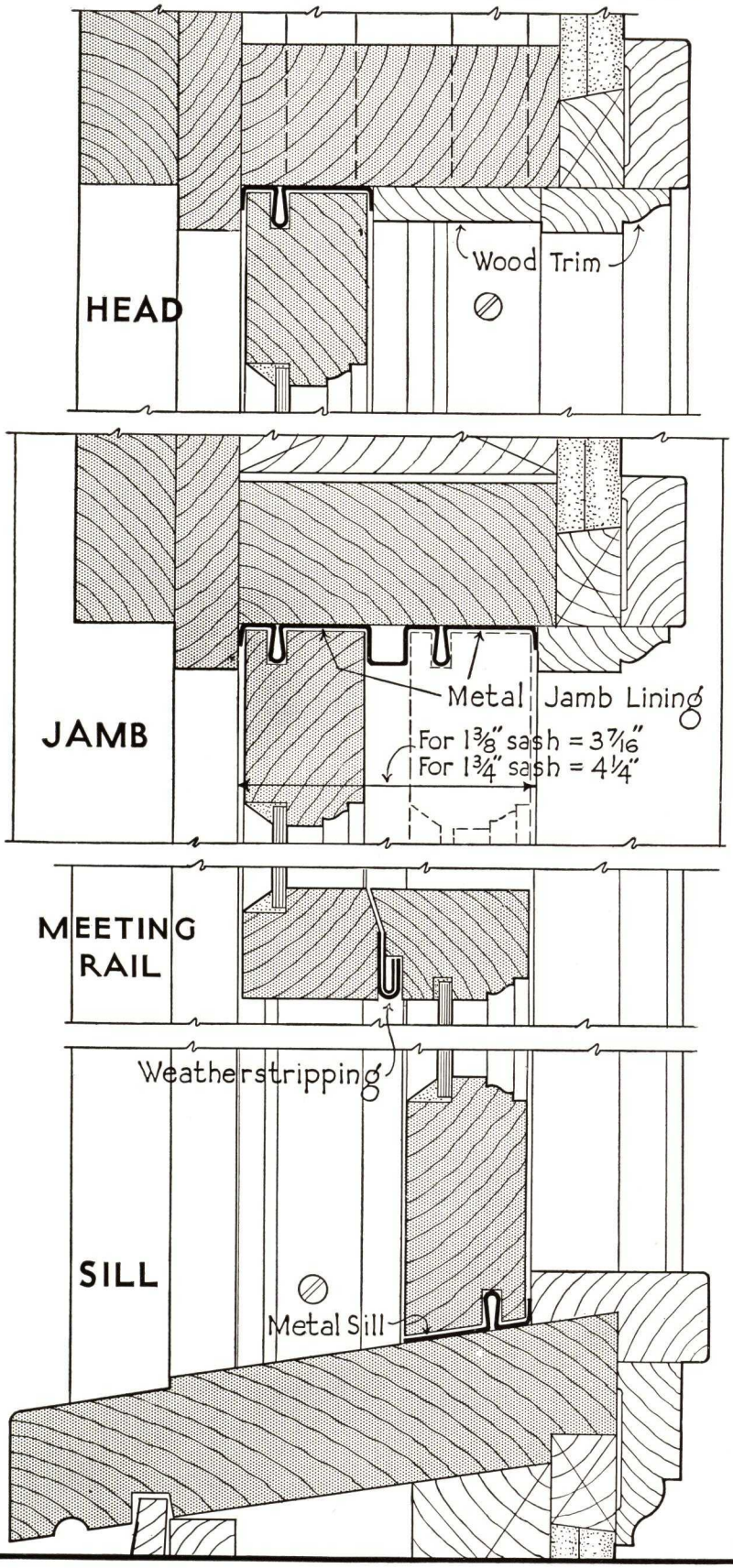
Detail showing Single N.S.W. Window Frame set in stud wall.



Elevation

MULLION WINDOW

Detail showing Mullion N.S.W Window Frame set in stud wall.



SPECIFICATIONS—N. S. W. WINDOWS

GENERAL

All double hung windows shall be N.S.W. completely factory-assembled units as made by a manufacturer licensed by N. S. W. Company, 2137 Gratiot Ave., Detroit, Mich.

FRAMES

Plank jambs and yokes shall be made in accordance with N.S.W. standard details from No. 1 Common, S4S, *(Douglas Fir) (specify species)* 2x4 in (1⅝x3⅝ in.) standard framing lumber *(with jamb extenders as required)*. Blind stops *(exterior trim) (staff beads)* and sills shall be as detailed made from clear pine.

SPRING BALANCES

Frames shall be equipped with New Pullman Adjustable Sash Balances as made by Pullman Mfg. Corp., one balance to each sash.

SASH

Sash shall be (1⅜ *in.*) (1¾ *in.*) thick as detailed of clear pine, factory machine fitted to N.S.W. metal weatherstripping sash runs and matching head, sill, and meeting rail members.

PRIMING AND SASH WATERPROOFING

Frames shall be primed on all surfaces before assembly with aluminum paint. Sash shall be dip-impregnated with colorless waterproofing compound after fitting and before glazing.

WEATHERSTRIPPING SASH RUNS, ETC.

Windows shall be equipped with factory-fitted and assembled N.S.W. patented jamb sash runs and matching head, sill, and meeting rail members of No. 9 gauge zinc.

GLAZING

Sash shall be glazed with *(specify glass)* back puttied and neatly face puttied with high grade wood sash putty.

DELIVERY

(Select clauses (a) or (b) as best suited to conditions).

(a) Assembled wood frames shall be delivered to be built into the rough structure. When called upon, the window manufacturer shall install in the erected frames the factory fitted metal weatherstripping and glazed sash and leave in perfect working condition.

(b) The complete assembled weatherstripped glazed window unit shall be delivered ready for erection.

RESPONSIBILITY

The window manufacturer shall assume full responsibility for free, frictionless sash operation and weathertightness.

WHERE TO OBTAIN N. S. W. WINDOWS AND SERVICE

Adams-Rogers Company	Indianapolis, Ind.
Edward J. Bahe Company	Chicago, Ill.
Bosman and Casson	Newark, N. J.
Byron Sash & Door Company	Louisville, Ky.
Carr & Moehl Company	Des Moines, Iowa
Carry, Ryder & Adams Company	Dubuque, Iowa
Carr-Johnston Company	Peoria, Ill.
Carr-Trombley Mfg. Company	St. Louis, Mo.
Collier-Barnett Company	Toledo, Ohio
Cole Manufacturing Company	Memphis, Tenn.
Davidson Sash & Door Company	Austin, Tex.
Davidson Sash & Door Co., Inc.	Lake Charles, La.
Houston Sash & Door Company	Houston, Tex.
Iron City Sash & Door Co.	Pittsburgh, Pa.
Morgan Company	Oshkosh, Wis.
Morgan Sash & Door Company	Chicago, Ill.
Morgan Millwork Company	Baltimore, Md.
Morgan Sash & Door Company	Oklahoma City, Okla.
Non Stick Window & Millwork Co.	Detroit, Mich.
Texas Sash & Door Company	Fort Worth, Tex.
The Throop-Martin Co.	Columbus, Ohio
Whitmer-Jackson Company	Buffalo, N. Y.

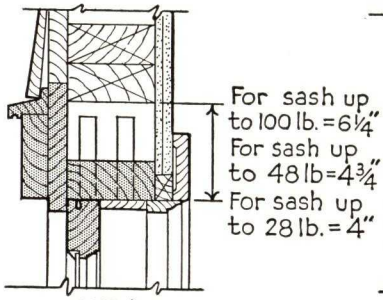
PARTIAL LIST OF INSTALLATIONS

Selfridge Field, U. S. Army	Mount Clemens, Mich.
Fort Belvoir, U. S. Army	Virginia (near Washington, D. C.)
Patterson Field, U. S. Army	Dayton, Ohio
School No. 37	Buffalo, N. Y.
Government Backed Subsistence Homesteads	Decatur, Ind.
Government Backed Subsistence Homesteads	Mount Pleasant, Pa.
Kensington High School	Buffalo, N. Y.
John R. King School	Detroit, Mich.
Carleton School	Carleton, Mich.
Wyandotte Nurses Home	Wyandotte, Mich.
Michigan State Hospital	Kalamazoo, Mich.
First Hungarian Reform Church	Cleveland, Ohio

Numerous commercial buildings, college buildings, and homes and apartments from the small cottage to the $50,000.00 home.

DETAILS OF N.S.W. WINDOW CONSTRUCTION

FRAME CONSTRUCTION



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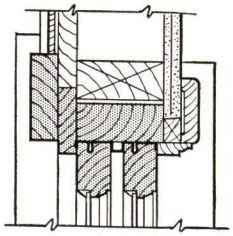
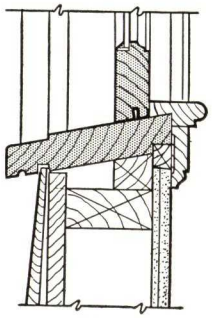
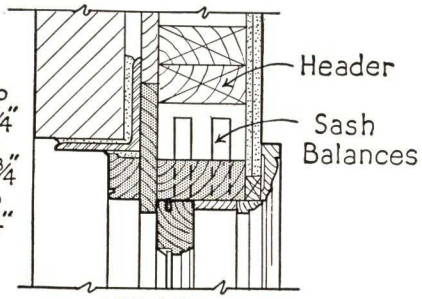


JAMB



SILL

BRICK VENEER CONSTRUCTION



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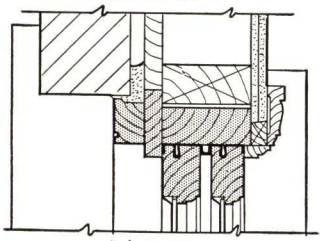

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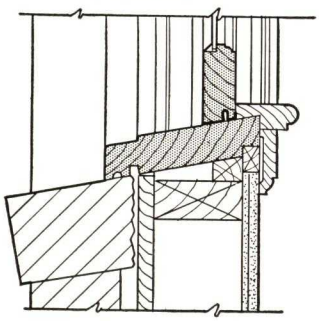

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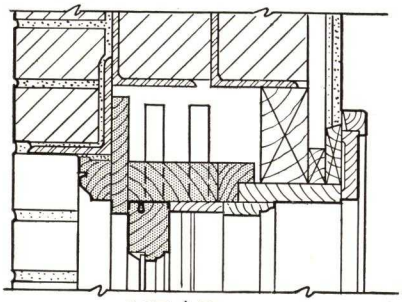
MASONRY CONSTRUCTION



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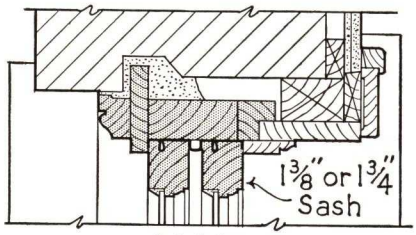

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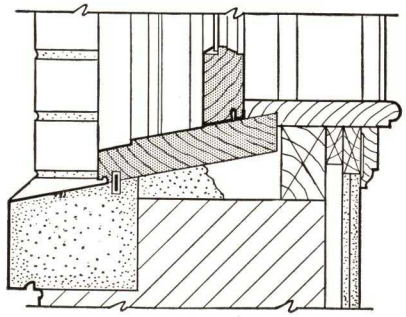
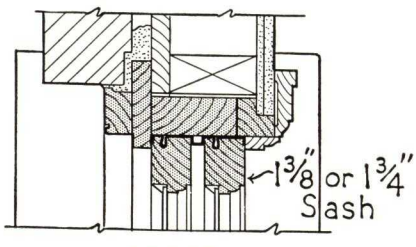


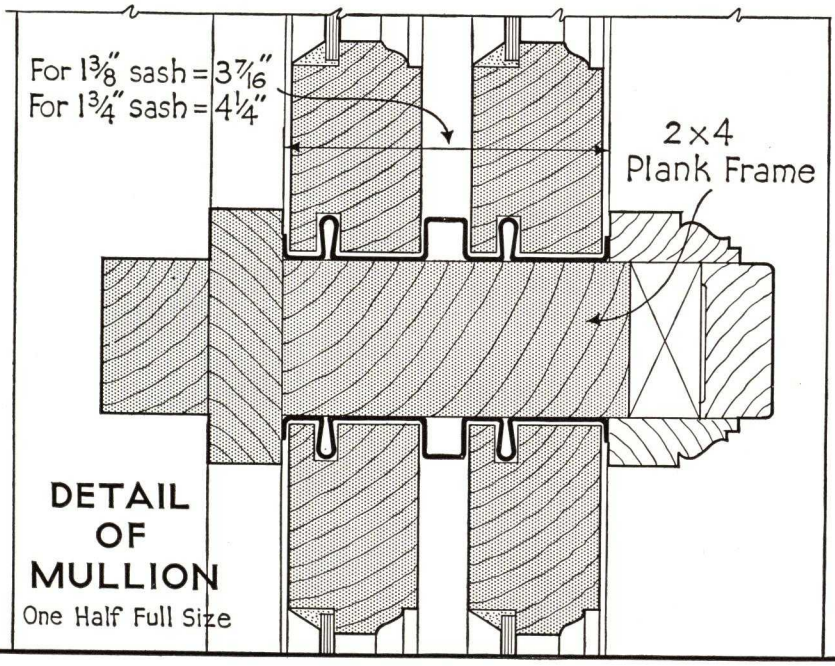
SILL

Shaded members indicate exterior trim, plank frame and sash furnished by the N.S.W. WINDOW CO. Interior trim by others.



JAMB

ALTERNATE BRICK VENEER CONSTRUCTION



DETAIL OF MULLION

One Half Full Size

MEMORANDA

A Manual of STANDARD CONSTRUCTION for STOCK SASH DOORS and FRAMES

★ PUBLISHED BY NATIONAL DOOR MANUFACTURERS ASS'N. INC. CHICAGO. ILL. ★

NATIONAL DOOR MANUFACTURERS ASSOCIATION, INC.

332 South Michigan Ave., Chicago, Ill.
and
919-17th Street, Northwest, Washington, D.C.

• • •

FOREWORD

THE ASSOCIATION—The Roster of the National Door Manufacturers Association consists of the country's largest producers of Ponderosa Pine Sash, Doors, and Frames and Hardwood Veneered Doors (see back cover). Through several generations of service to the construction industry, these national producers have developed standards of design, construction, and quality which assure to their users a maximum of utility, beauty, availability, and economy not only in first cost but in maintenance.

THE PURPOSE OF THIS CATALOG—The purpose of this catalog is to set forih clearly both in detail and specification the essential data and information regarding these products as they are manufactured in large quantities for the building trade. The details shown provide for variations in the width and thickness of some members. The variations in widths represent the differences established by common practice in various geographical centers. Minimum thicknesses are shown throughout, but the majority of items will actually finish $\frac{1}{32}$ inch thicker after sanding than shown on the details.

THE ADVANTAGES OF STOCK WINDOWS AND DOORS—In serving and protecting the best interests of his clients, it is the aim of every Architect and Builder to avail himself of every logical economy which does not sacrifice quality. In no way can this be better accomplished than in acceptance and use of standardized (stock) products. Stock windows, doors, and frames as distinguished from products of costly, time-consuming special design and construction, have the following definite advantages in their favor:

(1) Lower Cost—Made on a quantity production basis from time-tried designs which have proven their economies in utilizaton of available stock lumber dimensions and species, specialized machine operations, and ease in distributing, warehousing, and marketing.

(2) Availability—Stock windows, doors, and frames are available for immediate delivery in all localities nationally. The same designs and quality are obtainable at the smaller country lumber and millwork distributing yards as are obtainable in the metropolitan centers.

(3) Standardization—The national standards of design and quality are adhered to rigidly.

(4) Adaptability—They are adapted to all types of construction and architectural design, and, by varied methods of installation and arrangement, may be used to produce special effects at a minimum of cost.

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WHY WOOD SASH and FRAMES ARE BEST

1. They have proved their genuine merit, and long ago passed the experimental stage. Millions of installations of a generation ago are good today.

2. Except for a very small percentage, all windows and frames in use today are made of wood.

3. Both initial cost and upkeep of wood sash are low.

4. Wood sash and frames give satisfactory service with a minimum of attention.

5. They stand up in salt water atmosphere.

6. Wood windows are easy to operate and are not likely to get out of order or refuse to open or close when quick action is desirable.

7. Glass is vibrant and noisy but when set in wood sash will not be annoying in the least.

8. When misalignment occurs due to settling of the building, wood sash are easily and quickly refitted to again operate smoothly.

9. Wood sash repairs or replacements are simply made and can be done by local craftsmen quickly available.

10. Wood is one of the best insulators known against heat and cold.

11. Wood sash can be weatherstripped effectively at very little cost.

12. The construction of wood frames for wood sash accommodates screens and storm sash and without any additional framing expense.

13. The importance of screens is known to everyone and storm sash are absolutely essential if proper humidity is to be maintained during the heating season. It is likely that in a very few years most heating systems will be provided with proper humidification. Storm sash prevent condensation on the inside glass surface and permit maintenance of uniform and higher humidities in buildings in winter. Storm sash cut in half the heat loss directly through the glass, thus saving fuel, making room temperatures more uniform, avoiding drafts, and increasing comfort.

14. Condensation of moisture does not occur on wood. Therefore, wood sash and frames do no damage to costly draperies and curtains.

15. Fire damage results from the cracking of glass due to the heat of the blaze regardless of whether the glass is set in a wood or metal frame. Even wire glass is not proof against such damage.

16. In case of a bad fire, wood sash and frames, if they do not burn out clean, are quickly removed for replacement work.

17. Wood sash and frames withstand to a satisfactory degree the action of the condensation of acid fumes and charcoal fumes which occur in the processes of certain industries.

18. Wood windows are very attractive in appearance. The depth of the wood members produces shadow lines which add character to the windows, thus avoiding that "factory" or "commercial" appearance.

19. The use of wood sash and frames permits the use of good-looking, comfortable appearing trim of wood which will take a variety of finishes to suit the individual taste and interior treatment.

20. Wood admits of ready attachment of shade rollers and additional hangings.

21. Wood sash and frames do not stain rain water or cleaning water which in turn may run down and discolor the building surface, nor is wood attacked chemically by strong soaps or alkaline cleaning fluids.

22. Wood sash do not require building the home to fit the sash—they are built to fit the home.

23. A great variety of sizes and shapes is available in wood sash. Standard wood sash may be had double hung, in single units, in pairs, in groups, to swing in or out, or to pivot, and in any design required to harmonize with the architecture of the building.

24. The layout and design of wood sash and size of their members may be altered to suit any choice or purpose. Circular, gothic, elliptical, tudor, or any other irregular head design as well as any desired arrangement of division bars are obtainable in wood sash at reasonable cost.

WINDOW OPENING SIZES

The following amounts are added to Glass Sizes to determine finished Window Opening Sizes

MARKET	1⅜ and 1¾ 2 Light Wds.		1⅜ and 1¾ 4 Light Wds.		1⅜ and 1¾ 8 Light Wds.	
	Width	Length	Width	Length	Width	Length
Boston	3⅝	5	3⅝	5	3⅝	5
New York	4	6	4	6	4	6
Western	4	6	5	6	5	6
Ohio	4½	6⅛	4½	6⅛	4½	6⅛
Washington (*)	4½	6¼	*4½	6¼	*4½	6¼
Baltimore (*)	4½	6¼	*4½	6¼	*4½	6¼
Philadelphia	4⅝	6½	4⅝	6½	4⅝	6½
Indianapolis	5	6½	5	6	5	6
Wilkes-Barre	5	6	5	6	5	6
Southern	5	6	5	6	5	6

MARKET	1⅜ and 1¾ 12 Light Wds.		1⅛ 8 Light Wds.		1⅛ 12 Light Wds.	
	Width	Length	Width	Length	Width	Length
Boston	3⅝	5	3⅝	5	3⅝	5
New York	4	6	4	6	4	6
Western	4½	6	4½	6	4	6
Ohio	4½	6⅛	4½	6⅛	4½	6⅛
Washington (*)	4½	6¼	*4½	6¼	4½	6¼
Baltimore (*)	4½	6¼	*4½	6¼	4½	6¼
Philadelphia	4⅝	6½	4⅝	6½	4⅝	6½
Indianapolis	4½	6	4½	6	4	6
Wilkes-Barre	.....	.....	.....	.....	5	6
Southern	.....	.....	.....	.....	5	6

(*) **NOTE:** *There are exceptions to the above layout on 4 and 8 light Baltimore and Washington sizes. On 4 and 8 Light Windows 13" and 14½" wide, allow 5½" for wood. On 4 Light Windows 14" wide, allow 5" where opening is 2' 9" and 6½" where opening is 2' 10½". 13¼", 13½", and 15" are not regular stock sizes. Where these layouts are ordered, a definite understanding as to width of stiles and muntins should be reached.*

NOTE: *Sizes of stiles and rails in all Markets may vary slightly with the different manufacturers, but the finished opening or overall size of window is essentially the same in all cases.*

EXPLANATION OF SCHEDULE

OPENING SIZE OF 2 LIGHT WINDOW IN VARIOUS MARKETS

Glass Size	Boston	New York	Western	Ohio
24"x24"	2'3⅝"x4'5"	2'4"x4'6"	2'4"x4'6"	2'4½"x4'6⅛" Etc.
24"x26"	2'3⅝"x4'9"	2'4"x4'10"	2'4"x4'10"	2'4½"x4'10⅛" Etc.

OPENING SIZE OF 4 LIGHT WINDOW IN VARIOUS MARKETS

12"x24"	2'3⅝"x4'5"	2'4"x4'6"	2'5"x4'6"	2'4½"x4'6⅛" Etc.
12"x26"	2'3⅝"x4'9"	2'4"x4'10"	2'5"x4'10"	2'4½"x4'10⅛" Etc.

Specifications

• • •

STOCK WINDOW FRAMES and SASH

NOTE: *Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE: *Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.*

(1) MATERIAL

(1a) All window frames and sash shall be made of Ponderosa Pine selected for straightness and in strict accordance with the grading rules of the National Door Manufacturers Association, Inc.

(1b) Lumber shall be dried to a moisture content of from 8 to 10 per cent before fabrication.

(1c) Frames shall be Grade "A" Quality.

(1d) Sash shall be First Quality.

NOTE: *See Grading Rules, page 10.*

(2) FRAMES

(2a) Window frames shall be of stock design, construction, and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc.

(2b) Frames shall be delivered *(knock down) (completely erected) (except for application of) (exterior trim) (staff beads).*

NOTE: *Sill pitch varies from 1½ to 3 inches per foot with different manufacturers—can be made to any pitch specified. In masonry wall frames, sills are customarily dadoed to receive jambs, whereas in frame wall frames the jambs are dadoed to receive the sills.*

Inside stops and extension jambs are not considered parts of exterior frame.

(3) SASH

(3a) Window sash shall be of stock design and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc. They shall be *(1⅛) (1⅜) (1¾) (specify)* inch thick. A "thickness tolerance" not exceeding $\frac{1}{16}$ inch less than the nominal thickness will be allowed.

NOTE: *Sash can also be made ¾, 2¼, and 2½ inch thick.*

(3b) Sash shall be constructed, at the manufacturer's option, "mortised and tenoned" or "slot mortised."

(3c) Tenons shall be approximately three-quarters of the rail width. Sash shall be well clamped together and all tenons carefully pinned on the outside face with barbed steel pins set through tenons and countersunk.

(3d) The stiles of all double hung check rail windows shall be plowed and bored for sash cord attachment.

NOTE: *Plain rail window sash are not plowed and bored.*

(3e) Both sides of all sash including the top face of bottom sash check rail shall be machine sanded.

(3f) Bottom rails shall be rabbetted.

NOTE: *Bottom rails are not rabbetted unless so specified.*

(3g) Furnish wood glass stops where sash are not putty glazed.

(4) PRIMING

NOTE: *Unless otherwise specified, frames and sash are delivered unprimed in the white. A suitable priming will check moisture content changes to such an extent as to largely overcome swelling and subsequent shrinking after installation.*

(4a) All *(frames) (and) (sash)* shall be primed before delivery.

(4b) All *(frames) (and) (sash)* shall be dip treated *(with a weather resisting solution) (specify treatment).*

(4c) Priming coat shall consist of *(lead and linseed oil) (zinc, lead, and linseed oil) (high grade mixed paint) (reduced in accordance with the manufacturer's direction for first or priming coat work).*

(4d) The runs of frames and the edges of sash shall be thoroughly primed with raw linseed oil or liquid paraffine.

(4e) Sash primed before fitting shall have the exposed parts reprimed particularly under countersunk hardware.

(5) GLAZING

NOTE: *Unless otherwise specified, glass is set with zinc points and high grade putty.*

(5a) All sash unless otherwise specified shall be glazed with *(SS) (DS)* grade *(A) (B) (specify make) (flat drawn)* sheet glass.

NOTE: *Note exceptions to above, if any.*

NOTE: *Unless otherwise specified, sash are furnished glazed in "B" or "Standard Glazing" quality.*

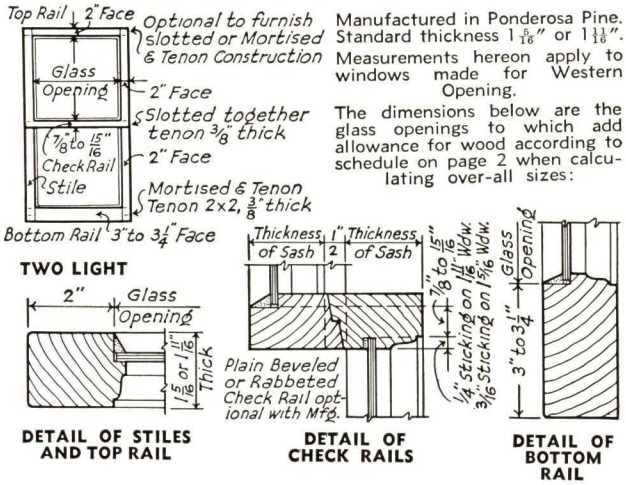
SHORT FORM

All stock window frames and sash shall be made in accordance with the standard specifications of the National Door Manufacturers Association, Inc. as filed in Sweet's Catalog File—Architectural.

Sash shall be *(specify)* thick.

CONSTRUCTION DETAILS

DOUBLE HUNG WINDOWS



Manufactured in Ponderosa Pine. Standard thickness $1\frac{5}{16}$" or $1\frac{1}{16}$".

Measurements hereon apply to windows made for Western Opening.

The dimensions below are the glass openings to which add allowance for wood according to schedule on page 2 when calculating over-all sizes:

SINGLE STRENGTH GLASS—GRADE "B"

16"x20"	18"x24"	20"x24"
16"x24"	18"x26"	20"x26"
16"x28"	18"x28"	20"x28"
18"x20"	20"x20"	

DOUBLE OR SINGLE STRENGTH GLASS—GRADE "B"

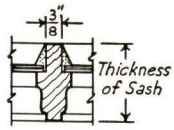
24"x20"	24"x30"	28"x26"
24"x24"	26"x24"	28"x28"
24"x26"	26"x26"	28"x30"
24"x28"	26"x28"	30"x30"
	26"x30"	

Generally stocked in S.S. glass but can be furnished with glass as desired.

DIVIDED TOP WINDOWS

Layout, size of stiles and rails, also glass sizes for 2 light windows apply for all divided top windows.

THREE LIGHT TOP

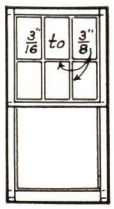


MUNTIN

NOTE:

In some Mills, windows and sash are carried in stock with O.G. sticking as shown while others carry same with Ovolo sticking. Therefore, when strictly stock windows are wanted, sticking will be optional with manufacturer.

MUNTIN



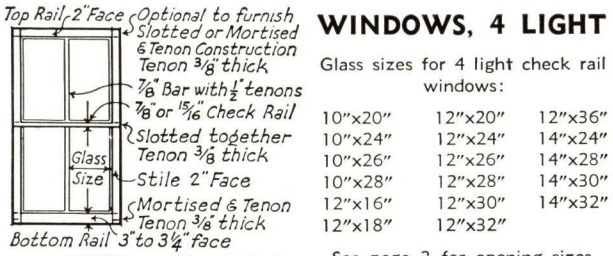
SIX LIGHT TOP

See page 6 for other divisions in top sash.

The sizes of stiles, rails, etc. as made by the different manufacturers vary slightly as noted on elevations, but in all cases the finished opening size is the same, i. e., for 2 light Western Openings, all finished openings are 4" wider and 6" higher than glass openings ordered.

See page 2 for allowance over glass size for openings in other markets.

WINDOWS, 4 LIGHT



Glass sizes for 4 light check rail windows:

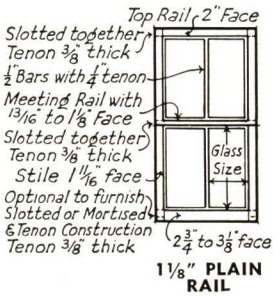
10"x20"	12"x20"	12"x36"
10"x24"	12"x24"	14"x24"
10"x26"	12"x26"	14"x28"
10"x28"	12"x28"	14"x30"
12"x16"	12"x30"	14"x32"
12"x18"	12"x32"	

See page 2 for opening sizes.

4 LIGHT AND 8 LIGHT WINDOWS:

All manufactured in Ponderosa Pine with glass as desired. Finished thickness $1\frac{1}{16}$", $1\frac{5}{16}$", and $1\frac{1}{16}$" after sanding. Measurements shown apply to windows made for Western Openings. See page 2 for opening sizes **for all markets.**

Glass sizes for 4 light plain rail windows: 12"x20", 12"x24".



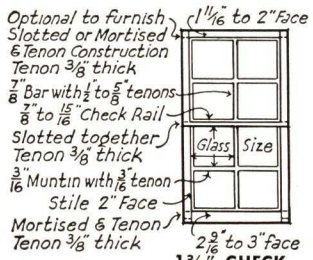
WINDOWS, 8 LIGHT

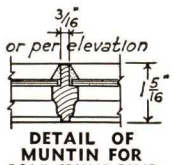
Glass sizes for 8 light check rail windows:

8"x10"	10"x14"	12"x16"
9"x12"	10"x16"	.....
10"x12"	12"x14"	.....

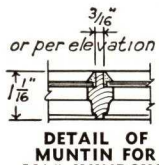
See page 2 for opening sizes.

Finished thickness after sanding $1\frac{5}{16}$" or $1\frac{1}{16}$".

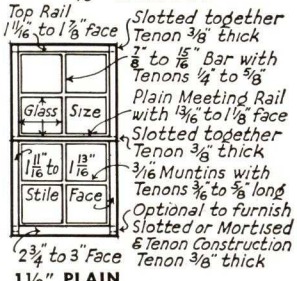




DETAIL OF MUNTIN FOR 1 3/8" WINDOWS



DETAIL OF MUNTIN FOR 1 1/8" WINDOWS



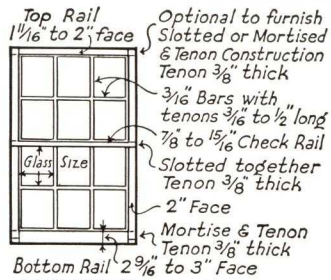
Glass sizes for 8 light plain rail windows:

8"x10"	10"x12"	12"x14"
9"x12"	10"x14"	12"x16"

See page 2 for opening sizes.

Finished thickness after sanding $1\frac{1}{16}$".

CONSTRUCTION DETAILS



1 3/8" CHECK RAIL — **Also made in 1 3/4"**

WINDOWS, 12 LIGHT

Glass sizes for 12 light check rail windows:

8"x10"	10"x12"	12"x14"
8"x12"	10"x14"	12"x16"
9"x12"	10"x16"	12"x18"
9"x14"	.....	.....

See page 2 for opening sizes. Finished thickness after sanding 1 1/16" or 1 1/16".

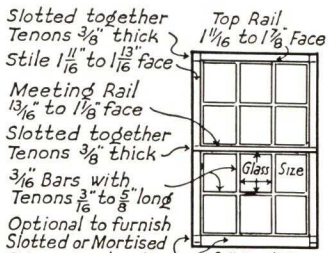
TWELVE LIGHT WINDOWS

All manufactured in Ponderosa Pine with glass as desired. Standard thickness 1 1/16", 1 5/16", and 1 11/16" after sanding. Measurements shown apply to windows made for Western Openings. Opening sizes for all markets scheduled on page 2. See page 4 for sections of windows.

Glass sizes for 12 light plain rail windows:

8"x10"	9"x12"	10"x12"
8"x12"	9"x14"	10"x14"
.....	.....	10"x16"

See page 2 for opening sizes. Finished thickness after sanding 1 1/16".



1 1/8" PLAIN RAIL

SASH

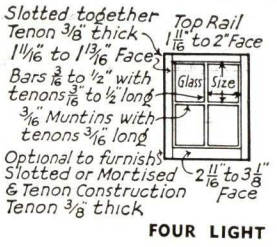
4 LIGHT 1 1/8" and 1 3/8"

Glass Sizes:

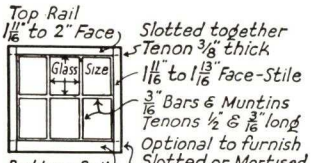
8"x10"	10"x10"	10"x14"	12"x12"
9"x12"	10"x12"	10"x16"	12"x14"
9"x14"	.....	.....	12"x16"

For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/16" and 1 5/16".



FOUR LIGHT



SIX LIGHT

6 LIGHT 1 1/8" and 1 3/8"

Glass Sizes:

8"x10"	9"x12"	10"x12"	10"x14"
.....	.....	.....	10"x16"

For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/16" and 1 5/16".

9 LIGHT 1 1/8" and 1 3/8"

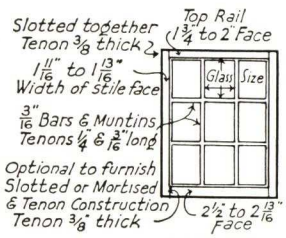
Glass Sizes:

8"x10"	9"x12"

For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/16" and 1 5/16".

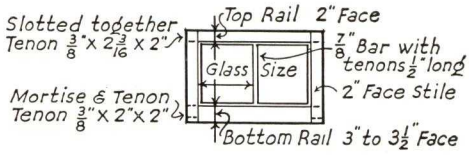
All sash manufactured in Ponderosa Pine with glass as desired.



NINE LIGHT

CELLAR SASH

1 1/8" and 1 3/8"



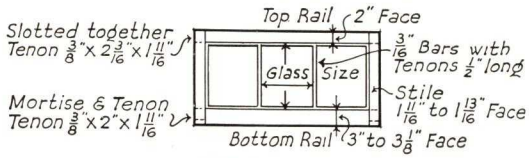
TWO LIGHT

Glass sizes for 2 light cellar sash:

10"x12"	12"x12"	12"x18"	14"x16"
10"x14"	12"x14"	12"x20"	14"x18"
10"x16"	12"x16"	12"x24"	14"x20"

For Western Opening, add 5" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/16" and 1 5/16".



THREE LIGHT

Glass sizes for 3 light cellar sash:

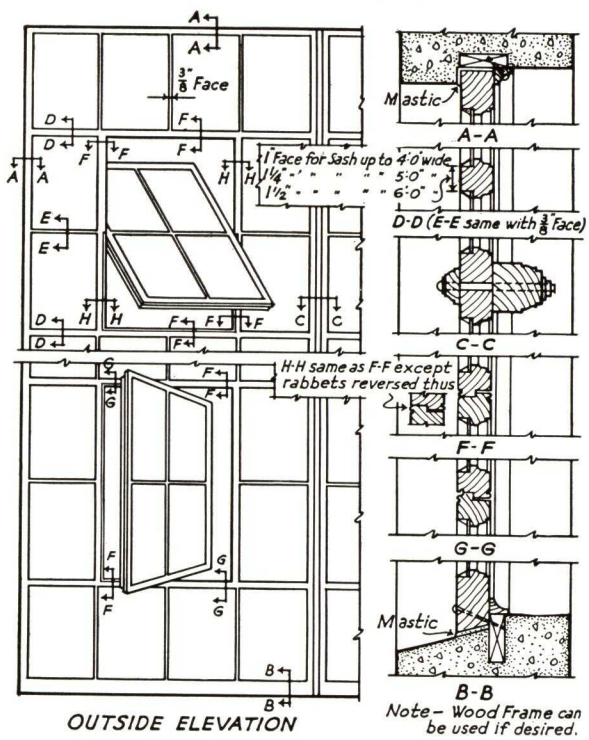
7"x 9"	9"x14"	10"x14"	12"x14"
8"x10"	9"x16"	10"x16"	12"x16"
9"x12"	10"x12"	10"x18"	.....

For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/16" and 1 5/16".

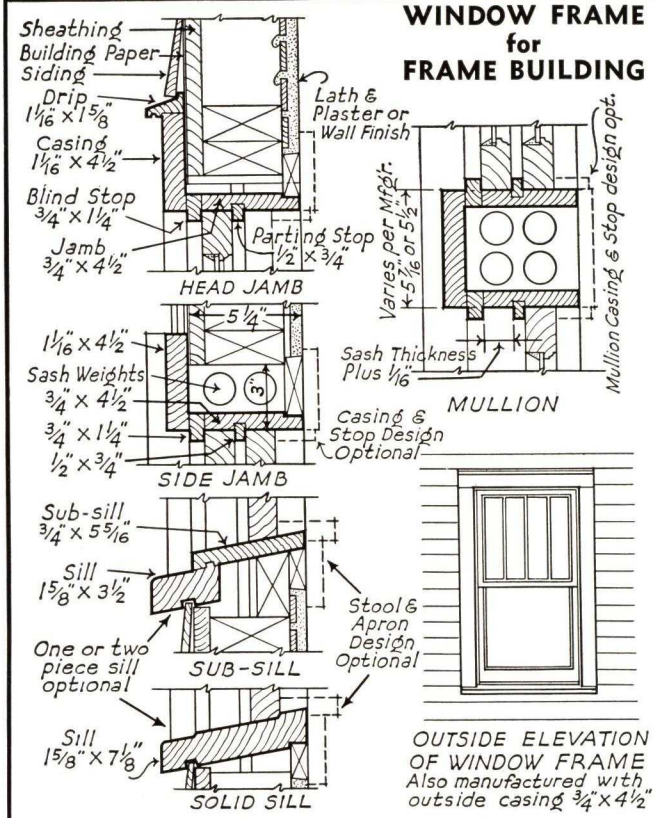
Cellar sash manufactured in Ponderosa Pine with glass as desired.

INDUSTRIAL WOOD SASH

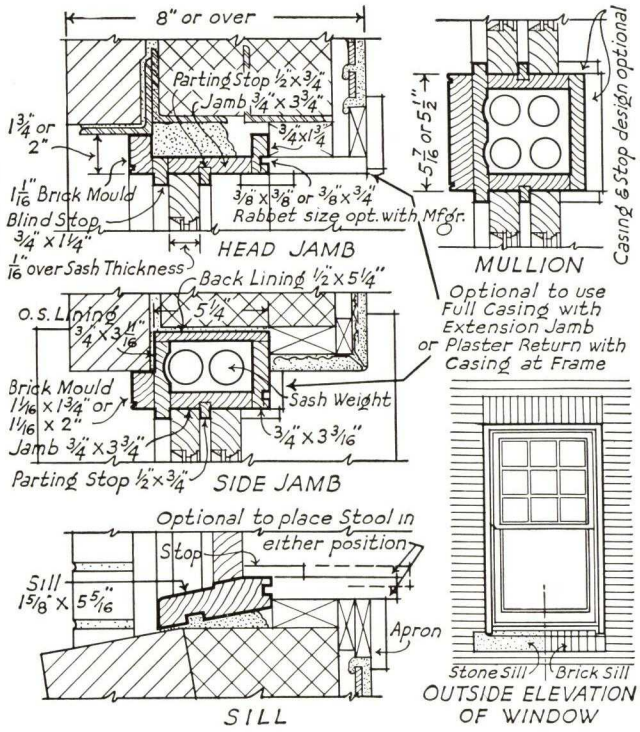


WINDOW and DOOR FRAME DETAILS

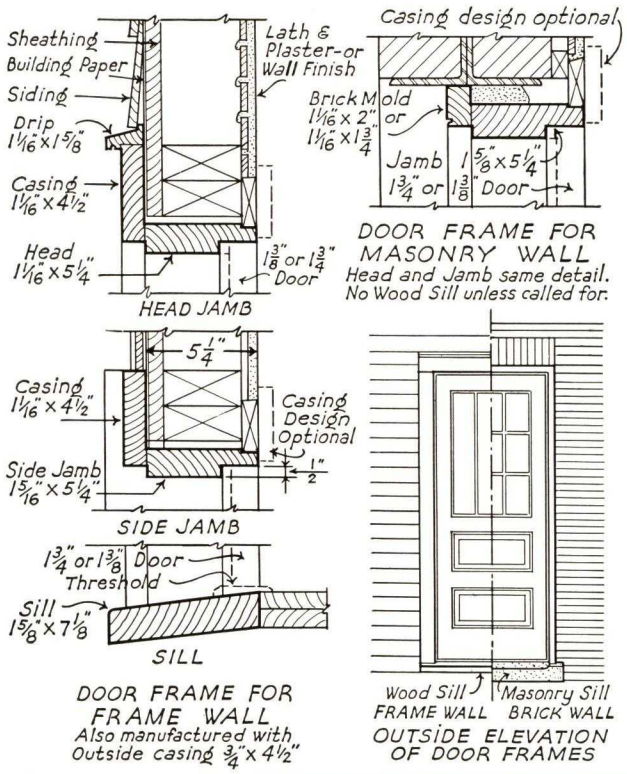
WINDOW FRAME for FRAME BUILDING



WINDOW FRAME FOR BRICK BUILDING



OUTSIDE DOOR FRAMES



NOTE: In these frame details "butt-joints" are shown between outside casings and blind stops, and between blind stops and jambs. "Tongued and Grooved" joints are optional with manufacturer and will be furnished by all manufacturers when specified.

DETAILING SPECIAL FRAMES

In detailing frames, economy in construction without loss in effect will be promoted if the standard sizes of lumber, especially thicknesses, are adhered to closely. Kiln dried frame material up to 2 inches (rough), which will finish up to 1 5/8 inches in thickness, is usually carried in stock. If thicker stock is required, it usually has to be cut and dried to order which requires more time and increases production costs materially. If frame members thicker than 1 5/8 inches are required, it is recommended that millwork plants be given the option of supplying them in built-up form. This form of construction is considered to be as good as that calling for use of one large piece. Granting this privilege may simplify a job for a millwork plant with no resultant loss in construction value.

Recommended thicknesses for pulley stiles or jambs are 3/4 and 1 1/16 inch.

Recommended thicknesses for rabbeted jambs are 1 5/16 and 1 5/8 inches.

Recommended thicknesses for sills is 1 5/8 inches. The appearance of greater thickness, when this effect is desired for purposes of design, may be produced by beveling the front side of the sill.

Specifications

STOCK SOLID DOORS and FRAMES

NOTE: *Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE: *Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.*

(1) MATERIAL

(1a) All solid doors and frames shall be made of Ponderosa Pine selected for straightness and in strict accordance with the Grading Rules of the National Door Manufacturers Association, Inc.

(1b) Lumber shall be dried to a moisture content of from 8 to 10 per cent before fabrication.

(1c) Frames shall be Grade "A" Quality.

(1d) Doors shall be *(First) (Second) (Third)* Quality.

NOTE: *See grading rules, page 10.*

(2) FRAMES

(2a) Door frames shall be of stock design, construction, and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc.

(2b) Frames shall be delivered *(knock down) (completely erected) (except for application of) (exterior trim) (staff beads).*

NOTE: *Unless otherwise specified, sills for door frames are furnished in Pine.*

(2c) Sills for door frames shall be clear *(Pine) (Oak).*

(3) DOORS

(3a) Doors shall be of stock design and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc. They shall be *(1⅜) (1¾) (specify)* inch thick. A "thickness tolerance" not exceeding $\frac{1}{16}$ inch less than the nominal thickness will be allowed.

NOTE: *Doors can also be made ¾, 1⅛, and 2¼ inch thick.*

(3b) Stiles and rails shall have *(specify type)* solid sticking with solid raised panels. All intersections shall be coped with joints well fitted.

NOTE: *Unless otherwise specified, stock doors are assembled with hardwood dowels extended into stiles and rails approximately one half the width of the stiles.*

(3c) Doors shall be *(describe panel arrangement including glazing requirements).*

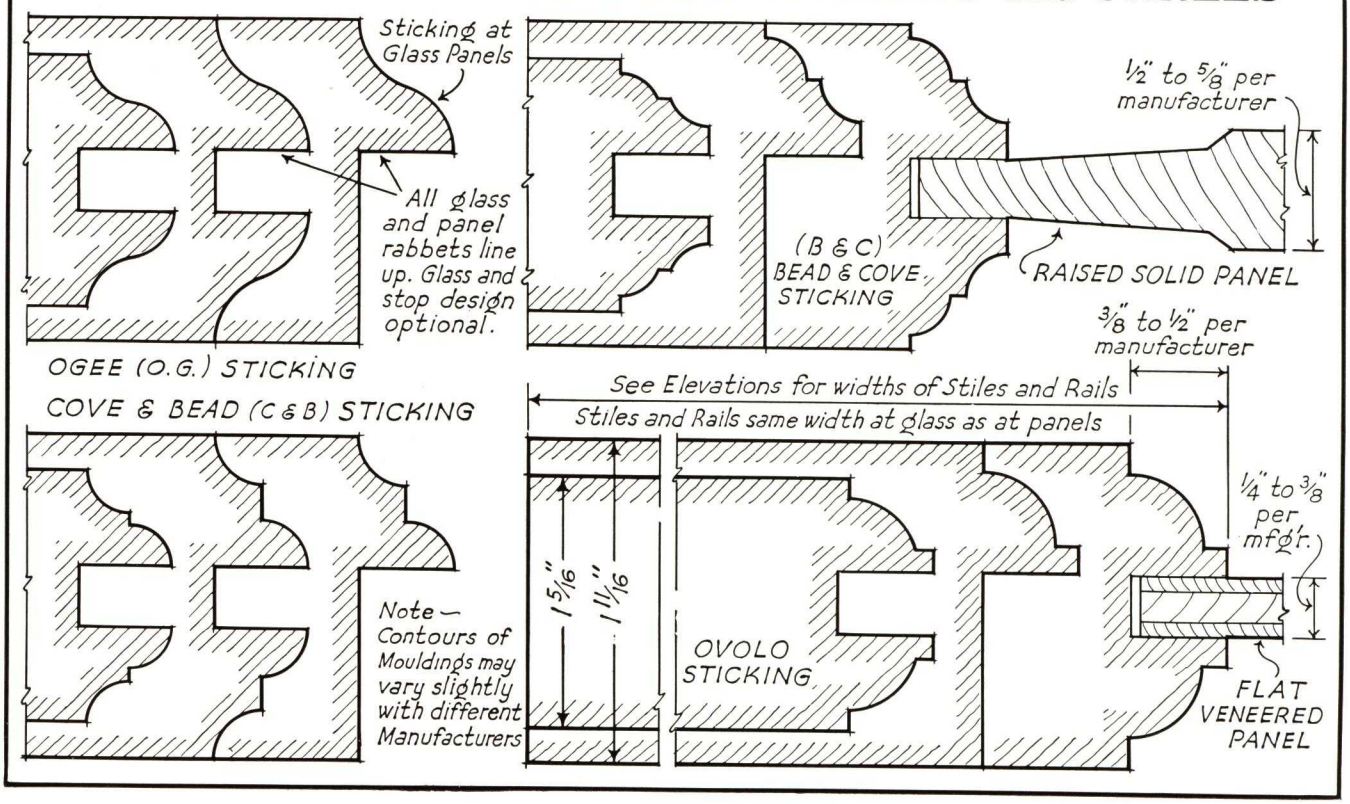
NOTE: *Unless otherwise specified, glass stops are furnished for all glazed doors. Faces of all doors are machine sanded.*

SHORT FORM

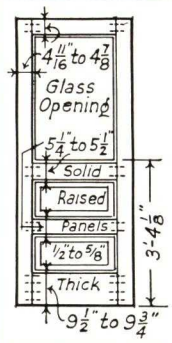
All stock solid doors *(and frames)* shall be made in accordance with the standard specifications of the National Door Manufacturers Association, Inc. as filed in Sweet's Catalog File—Architectural.

Doors shall be *(specify)* thick.

STANDARD TYPES OF DOOR STICKING and PANELS



CONSTRUCTION DETAILS



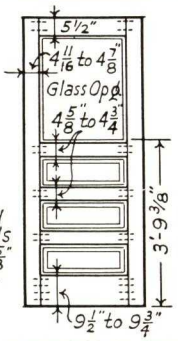
TWO PANEL AND ONE LIGHT

EXTERIOR DOORS

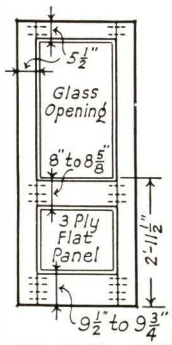
Manufactured in Ponderosa Pine with pine panels as shown on elevations. Moulded B&C, C&B or Ovolo sticking. Standard thickness of doors $1\frac{5}{16}$" or $1\frac{11}{16}$".

STANDARD SIZES

2' 6"x6'6"	2' 10"x6' 10"
2' 8"x6'8"	2' 8"x7' 0"
3' 0"x6'8"	3' 0"x7' 0"



THREE PANEL AND ONE LIGHT

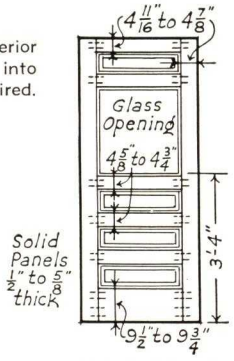


ONE PANEL AND ONE LIGHT

GLASS DIVISIONS

All glass openings in exterior doors can be divided into smaller lights as desired. Usual divisions are:

3 lights wide
4 lights (2 wide—2 high)
6 lights (3 wide—2 high)
9 lights (3 wide—3 high)



FOUR PANEL AND ONE LIGHT

CASEMENT DOORS

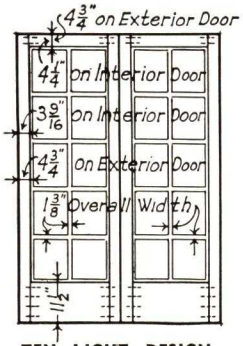
TEN OR FIFTEEN LIGHT CASEMENT DESIGN

Manufactured in Ponderosa Pine with glass as desired. Moulded B&C, C&B, O.G., or Ovolo sticking. Standard thickness of doors $1\frac{5}{16}$" and $1\frac{11}{16}$".

Interior Casement Doors are also made in any hardwood with veneered stiles and rails and solid division bars.

STANDARD SIZES

4'-0" opening, 2'-0"x6'-8" or 2'-0"x7'-0"
4'-8" opening, 2'-4"x6'-8" or 2'-4"x7'-0"
5'-0" opening, 2'-6"x6'-8" or 2'-6"x7'-0"
5'-0" opening, 2'-8"x6'-8" or 2'-8"x7'-0"



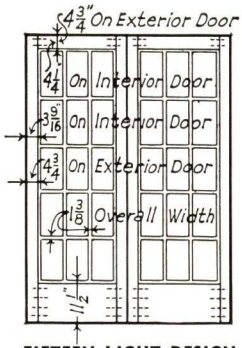
TEN LIGHT DESIGN

CASEMENT DESIGNS

Casement doors can also be divided into:

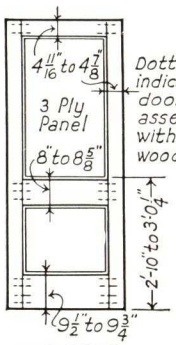
8 lights (2 wide—4 high) and
12 lights (3 wide—4 high).

Pairs of casement doors in openings less than 5'-0" wide have $3\frac{9}{16}$" stiles as shown while pairs in openings 5'-0" wide and wider have $4\frac{1}{4}$" stiles.



FIFTEEN LIGHT DESIGN

INTERIOR DOORS



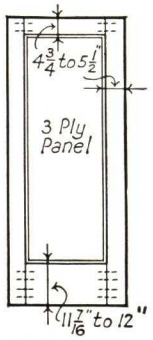
TWO PANEL

Dotted lines indicate that doors are assembled with 1/2"x5" wood dowels

Lock rail heights, width of stiles, and width of rails as noted on all elevations are minimum and maximum dimensions as used by the various manufacturers.

STANDARD SIZES OF ONE, TWO, AND SIX PANEL DOORS

2'- 0"x6'- 0", 1 3/8"	2'-10"x6'-10", 1 3/8"
2'- 0"x6'- 6", 1 3/8"	3'- 0"x6'- 8", 1 3/8"
2'- 0"x6'- 8", 1 3/8"	3'- 0"x7'- 0", 1 3/8"
2'- 0"x7'- 0", 1 3/8"	2'- 6"x6'- 6", 1 3/4"
2'- 4"x6'- 6", 1 3/8"	2'- 6"x6'- 8", 1 3/4"
2'- 4"x6'- 8", 1 3/8"	2'- 6"x7'- 0", 1 3/4"
2'- 6"x6'- 6", 1 3/8"	2'- 8"x6'- 8", 1 3/4"
2'- 6"x6'- 8", 1 3/8"	2'- 8"x7'- 0", 1 3/4"
2'- 6"x7'- 0", 1 3/8"	2'-10"x6'-10", 1 3/4"
2'- 8"x6'- 8", 1 3/8"	3'- 0"x6'- 8", 1 3/4"
2'- 8"x7'- 0", 1 3/8"	3'- 0"x7'- 0", 1 3/4"



ONE PANEL

ONE AND TWO PANEL DESIGNS

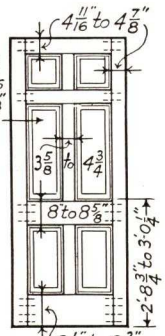
Manufactured in Ponderosa Pine with laminated flat panels of pine, fir, gum, or birch. Moulded C&B, B&C or Ovolo Sticking. Standard thickness of doors $1\frac{5}{16}$" or $1\frac{11}{16}$". Made also in any Hardwood with veneered stiles, rails and panels.

INTERIOR DOORS

SIX PANEL DESIGN

Manufactured in Ponderosa Pine with raised panels of solid pine. Moulded B&C, C&B, or Ovolo Sticking. Panels 1/2" thick. Standard thickness of doors $1\frac{1}{16}$", $1\frac{5}{16}$", or $1\frac{11}{16}$". Made also in any Hardwood with veneered stiles and rails, and flat veneered panels.

Solid Panels 1/2 to 5/8" Thick



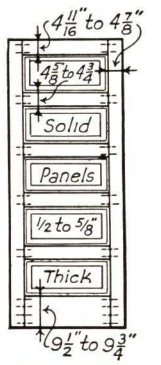
SIX PANEL

FIVE CROSS PANEL DESIGN

Manufacturd in Ponderosa Pine with raised panels of solid pine. Moulded OG, C&B, or Ovolo Sticking. Standard thickness of doors $1\frac{1}{16}$", $1\frac{5}{16}$", or $1\frac{11}{16}$". Panels 1/2" thick.

STANDARD SIZES OF FIVE PANEL DESIGN

2'- 0"x6'- 0", 1 1/8"	2'- 6"x7'- 0", 1 3/8"
2'- 0"x6'- 8", 1 1/8"	2'- 8"x6'- 8", 1 3/8"
2'- 4"x6'- 8", 1 1/8"	2'- 8"x7'- 0", 1 3/8"
2'- 6"x6'- 6", 1 1/8"	2'-10"x6'-10", 1 3/8"
2'- 6"x6'- 8", 1 1/8"	3'- 0"x6'- 8", 1 3/8"
2'- 8"x6'- 8", 1 1/8"	3'- 0"x7'- 0", 1 3/8"
2'- 0"x6'- 0", 1 3/8"	2'- 6"x6'- 6", 1 3/4"
2'- 0"x6'- 6", 1 3/8"	2'- 6"x6'- 8", 1 3/4"
2'- 0"x6'- 8", 1 3/8"	2'- 6"x7'- 0", 1 3/4"
2'- 0"x7'- 0", 1 3/8"	2'- 8"x6'- 8", 1 3/4"
2'- 4"x6'- 6", 1 3/8"	2'- 8"x7'- 0", 1 3/4"
2'- 4"x6'- 8", 1 3/8"	2'-10"x6'-10", 1 3/4"
2'- 6"x6'- 6", 1 3/8"	3'- 0"x6'- 8", 1 3/4"
2'- 6"x6'- 8", 1 3/8"	3'- 0"x7'- 0", 1 3/4"



FIVE CROSS PANEL

Specifications

STOCK VENEERED DOORS

NOTE: *Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE: *Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.*

(1) MATERIAL AND CONSTRUCTION

(1a) GENERAL—All doors shall be of size and design as called for on plans *(and details)* constructed in accordance with the standard details of the National Door Manufacturers Association, Inc.

(1a1) All doors shall be constructed of thoroughly seasoned material redried by the door manufacturer before assembly to a proper, uniform moisture content suitable for the climate in which they are to be used.

(1b) GLUE AND GLUING—Glue for all fabrication shall be high grade vegetable glue or water resisting casein glue equally distributed over the surfaces and applied under pressure before "chilling."

(1c) CORES—All cores shall be constructed of soft pine blocks not over 2 inches wide on the face with end joints in adjacent rows well staggered.

(1c1) Outer exposed edges of all stiles and rails shall be finished with a ¾ inch thick strip of same wood as face veneer wood.

(1c2) Cores, after gluing, shall be planed smooth to a uniform thickness.

(1d) SANDING—Faces of all doors shall be smoothly machine sanded with "00" sandpaper.

(2) INTERIOR STILE AND RAIL DOORS

(2a) All cores for stiles and rails shall be finished on panel edges with a ¾ inch thick strip of face veneer wood.

(2b) Stiles and rails shall have *(specify type)* solid sticking.

(2c) Furnish glass stops *(and muntins)* of face veneer wood.

(2d) Face veneers for stiles and rails shall be of *(specify wood)* ⅛ inch thick before sanding.

(2e) Panels shall be of *(three) (five)* ply veneer faced with *(specify wood)* veneer of standard commercial thickness. Grains of the various plies shall alternate in direction.

(2f) All stiles and rails shall be assembled with hard wood dowels not less than ½ inch in diameter by 5 inches long. On rails 6 inches or less in width, there shall be two dowels with one additional dowel for each additional 3 inches in width or fraction thereof. All joints shall be well cope fitted and all moulded edges smoothly machined.

(3) INTERIOR FLUSH VENEER DOORS

(3a) At the option of the manufacturer, the core shall be constructed of vertical blocks not over 2 inches wide on the face, well glued together with joints staggered and surrounded with ¾ inch hardwood edge strip on all four edges; or shall be constructed of stile, rail and panel units, each unit made up entirely of blocks with ¾ inch edge strips on the exposed edges of stiles and rails.

(3b) In lieu of ¾ inch hardwood top and bottom edge strips, the tops and bottoms of the doors shall be given two coats of paint or varnish before leaving the factory.

(3c) Horizontal crossbanding shall be $\frac{1}{16}$ inch thick or thicker before sanding. Face veneers shall be ($\frac{1}{16}$) (⅛) inch thick before sanding *(specify wood)*.

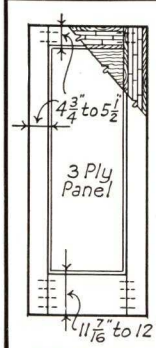
(4) EXTERIOR DOORS

Exterior *(stile and rail) (flush veneer)* doors shall be made in accordance with specifications for interior doors except that all glue, throughout, shall be water resisting casein glue and *(stile and rail)* face veneers shall be ¼ inch thick, before sanding.

SHORT FORM

All stock *(stile and rail) (flush veneer)* doors shall be made of sizes and design as called for on plans *(and details)* in accordance with the standard specifications of the National Door Manufacturers Association, Inc. as filed in Sweet's Catalog File—Architectural.

CONSTRUCTION DETAILS



ONE PANEL

INTERIOR DOORS
VENEERED CONSTRUCTION

ONE PANEL VENEERED DESIGN

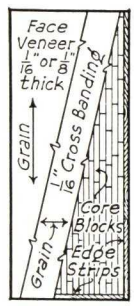
Manufactured in any hardwood with veneered flat panels. Moulded C&B, B&C, or Ovolo Sticking. Face veneers on stiles and rails ⅛" thick before sanding. Core blocks not to exceed 2" in width. Standard thickness of doors $1\frac{5}{16}$" or $1\frac{11}{16}$". Similar construction used for veneered two panel and six panel doors.

STANDARD SIZES FOR VENEERED AND FLUSH TYPE DOORS

2'-4" x 6'-8" 2'-6" x 6'-6" 2'-8" x 6'-8" 3'-0" x 6'-8"
2'-4" x 7'-0" 2'-6" x 6'-8" 2'-8" x 7'-0" 3'-0" x 7'-0"
2'-6" x 7'-0"

FLUSH TYPE DESIGN

Manufactured with softwood built-up core, horizontal crossbanding $\frac{1}{16}$" thick, with face veneer and edge strips of any hardwood. Face veneers ⅛" thick before sanding. Standard thickness of doors $1\frac{5}{16}$" or $1\frac{11}{16}$". Permissible to use face veneer $\frac{1}{16}$" thick, also ⅛" crossbanding. Optional with manufacturer to furnish core made as shown or made up of core block stile, rail and panel units doweled together to make a flush core.



FLUSH TYPE

GRADING RULES
PINE SASH DOORS and FRAMES

GENERAL INSTRUCTIONS

The purpose of grades is to maintain a standard or measure of value among factories manufacturing similar products which will permit the buyer to obtain products of approximately the same utility regardless of the factory from which they are shipped. No hard and fast rules can be made without some latitude in the matter of application, and practical common sense must govern to some extent. A shipment of any grade must consist of a fair proportion of the better and the poorer types and, as a whole, be representative of the grade.

Grades as described under this head are applicable to Pine products only and should not be confused with grading rules applying to other woods.

PINE FRAMES

GRADE "A"—Material in Grade "A" Frames shall be practically free from defects in all exposed parts. White sap, light brown water stain, and light red kiln burn are not considered defects. Parts that are not exposed when Frame is in place may contain stain, pitch streaks, sound knots, or any other sound defects that will not affect the strength of the Frame.

Workmanship must be good.

PINE HOUSE DOORS

NO. 1 QUALITY—Material in No. 1 doors shall be practically free from defects. White sap, light brown water stain, and light red kiln burn are not considered defects. Also one (1) carefully repaired pitch seam not over 2½ inches in length is permissible in each stile or bottom rail.

Workmanship must be good.

LAMINATED PANEL DOORS—Panels shall have two good faces practically free from defects and may contain not to exceed 25% pieced faces. Inconspicuous patches shall be admitted.

NO. 2 QUALITY—Material in No. 2 doors may contain light blue stain, medium brown water stain, or medium red kiln burn showing on not to exceed 50% of the area of any piece. Also pitch streaks, checks, pitch pockets, if carefully slivered, tight sound knots not to exceed ⅝ inch in diameter, and other defects, not one of which shall be more serious in nature than the defects already enumerated. Each stile must contain one (1) such defect, but no piece shall contain more than two (2), and no door shall contain more than eight (8) such defects on each side.

Plugs admitted but regarded as defects.

Slight defects in workmanship admitted.

LAMINATED PANEL DOORS—Panels may contain slight stains and discolorations. Any amount of unmatched pieced faces permissible. Inconspicuous patches shall be admitted.

NO. 3 QUALITY—Material for No. 3 doors may contain all blue stain, brown water stain, or red kiln burn; also worm holes, checks, pitch streaks, pitch pockets, fine shake, tight sound knots not to exceed 1½ inches in diameter, and other defects, not one of which shall be more serious in nature than defects already enumerated. Each stile must contain two (2) such defects, but no piece shall contain more than four (4) and no door shall contain more than twenty (20) such defects on each side.

Plugs admitted but regarded as defects.

Slight defects in workmanship admitted.

LAMINATED PANEL DOORS—Panels may contain medium to heavy stains and discolorations, also pin knots, and other equivalent defects. Any amount of unmatched pieced faces and any number of patches permissible.

PINE GARAGE DOORS

Pine Garage Doors shall be graded according to Pine House Door rules as shown above except mill-run grade which may contain blue stain, brown water stain, or red kiln burn, checks, pitch streaks, pitch pockets, fine shake, tight sound knots not to exceed 2 inches in diameter and other defects, none of which shall be more serious in nature than defects already enumerated.

PINE OPEN SASH AND WINDOWS

Material in No. 1 Sash and Windows shall be practically free from defects. White sap, light brown water stain, and light red kiln burn are not considered defects.

Workmanship must be good.

VENEERED DOOR GUARANTEE

Veneered doors produced by members of the National Door Manufacturers Ass'n, Inc. are guaranteed by the manufacturer to be of good material and workmanship, free from defects which render them unserviceable or unfit for the use for which they are intended. (A warp or twist of not to exceed ¼ inch shall not be considered a defect in a veneered Flush Door.) Natural variations in the color or texture of the wood are not to be considered as defects.

Veneered doors must be accorded reasonable treatment by the purchaser and must not be stored in damp warehouses or placed in moist or freshly plastered buildings, or subjected to abnormal heat or dryness, as manufacturer will not assume responsibility for defects resulting from these causes. Top and bottom edges of all doors must be thoroughly painted or varnished to prevent absorption of moisture.

Doors must be inspected upon arrival and all claims or complaints must be filed before painter's finish is applied.

The manufacturer agrees to repair or replace in the white, without charge, any door found to be defective within the meaning of this guarantee.

ROSTER of MEMBERS

• • •

NATIONAL DOOR MANUFACTURERS ASSOCIATION, INC.

CHICAGO, ILL. • • • WASHINGTON, D. C.

Andersen Corporation	Bayport, Minn.
Anson & Gilkey Company . .	Merrill, Wis.
Biles-Coleman Lumber Company	Omak, Wash.
Carr, Ryder & Adams Company .	Dubuque, Iowa
Crowley Millwork Company . .	Spokane, Wash.
Curtis Brothers & Company . .	Clinton, Iowa
Curtis & Yale Company . . .	Wausau, Wis.
Deer Park Lumber Company . .	Deer Park, Wash.
Farley & Loetscher Manufacturing Company	Dubuque, Iowa
Hardwood Products Corporation	Neenah, Wis.
Huttig Manufacturing Company	Muscatine, Iowa
Ideal Company	Waco, Tex.
Kinzua Pine Mills	Kinzua, Ore.
The Long-Bell Lumber Company	Kansas City, Mo.
The R. McMillen Company . .	Oshkosh, Wis.
Missoula White Pine Sash Company	Missoula, Mont.
Morgan Company	Oshkosh, Wis.
Northern Sash & Door Company	Hawkins, Wis.
Roach & Musser Company . .	Muscatine, Iowa
Rock Island Sash & Door Works	Rock Island, Ill.
Roddis Lumber and Veneer Company	Marshfield, Wis.
Spokane Pine Products Company	Spokane, Wash.
Western Pine Manufacturing Co., Ltd.	Spokane, Wash.
White Pine Sash Company . .	Spokane, Wash.

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WHITE PINE SASH COMPANY

Window and Door Frames and Full Vision Automatic Awning Type Windows; Normandy Casements

SPOKANE, WASH. MISSOULA, MONT.

DISTRIBUTING WAREHOUSES: NEW YORK, N. Y. and CHICAGO, ILL.

JOBBERS IN PRINCIPAL CITIES

PINE CRAFT WEATHER-PROOF FRAMES

Products

PINE CRAFT WEATHER-PROOF FRAMES.
NORMANDY CASEMENTS.
DALMO-PINE CRAFT AWNING TYPE WINDOWS.
PINE CRAFT FITTED SASH.
PERMATOL TREATED FRAMES and SASH.
SCREEN DOORS and WINDOWS.
PINE INTERIOR TRIM.
PINE MILLWORK.

PINE CRAFT
WEATHER PROOF
PATENTED
WHITE PINE SASH CO.
SPOKANE

Materials Used:

Ponderosa Pine (Pinus Ponderosa) and Idaho White Pine (Pinus Monticola).

Guaranteed Frames and Sash

The Pine Craft Permatol treatment protects wood against attack by rot or termites. We guarantee (in writing) against failure from rot or insect attack for a period of twenty-five years, any sash or frame protected by the Pine Craft Permatol treatment.

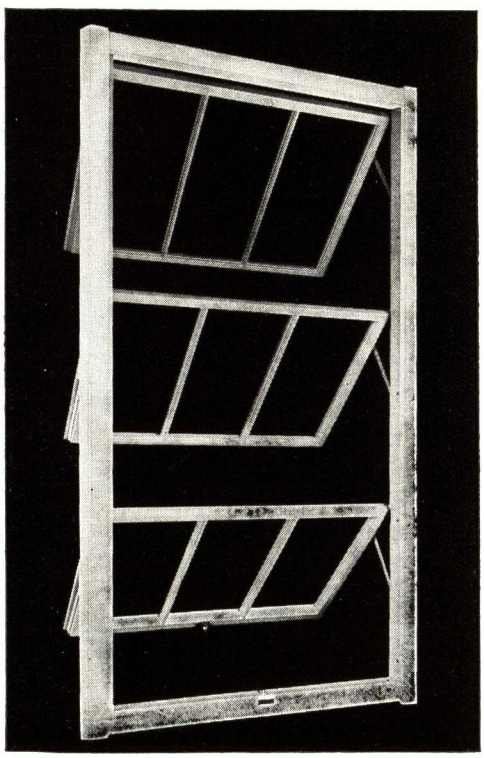
REPRESENTATIVE INSTALLATIONS

Parklawn Housing Project (Frames, Sash, Trim and other Millwork).
Colonial Village (Frames).
Merchandise Mart, Chicago (Sash).
San Francisco Federal Building (Frames and Sash).
Dutchland Farms (Normandy Casements).
Grand Coulee Dam (Complete houses).

In addition to the above, through our jobbers we have furnished the sash and frames for countless residences, apartments, schools, etc., comprising more than 4½ million frames and over 17 million windows, all contributing to the knowledge and experience necessary for quantity production and quality workmanship.

DALMO-PINE CRAFT AUTOMATIC MULTIPLE-OPERATING WINDOW

Full-vision Awning-type Window for Schools, Hospitals, etc.



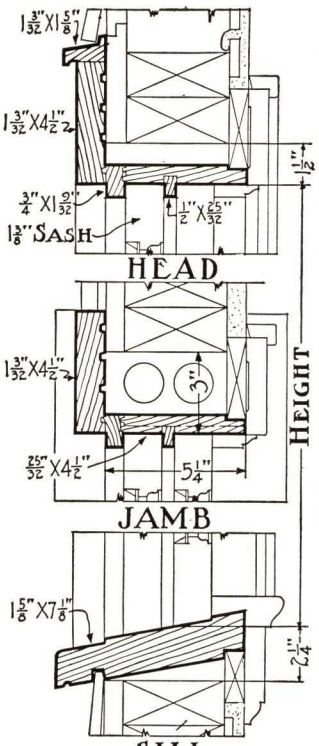
These windows permit daylight illumination without glare, and natural ventilation without drafts. May be furnished one-, two- or three-sash high, all sash being automatically controlled by operation of the bottom sash. Opened to a predetermined position, the bottom sash automatically disconnects for independent operation, leaving the upper vents in fixed open position.

Re-connection of the lower sash is also automatic, requiring only that it be opened to the position occupied by the upper vents. As there are no side clutches or locks, the entire operation is accomplished with one hand. Window poles are eliminated.

Sawyer Design windows have the bottom sash opening down and in, the top sash opening up and out, in unison. The center sash can then be manually adjusted to any desired position. This arrangement deflects air currents toward the ceiling and permits maximum ventilation.

These windows are furnished as complete units, comprising frame, sash and operating hardware. Factory assembled, they are ready for installation and glazing. Half-size drawings will be furnished on request. Automatic type illustrated.

WEATHER-PROOF WINDOW AND DOOR FRAMES

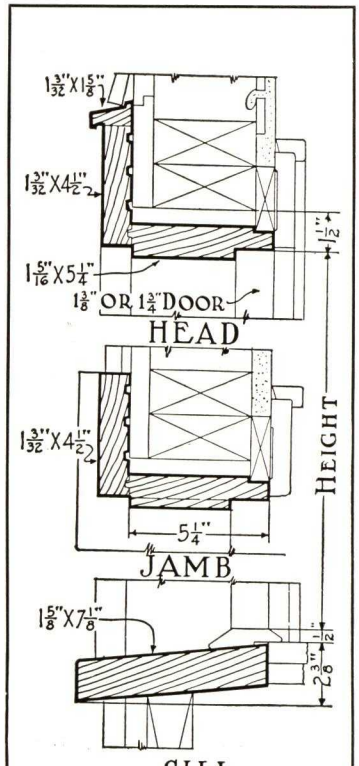


Typical Frame House
Window Frame
No. 711

On this page are shown typical stock window and door frames for frame, brick veneer and solid brick wall construction. Variations of these basic patterns are used in different parts of the country, our jobbers carrying the proper frames for the territory they serve. Where practicable, stock frames should be specified, as they cost less than special patterns and are more quickly available. Our facilities, however, include equipment for the manufacture of any type window, door or cellar frame.

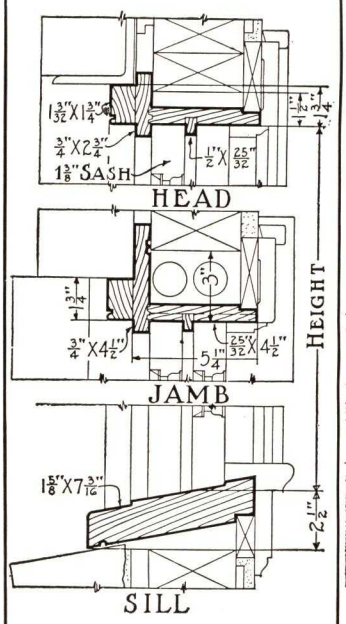
WEDGE JOINT CONSTRUCTION

The outstanding success of our Pine Craft Weather-Proof Frames is due in no small part to the simplicity of construction. The various parts of the frame are united by wedge-shaped tongues and grooves, milled to exact size and uniting the various parts with a windproof and dustproof joint. These joints also line up the exterior casings. The side casings are parallel and the head casing is parallel with the sill, insuring perfect fitting of screens and storm sash.

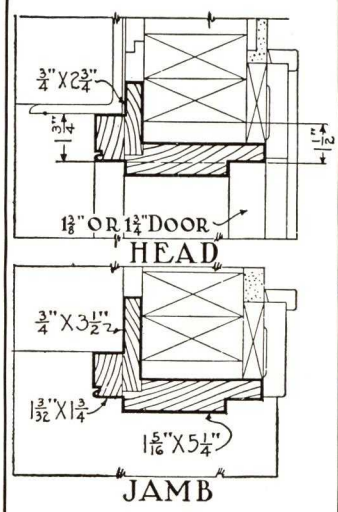


Typical Frame House
Door Frame
No. 750

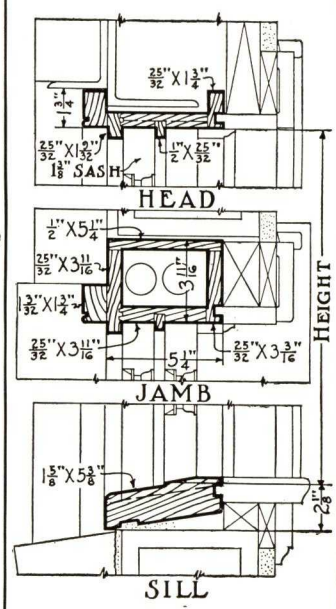
Patent No. 1790428



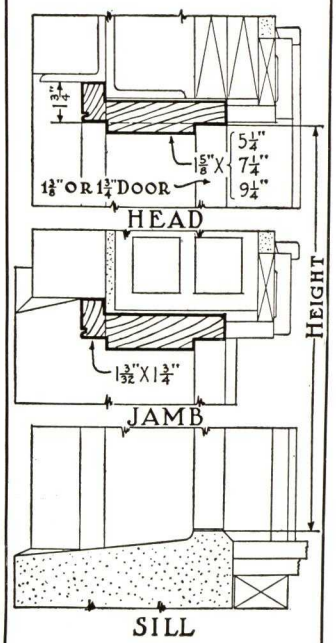
Typical Brick Veneer
Window Frame
No. 725



Typical Brick Veneer
Door Frame
No. 761



Typical Brick Wall or "Box"
Frame for Residences
No. 730



Typical Brick Wall Door
Frame for Residences
No. 765

NORMANDY CASEMENTS
For Residences, Apartments, etc.

Pine Craft Normandy Casements offer many exclusive features, such as

No underscreen operators
No hinges on outside
No mullions in multiple units
No sliding hardware
Sash and screen cleaned from inside

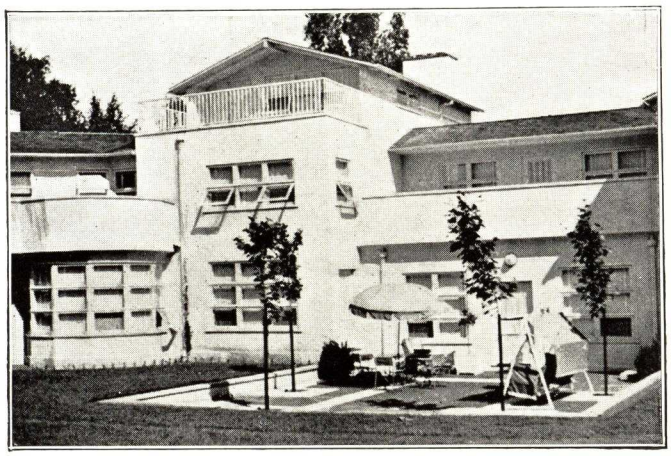
Inside screens open and close the sash. Sash and screen both swing out without interfering with curtains and are cleaned from inside the building without detaching.

Complete Units—Normandy Casements are sold as completely assembled units, including frame, sash, (glazed or unglazed), operating hardware and wood frame screens. Storm sash inserts are optional, creating an effective dead air space 2½ in. wide between the sash and the storm sash.

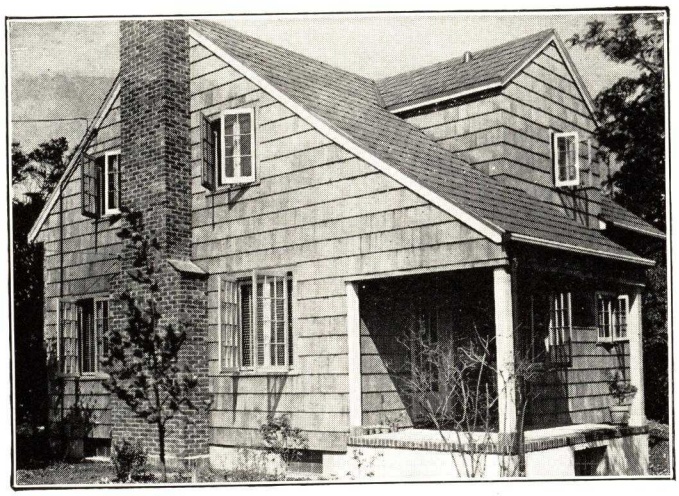
No Mullions—Type A multiple units have bumper bars between screens. Each sash individually controlled. No mullion shows on outside. Type B multiple units have no bumper bars or mullions. Locking the extreme right or left-hand sash also locks all others. Sliding screens are used on this type. On Type B multiple units all sash must swing same way.

Advantages—The advantages offered by Normandy Casements are many and definite. The sash are factory fitted with proper clearances to prevent binding or sticking in any weather. These clearances are controlled and made weathertight by fine quality spring bronze weatherstrip, applied at the factory. This strip compensates for any shrinkage or swelling of the sash.

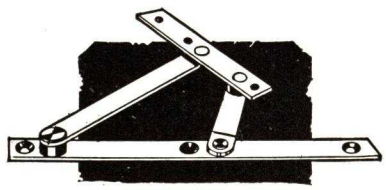
The motivating force is applied directly to the center of the sash stile, instead of to the bottom rail as with underscreen operated sash. Thus there is no tendency to warp or distort the sash when opening or closing. The sash are held firmly in place in any position and will not rattle.



Residence of George Pope, Jr., Hillsborough, Cal.
Awning Type Casements, two and three-sash high help give this residence a distinctive appearance



Newly Completed Residence of Thomas Moore, Union, N. J.
Normandy Casements used throughout. Note that these casements permit the use of Venetian blinds



Rustproof Sash and Screen Adjuster
All motion confined to four self-adjusting brass pivots

Sash and Screen Adjusters

These sash and screen adjusters have been used since 1927. They are specified by Federal and State departments, and also by prominent architects on private homes, apartment houses, etc. Locking handles are solid bronze or brass, in standard finishes.

Wide Range of Sizes

Normandy Casements are made in a wider range of stock sizes than any similar windows. By the use of multiple units almost any desired width can be obtained and there are five sizes of stock heights. Larger units can also be furnished where required, up to three feet wide by seven feet high. Stock sizes are listed below.

Stock Sizes

Sash Widths—1 ft. 4 in., 1 ft. 8 in., 2 lights wide; 2 ft. 0 in., 2 ft. 4 in., 3 lights wide.
Sash Heights—3 ft. 0 in., 3 ft. 6 in., 3 lights high; 4 ft. 0 in., 4 ft. 6 in., 5 ft., 4 lights high.

Awning Type Windows

Awning type windows for residences or apartments offer new possibilities to architects. Furnished one, two or three-sash high. Our Normandy type hardware permits inside screens. Installation and operation are the same as for casements. One or more units may be left unscreened if desired.

Roller screens may be used with Normandy Casements.

MEMORANDA

HARDWARE, DOOR AND WINDOW EQUIPMENT
- SECTION - 16

Section Number 1 / 5 Catalog Number

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Chamberlain Metal Weather Strip Co. Inc. 16/116
Lite—Seal 16/116
Universal Roller Screen Co. 16/68

Window—Noise Excluding

Davies Air Filter Corp. 26/64
Filteraire 26/64
Silentaire 15/22
Truscon Steel Co. 15/22

WASHERS

Heel

See 16/92

WEATHERSTRIPS

Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.

Accurate Metal Weather Strip Co. 16/72
Adjusto-Seal 16/83
All-Metal 16/77
Allmetal Weatherstrip Co. 16/71
Andersen Corp. 15/24
Athey Co. 16/73
Barland Weatherstrip Material Co. 16/74
Bed-Dor-Seals 16/84
Burrowes Corp. 16/55
Ceco Steel Products Corp. 3/8
Chamberlin Metal Weather Strip Co., Inc. 16/75
Craig 16/79
Dennis, W. J., & Co. 16/76
Flexo-Seal 16/83
Gold-Seal 16/83
Higgin Products, Inc. 16/77
Kane Mfg. Co. 16/62
Knight-Triple-Interlocking 16/74
Leakproof 16/82
Malta Mfg. Co. 15/27
Master Metal Strip Service 16/78
Michaels Art Bronze Co. 13/34
Monarch Metal Weatherstrip Corp. 16/80
N. S. W. Co. 15/28
Niagara Metal Weather Strip Co. 16/79
Protex Weatherstrip Mfg. Co. 16/81
Pyramid Metals Co. 11/47
Reese Metal Weather Strip Co. 16/83
Rotproof Sill 16/82
Sager Metal Weatherstrip Co. 16/82
Slide-Easy 16/78
Slide Lock 3/8
Spanjers, A. J., Co. 16/84
Unique Balance Co., Inc. 16/5

(Continued in Next Column)

WEATHERSTRIPS—Cont.

Metal — for Double Hinge Windows, Casements, Doors, Transoms, etc.—Cont.

(Continued from Previous Column)

Vatafend 16/80
Wing Flex 16/76
Specifications 15/28; 16/72; 16/75; 16/78; 16/81; 16/83

Threshold Combination

(See also Door — Bottoms — Weatherstrip)

Allmetal Weatherstrip Co. 16/71
Accurate Metal Weather Strip Co. 16/72
Barland Weatherstrip Material Co. 16/74
Beauty-Tread 16/74
Chamberlin Metal Weather Strip Co., Inc. 16/75
Clark, Peter, Inc. 21/53
Higgin Products, Inc. 16/77
Master Metal Strip Service 16/78
Monarch Metal Weatherstrip Corp. 16/80
Niagara Metal Weather Strip Co. 16/79
Protex Weatherstrip Mfg. Co. 16/81
Reese Metal Weather Strip Co. 16/83
Sager Metal Weatherstrip Co. 16/82
Spanjers, A. J., Co. 16/84
Super-Seal 16/74
Vatafend 16/80
See also 21/55
Specifications 16/72; 16/75

WINDOW

Blinds

See Blinds; Shades

Casement Hardware for

See Hardware—Casement Window

Cleaners' Safety Devices

Acker & Man, Inc. 16/12
Ackerman 16/12
Morewood 16/37

Controls

See Hardware—Window

Fascias

See Fascias—Window

Fixtures—Balances

See Windows—Reversible

Fixtures—Reversible

See Windows—Reversible

Opening Devices

See Operators—Sash

Poles

Austral Sales Corp. 16/36

WINDOW—Cont.

Sash Balances

See Balances—Sash

Sash Chain

See Chain—Sash

Sash Cord

See Cord—Sash

Screens

See Screens—Insect

Shade Cloth

See Shades—Window—Cloth or Fabric for

Shade Rollers

See Shades—Window—Rollers for

Shades

See Shades

Shades—Ventilating

See Shades—Window, Skylight, etc—Ventilating; Blinds—Venetian

Strips

See Weatherstrips—Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.

WINDOWS

Casement—Hardware for

See Hardware—Casement Window

Casement Screened

See Screens—Insect

Reversible—Double Hung—Fixtures for

Williams Pivot Sash Co. 16/38
Specifications 16/38

Reversible—Plank Frame—Fixtures for

Austral Sales Corp. 16/36
Williams Pivot Sash Co. 16/38
Specifications 16/36; 16/38

Reversible—Side or Vertical Pivoted—Fixtures for

Williams Pivot Sash Co. 16/38
Specifications 16/38

Reversible—Sliding Pivot—Fixtures for

Williams Pivot Sash Co. 16/38

WIRE

Cloth

See Screen Cloth

Reels

See 16/92

THE CALDWELL MANUFACTURING CO.

Caldwell Spring Sash Balances for New or Remodeled Buildings

MAIN OFFICE AND FACTORY
56 Industrial Street, ROCHESTER, N. Y.

OVER FIFTY YEARS OF SATISFACTORY SERVICE

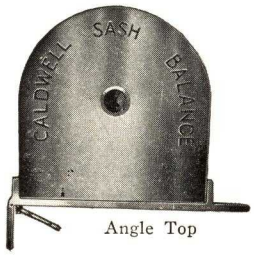
Side

What the Caldwell Sash Balances Are

These sash balances are compact, efficient, easily installed devices for counterbalancing the sash of double-hung windows. They eliminate entirely box frames, weight pockets, cord and sash weights with their many undesirable features. The added durability and long life of Caldwell Sash Balances is universally recognized.

Types and Sizes

Caldwell Sash Balances are furnished in four mortise sizes ranging from 4 to 105 lbs. per sash in either head or side jamb patterns greatly simplifying mill specifications. (See table of sizes.)



Angle Top

Caldwell Spring Sash Balances

More economical than weights or cords.

They eliminate entirely box frames, weights, cords and pulleys.

They are troubleproof, do away with frequent cord replacement. They require no care or oiling.

They permit use of very narrow mullions and trim, adding to the design and appearance of the window.

They eliminate infiltration of air around the box frame and through weight pockets.

They affect considerable saving in lumber and labor in the construction of frames.

They take only one-third the time of installation required by sash weights.

They affect an important saving in freight, cartage and handling. Labor costs reduced to the minimum. Tonnage reduced over 75%.

A perfect counterbalance for the life of the building.

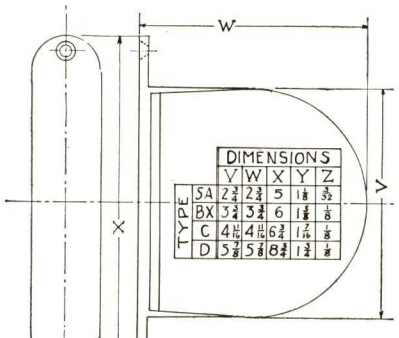
Construction Principles

The Caldwell Sash Balance consists of a compact, rigid cast iron case which contains a revolving drum operated by an enclosed finely tempered steel spring. Over this drum is wound a suspension tape of satin finish cold rolled steel or special bronze alloy. One end of this tape is equipped with a steel loop for attaching to the side of the sash.

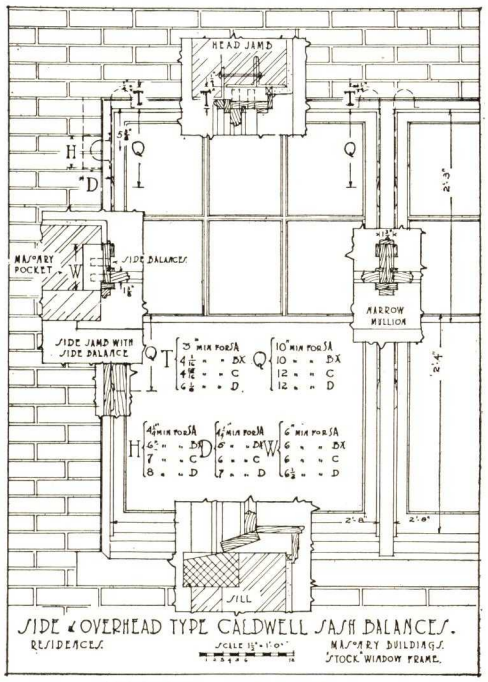
All balances finished in special rust-resisting flexible metallic lacquer.

Adjustable

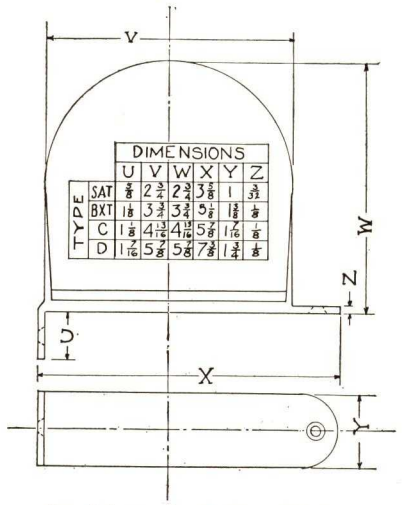
Variations in weight of sash can be compensated for by means of adjusting screws in face plate without removing the balance from the sash.



Side Balance



Caldwell Spring Sash Balance



Top Balance for Mullion Windows

Guaranteed for Life of Building

When weights of each sash are accurately given and installation is made according to our instructions, Caldwell Spring Sash Balances are guaranteed to counterbalance the sash perfectly during the life of the building. We will replace or repair at our factory, free of charge, any imperfect sash balances.

Specification (Millwork Section)

All double hung windows shall be equipped with sash balances, as manufactured by The Caldwell Manufacturing Co. of Rochester, N. Y. The stiles shall be mortised at the mill in accordance with the templates furnished free by the manufacturer.

Carpentry Section—This contractor shall provide and install sash balances, as manufactured by The Caldwell Manufacturing Co., of Rochester, N. Y., on all double hung windows.

All sash shall be scale weighed and the correct size balances shall be provided in each case as required in the manufacturer's guarantee.

CAPACITY OF CALDWELL SASH BALANCES

Type SA	Maximum size of sash 12 0 sq. in. †	Weight of sash 23 l s.	Length of tape 4 l ins.
Type BX	Maximum size of sash 25 0 sq. in. †	Weight of sash 40 lbs.	Length of tape 54 ins.*
Type C	Maximum size of sash 3844 sq. in. †	Weight of sash 60 lbs.	Length of tape 5 0 ins.*
Type D	Maximum size of sash (variable) †	Weight of sash 105 lbs.	Length of tape 50 ins.*

*Can often be increased. Write us giving details.

†D.S. Glass: 1¾-in. sash.

Write Us About Special Installations and Extra Long Tapes

DUPLEX INCORPORATED

Manufacturers of Duplex Flat, Adjustable Sash Balances for Wood and Metal Double Hung Windows

634 North La Pere Street
LOS ANGELES, CALIF.

Consult telephone directory for Local Representative or write factory
For Sale by All Reliable Hardware and Lumber Dealers

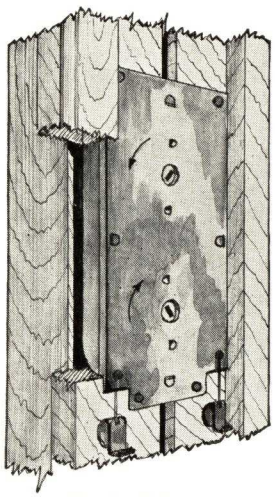
Product

DUPLEX ADJUSTABLE SASH BALANCE for double hung windows—requiring no boring, pulleys, sash cord or weights. Eliminating the weight pocket, and entirely contained in the thickness of the pulley stile. Can be used without casings where bullnose plaster returns are desired. Extremely narrow mullions may be used.

One Duplex Balance will hang both the upper and lower sash of the ordinary sized double hung window, and provide perfect balance, free from rattling, bucking or creeping.

Types and Sizes

Duplex Balance is made in only one type and but four sizes, yet it will handle both the upper and lower sash of all double hung windows ranging in weight from 4 to 48 lbs. for each sash. This is accomplished by the use of one balance on one side or one on each side, as the weight and width of window may require.



Duplex Balance

Advantages

Provides a smoothly operating, silent window which can be lifted or lowered from any point without rattle, chatter or jangle of weights. Accomplishes savings in millwork, labor and handling charges. Installed in minimum amount of time and can be replaced by removing one stop and one parting bead. Provides airtight construction at the pulley stile. Lower first cost and minimum upkeep. Duplex Balances are guaranteed.

Tests

Laboratory tests of Duplex Balances show an average service of from 25 to 30 years. Practical tests indicate that it will outlive the average building. One and one-half million Duplex Balances are now installed in Pacific Coast buildings of all types. They are recommended by leading architects, builders and dealers.

Construction

The Duplex is constructed of the best materials throughout. Each Duplex Balance consists of two high grade clock springs, steel drums, ratchets, axles and a steel carrying wire, housed in a heavy plastertight steel case. Springs have been tested to 100,000 operations without fatigue or breaking. The music wire used is capable of carrying a load ten times that of the window. It is rust-resisting.

The self-adjusting glider hook, a feature of the Duplex Balance, provides smooth operation of the window and freedom from rattling, bucking or chatter.

The Duplex is plastertight, and all working parts are enclosed and permanently lubricated. Though rugged in construction Duplex Balance is light in weight. In 500 windows using 48 lbs. per window of sash weights, it would require 24,000 lbs. of weights. Duplex Balances to handle these same 500 windows would weigh but 2500 lbs.

Weatherstripping

Duplex Adjustable Balance installation permits the use of your favorite weatherstripping because music wire cables are located on opposite edge of sash from that occupied by strip.

Finish

Standard Duplex Balance is finished tan, rustproof lacquer. As the Duplex Balance is mostly concealed when installed, special finish is not required.

Architects' Specifications

Specify: All double hung windows in the building to be hung on Duplex Flat Adjustable Sash Balances of the proper size and number required according to the schedule of sizes and directions of the manufacturer.

Guarantee

The manufacturer guarantees the Duplex Balance against breakage when properly installed and used in accordance with the manufacturer's schedule of sizes and directions. Balances proving defective or broken under above conditions may be returned to our factory and we will replace them free of charge.

SCHEDULE OF SIZES

Weight of one sash, lb.	Max. height each sash, in.	Max. width each sash, in.	Balance required
Single Installation (One Duplex Balance)			
4 to 8	36	36	1—No. 1
8 to 12	36	36	1—No. 2
12 to 18	42	42	1—No. 4
18 to 24	42	42	1—No. 5
Double Installation (One Each Side)			
10 to 16	36	No limit	2—No. 1
18 to 24	36	No limit	2—No. 2
26 to 36	42	No limit	2—No. 4
38 to 48	42	No limit	2—No. 5

Nos. 1 and 2 balances require depth in pulley stile of ¾ in.; Nos. 4 and 5 require depth of 1⅜ in.

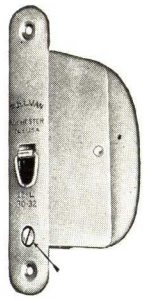
How to Order

Specify quantity of openings and weight of sash, giving weight of one sash. If upper and lower sash vary, give weight of each.

PULLMAN MANUFACTURING CORPORATION

Manufacturers of Unit Sash Balances

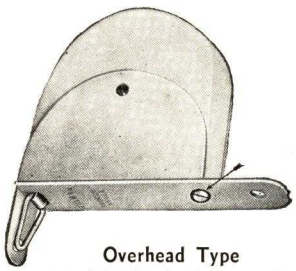
ROCHESTER, N. Y.



Adjusting screw

NEW PULLMAN ADJUSTABLE SASH BALANCE

The most radical and important improvement in Spring Sash Balances in forty years. An ordinary screwdriver makes the adjustment without removing the Balance or sash. Re-adjustment is possible at any time to permanently maintain a perfectly balanced window. The tension of the inside coiled spring is actually changed, insuring smooth, easy and quiet operation impossible with any other type of adjustment. All pressed steel construction—light in weight and non-breakable. All working parts are entirely incased so that no foreign matter can penetrate inside the housing and interfere with free action of the moving parts. No pulleys, weights or cords. Double hung opening completely installed in 10 to 15 minutes.



Overhead Type
Fitted in head of frame for narrow mullions

Side Type Fitted to Jamb

Principle of Construction

The Pullman Balance consists of a pressed steel casing enclosing a steel aluminoy tape, (or, if desired, brass tape is furnished without extra charge), wound on a revolving drum. Inside this drum is a spring of the finest clock steel, uniform in tension and temper.

Units A-A and L-A can be removed or re-installed without disturbing stops, sash or frame by means of our patented Tape Hook device.

Pullman Sash Balances More Economical Than Weights and Cords

Expensive box frames, weights and cords are eliminated. Pockets for reaching weights are unnecessary. Sash are grooved in one operation instead of two. Less lumber and labor required throughout.

The springs are durable, remain uniform in tension and do not require oiling. Installations of 40 years ago are working satisfactorily. Tight construction. No leakage of air as with pulley opening. Saves fuel bills.

Substantial savings are effected in freight and cartage and in handling to and on the job. Labor costs reduced to a minimum. Tonnage reduced 90% as compared with weights and cords.

Finishes

All units have special rust resisting finish. No additional protective coating is necessary. Finishes last indefinitely.

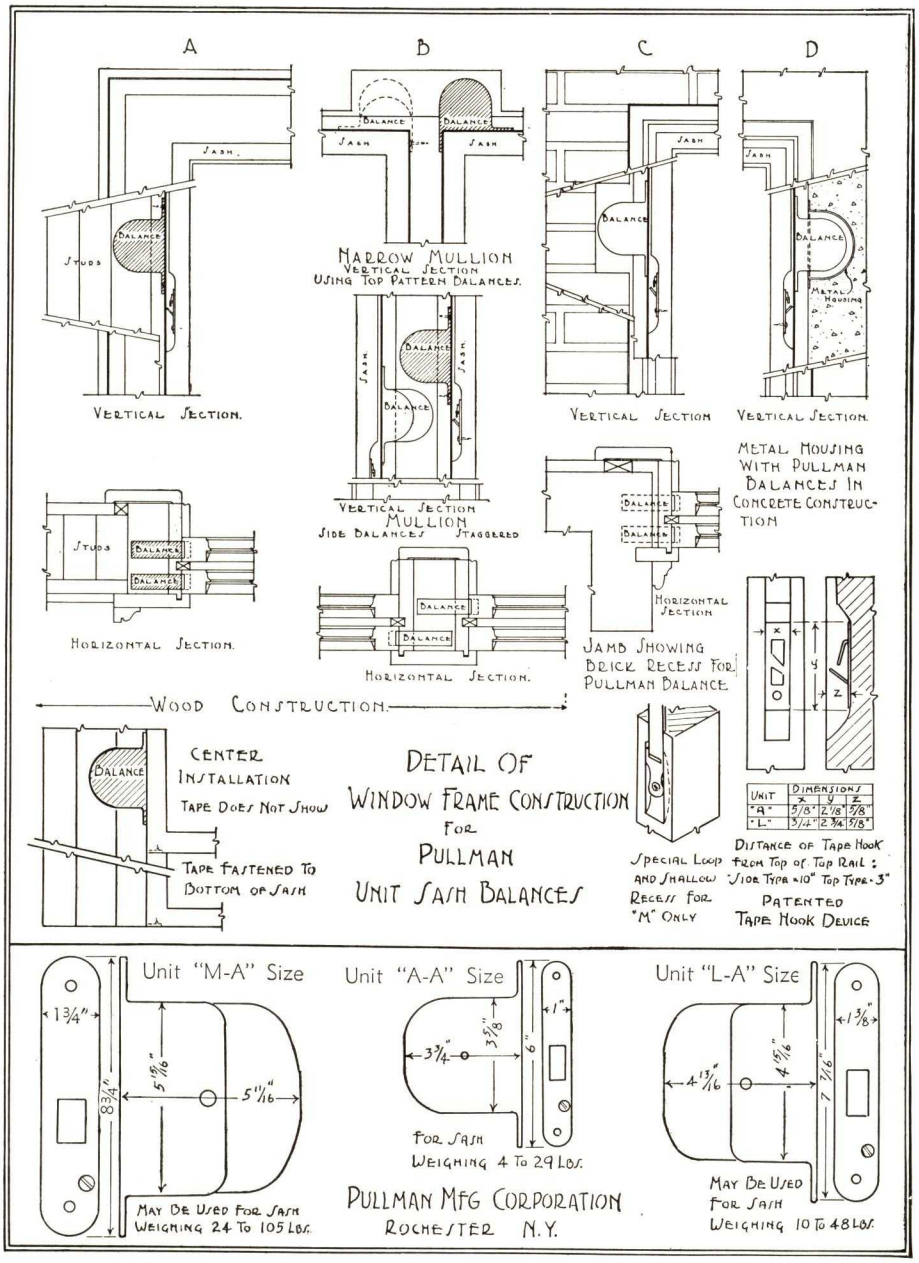
Brass, nickel, bronze or other achitectural finishes can be obtained at a small additional cost. Special finishes should be clearly specified and sample of similarly finished hardware submitted if possible.

Guaranteed for the Life of the Building

When each sash is accurately weighed and our instructions are followed for putting them in, we guarantee our Balances for the life of the building against imperfect workmanship or material and will repair or replace at our factory free of charge, any imperfect or broken Balances.

How to Order

Specify exact weight by scales of each individual sash, listing upper and lower sash separately. The mill usually so marks the sash. Never give weight of entire window. Be sure sufficient space is left for Balances. Use overhead type if no room in side jamb.



Note: The drawings and dimension schedules shown must not be used for mortising purposes. Always send to us for templates (supplied gratis) before the mortising is done. The template is absolutely necessary for correct mortising.

Complete illustrated catalog, "Standard Specifications and Architectural Details," may be had upon request.

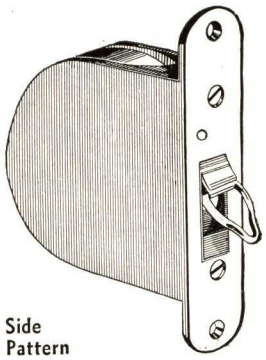
ROCHESTER SASH BALANCE CO., INC.

Manufacturers of Sash Balances for All Purposes

192 Mill Street
ROCHESTER, N. Y.

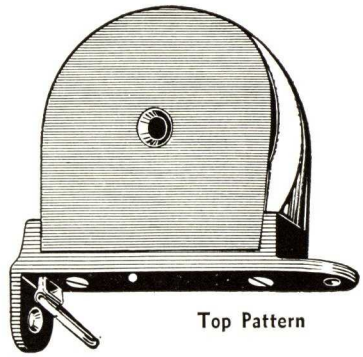
ROCHESTER SASH BALANCES

For New or Old Buildings



Side Pattern

The Rochester Sash Balance is a simple, compact device for perfectly counter-balancing double-hung windows of all kinds, including special types, car, show and wall case, marine (bronze) etc. Their use permits substantial savings in construction—only a plain window frame being required—box frames, sash cord and sash weights are dispensed with. They eliminate cold air infiltration thus contributing to fuel economy and comfort. They add to fire protection. The metal suspending tape cannot burn and there is no danger of sparks from smouldering sash cord falling into weight pockets. With Rochester Sash Balances it is possible to use narrow mullion double-hung windows in rows to produce the casement effect, assuring the maximum amount of light. They are ideal for re-modeling old buildings as it is not necessary to alter either the frame or the sash in any way.



Top Pattern

Features of Rochester Sash Balances

Material—Frame and face of fine gray iron. Spring of best quality steel uniform in temper and tension. Special alloy bronze tape. Drum revolves between two steel plates resulting in a smooth, noiseless working balance.

Adjustable—Moderate variation in weight of sash can be regulated by two adjusting screws in face. For steel windows glazed on the job this feature is *particularly* valuable.

Types—Made in two types:

Side Balance—For installation in the side jamb.

Top Balance—For application in the head stile where narrow mullions are desired.

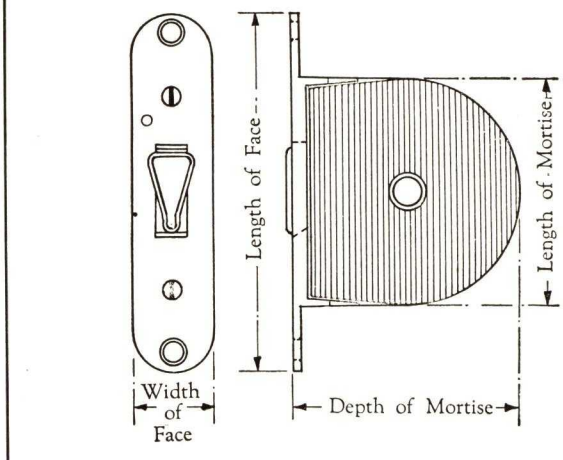
Sizes—Furnished in four mortise sizes for sashes ranging in weight from 4 to 100 lbs.

Finishes—Regular finish is *rust-resisting* Amber Bronze. Electro-plated finishes to match hardware furnished at slight additional cost.

Guarantee

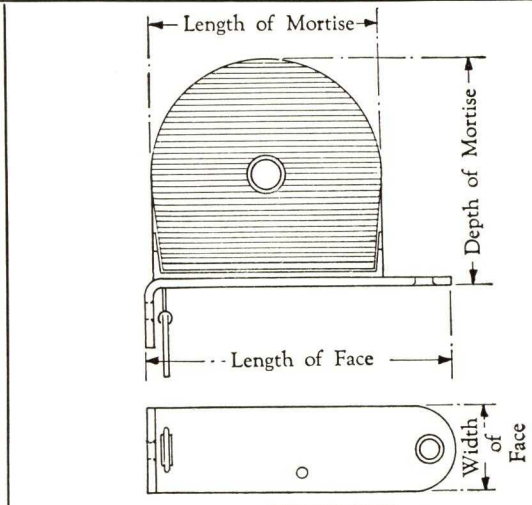
When each sash is accurately weighed and the proper size Balance installed, we guarantee Rochester Sash Balances will counter-balance the sash perfectly during the life of the building.

DIMENSIONS OF ROCHESTER SASH BALANCES



SIDE BALANCE

Group	For sash weighing lbs.	Dimensions			
		Face		Mortise	
		Length	Width	Length	Depth
R A	4 to 16	4½″	1 ″	2½″	2½″
R B	4 to 32	5½″	1¼″	3 9/16″	3 9/16″
R C	23 to 56	6¾″	1 7/16″	4 11/16″	4 11/16″
R D	50 to 100	8 3/4″	1¾″	5 7/8″	5 7/8″



TOP BALANCE

Group	For sash weighing lbs.	Dimensions			
		Face		Mortise	
		Length	Width	Length	Depth
R A	4 to 16	3¼″	1 ″	2½″	2½″
R B	4 to 32	4 7/16″	1¼″	3 9/16″	3 9/16″
R C	23 to 56	5 7/8″	1 7/16″	4 11/16″	4 11/16″
R D	50 to 100	7 3/8″	1¾″	5 7/8″	5 7/8″

Recommended Specification for Rochester Sash Balances

Insert the following in the Millwork portion of the specification:

"All double-hung windows to be counter-balanced with Sash Balances manufactured by ROCHESTER SASH BALANCE CO., INC., of Rochester, N. Y. Frames to be mortised at the mill in accordance with template furnished (free) by manufacturer.

Insert the following in the finish Carpentry specifications:

"The Contractor shall furnish and install Rochester Sash Balances as manufactured by the ROCHESTER SASH BALANCE CO., INC., of Rochester, N. Y., on all double-hung windows. Sash shall not be ploughed for the tape. All sash shall be accurately weighed and the proper size Sash Balance used in each case, as required in the manufacturer's guarantee, which is *"To counter-balance sashes perfectly for the life of the building."*

UNIQUE BALANCE CO., INC.

296 East 134th Street, NEW YORK, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

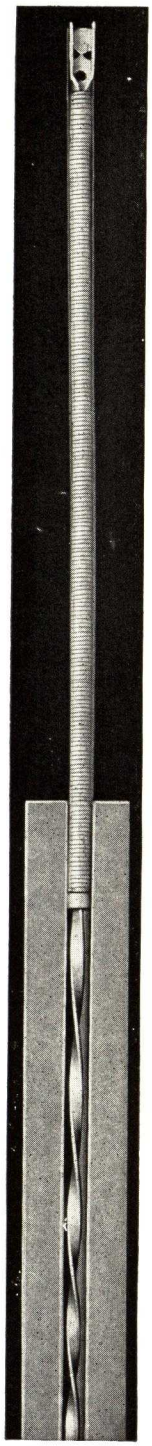
General Description

The Unique Sash Balance is a true counterbalance and not a friction device.

In operation, power is continuously transferred from sash to balance and from balance to sash.

The Unique Sash Balance is entirely self contained. It will operate perfectly with or without a weatherstrip.

The Unique Balance is simplicity itself, there being but one movable part. The balance is constructed of the very best materials. It will last the life of the building.



Type "B"

Flexible casing for 1 to 20-lb. sash or 40-lb. window

Type "B" Balance

Type "B" Balance is recommended for use in sash not exceeding 20 lbs. each of 40 lbs. per window where sash opening does not exceed 5 ft. 10 in. in height.

Type "B" Balance is a complete unit, consisting of a flexible type of high-grade oil-tempered wire having a hanger at top and a slotted fitting at bottom, through which slides a spiral rod. At lower end of spiral is a sash holder. Installation is extremely simple. Hanger at top is fastened to jamb at head of frame. Sash holder at bottom of spiral rod is turned three to six turns (depending on weight of sash) and then screwed to lower rail of sash. Turning bottom sash holder creates lifting power in the flexible tube and this lifting power is equalized by the spiral rod resulting in a perfectly balanced sash at every point.

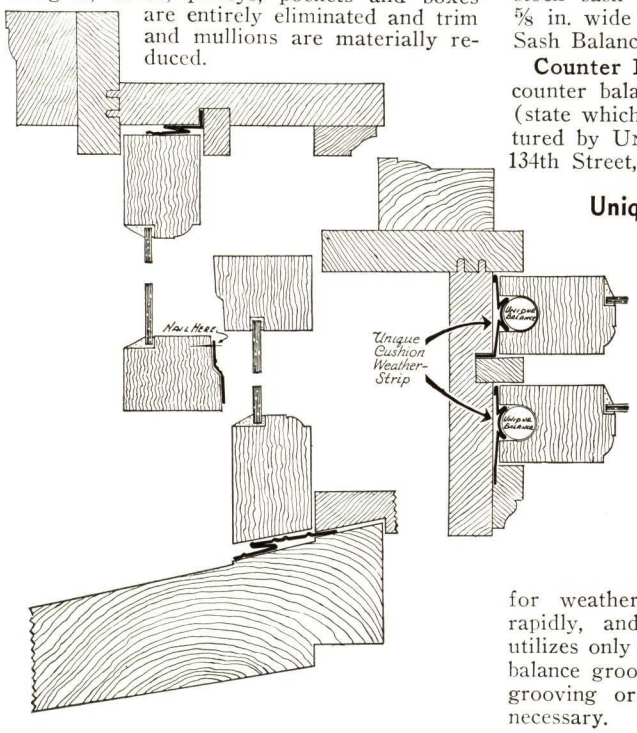
Type "C" Balance

Type "C" Balance is recommended for use in sash not exceeding 30 lbs. each or 60 lbs. per window. It is slightly higher in price than Type "B".

Type "C" Balance is the same in all principles and operating characteristics as Type "B" except that the flexible tube is covered with a rigid metal casing. Installation of Type "C" is the same as Type "B".

Economy

Weights, cords, pulleys, pockets and boxes are entirely eliminated and trim and mullions are materially reduced.



Other Advantages

A perfectly balanced sash at all times.

Narrow mullions, 1½ in. wide.

Narrow trim of any size, from 1 in. up, as there is no weight box to be covered.

Permits a plaster return. No added labor or blocking out for this.

Allows freedom of architectural design and planning.

Weather-tight construction, as there are no pulley holes or weight boxes for cold air to seep through.

Solid construction, as studs or brick set tight against frame jamb.

No calking for weatherproofing.

Balances are installed much faster than weights and cords.

The balance is rust and corrosion-proof. Columbia University proved this by the United States Bureau of Standards salt spray test.

Durable. Proven by Columbia University test No. 2,295. This test equalled sash operation for a period of 137 years.

No cord to break or rot.

No clang or bang of weights.

The balance can be installed or removed after the window has been trimmed, painted and completed.

If desired, a sash may be pre-fitted in the shop, balances installed and the complete unit of frame, sash and balances sent to the building, ready to be set in place.

A 2-in. outside casing on frame house frames if desired.

Specifications

Frames—All window frames shall be as detailed or regular stock frames as manufactured for Unique Sash Balances, eliminating pulleys, pockets and boxes.

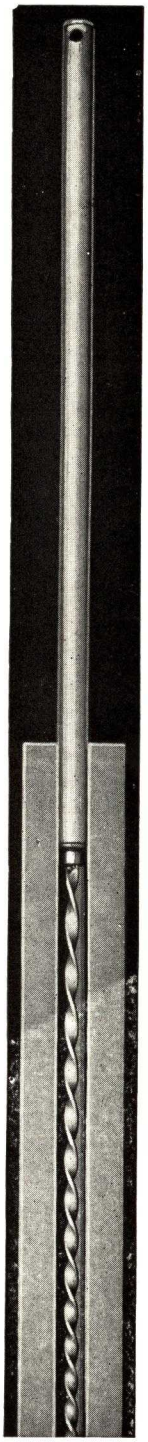
Sash—All sash shall be as detailed or regular stock sash grooved full length on each side ⅝ in. wide and ¾ in. deep to receive Unique Sash Balances.

Counter Balancing Sash—The sash shall be counter balanced with Type "B" or Type "C" (state which) Unique Sash Balances, manufactured by UNIQUE BALANCE CO., INC., 296 East 134th Street, New York City.

Unique Cushion Weatherstrip

While practically any weatherstrip for which the architect may have a preference may be used with Unique Sash Balance . . . we recommend our Unique Cushion Weatherstrip as the most effective and economical.

Unique Cushion Weatherstrip eliminates air leakage and the noise of a loose sash. It automatically adjusts itself to sash shrinkage and expansion and its cushion effect causes an easy sliding sash. It is made of bronze, conceded to be the best material for weatherstripping. It is installed easily, rapidly, and economically as its installation utilizes only the parting strip, the stop, and the balance groove already in sash. No additional grooving or ploughing of frame or sash is necessary.



Type "C"

Solid casing for 1 to 30-lb. sash or 60-lb. window

CLEVELAND LOCK WORKS

FORMERLY COLUMBIAN LOCK DIVISION

Manufacturers of Sash Pulleys
1290 East 53rd Street, CLEVELAND, OHIO

LOS ANGELES, CAL., 443 So. San Pedro Street
PORTLAND, ORE., 316 S. E. Madison Street
NEW ORLEANS, LA., 3728 So. Prieur Street
NEW YORK, N. Y., 16 Warren Street

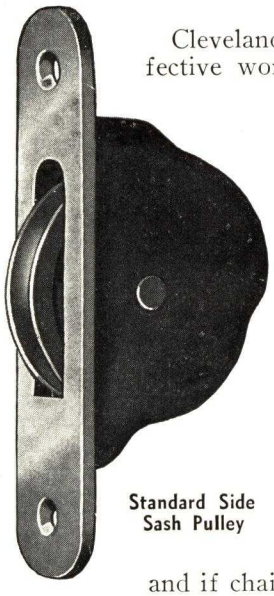
CLEVELAND SASH PULLEYS

The standard line of Cleveland Sash Pulleys in table is made of finest grade gray iron housings and wheels in our own foundries, and machined and assembled in our own shops. Circular design of housings as well as ends of face plates permit easy mortising with standard mortising machines.

Cleveland Pulleys can be furnished in a wide selection of finishes as noted in table. Catalogue numbers in table cover pulleys with *plain axles* unless specified otherwise, in which case they can be equipped with ball bearing, roller bearing, noiseless wood bushing, steel bushings, bronze bushings, self-lubricating bushings, etc., by making such notation after catalogue number.

Wheels are furnished with *combination groove,* applicable for cord or chain and double square groove for chain only can be furnished at no extra cost by writing in words "Chain Groove" after catalogue number. Wheels are all accurately machine grooved to perfect smooth finish. Due to accurate machine methods of locating axle holes, all wheels are concentric, assuring a true running wheel.

Pulleys are packed in boxes with screws to match finish of face.



Standard Side Sash Pulley

Guarantee

Cleveland Sash Pulleys are guaranteed against defective workmanship and material. All orders taken by selling agents are subject to approval and acceptance. Notification of incorrect orders should be made promptly on receipt of shipment. No responsibility is assumed on any work in connection with pulley installation.

Guide for Architectural Specifications or Ordering

Refer to Table "A" to determine the correct series of pulley to use according to weight of sash. Then refer to Table "B" to select catalogue number in required series according to the selection of finish desired. Catalogue numbers below are furnished with *plain axle* and *combination groove wheel.* If roller bearing, ball bearing, etc., are required note this selection, and if chain groove wheel is preferred, specify accordingly.

Specification Data

Table A—

Sash up to 20 lb., 100 series
Sash 20 to 40 lb., 200 series
Sash 40 to 100 lb., 300 series
Sash 100 lb. and over, 400 series

CLEVELAND SPECIFICATIONS—TABLE B

	Standard wheel sash pulley					Heavy duty wheel pulley	
Diameter, in.	2	2¼		2½		2½	3
Faces, in.	1⅛x5	1⅛x5	1⅛x5½	1¼x5¾	1¼x6	1¼x6	1¼x6½
Finish	No.	No.	No.	No.	No.	No.	No.
No finish, plain	100-0	200-0	220-0	300-0	320-0	400-0	420-0
Lacquered only	100-01	200-01	220-01	300-01	320-01	400-01	420-01
Polished and lacquered	100-02	200-02	220-02	300-02	320-02	400-02	420-02
Electro-plated dull bronze	100-1D	200-1D	220-1D	300-1D	320-1D	400-1	420-1
Electro-plated bright bronze	100-1	200-1	220-1	300-1	320-1	400-1D	420-1D
Electro-plated bright brass	100-12	200-12	220-12	300-12	320-12	400-12	420-12
Electro-plated dull brass	100-13	200-13	220-13	300-13	320-13	400-13	420-13
Electro-plated nickel	100-5	200-5	220-5	300-5	320-5	400-7½	420-5
Plain coppered	100-7½	200-7½	220-7½	300-7½	320-7½	400-5	420-7½
Dead black	100-33	200-33	220-33	300-33	320-33	400-33	420-33
Wrought bronze face plate	D106-1	D206-1	D226-1	D306-1	D326-1	D406-1	D426-1
Wrought brass face plate	D106-12	D206-12	D226-12	D306-12	D326-12	D406-12	D426-12

Note: Series 200 and 220 pulleys can be furnished with 2½-in. wheel if specified; otherwise 2¼-in. wheel will be furnished.

GOVERNMENT SPECIFICATIONS AS RELATED TO CLEVELAND SPECIFICATIONS

Gov't type	Wheel, in.	Face, in.	Cleveland type
1249	2	1⅛x5	No. 100
1249	2¼	1⅛x5	No. 200
1249	2½	1¼x5¾	No. 300
1249 A	2	1⅛x5	No. 100 roller bearing
1249 A	2¼	1⅛x5	No. 200 roller bearing
1249 A	2½	1¼x5¾	No. 300 roller bearing
			Specify U. S. Finish in addition to Cleveland numbers according to individual specification.
1250 A	2	1⅛x5	D106-1 brass wheel—steel bushed—roller bearing
1250 A	2¼	1⅛x5	D206-1 brass wheel—steel bushed—roller bearing
1250 A	2½	1¼x5¾	D306-1 brass wheel—steel bushed—roller bearing
1250 B	2	1⅛x5	D106-1 brass wheel—steel bushed—ball bearing
1250 B	2¼	1⅛x5	D206-1 brass wheel—steel bushed—ball bearing
1250 B	2½	1¼x5¾	D306-1 brass wheel—steel bushed—ball bearing
1250 E	Single double hung window		Cleveland single overhead set
1250 E	Twin double hung window		Cleveland twin overhead set
1250 E	Triple double hung window		Cleveland triple overhead set

Example—

Conditions require a pulley for heavy sash up to 100 lbs. Refer to Table "A" which recommends Series No. 300 for above weight. If wrought bronze metal face plate in this series is desired according to Table "B" the catalogue number is D-306-1.

For roller bearing and chain groove specify accordingly. Complete specification for above requirements is—

"Furnish Cleveland Sash Pulley D-306-1, roller bearing, chain groove."

(For specification of pulleys of cast metals other than gray iron, see Note*.)

Note*—Cleveland Pulleys catalogued above can also be furnished in cast metals, such as bronze, brass, aluminum, etc., if required. Use catalogue numbers in specifying and mention that pulleys are to have housing and wheels or possibly housings only or wheels only of brass, bronze, etc.

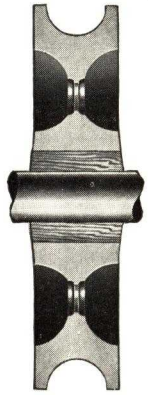
Standard Grooves

Combination Groove for Cord or Chain

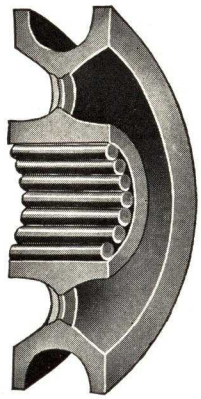
Double Square Groove for Chain Only

Standard Bearings and Bushings

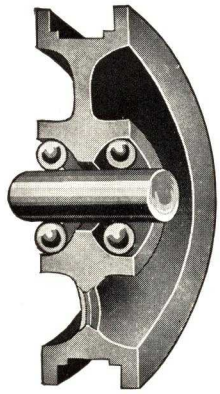
Plain Axle



Wood Bushing



Roller Bearing



Ball Bearing

In addition to bearings and bushings illustrated, other types also furnished; such as, bronze bushing, self-lubricating bronze bushing, steel bushing; ball bearing contained in race, etc.

CLEVELAND OVERHEAD PULLEYS

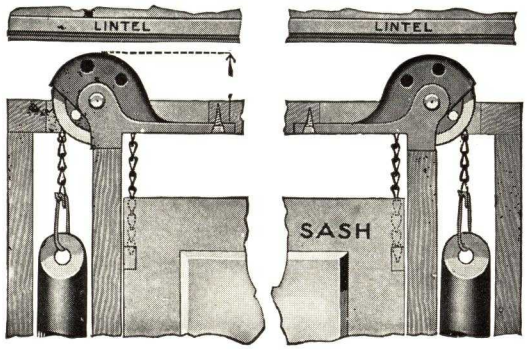
Removable Type, Conforming to U. S. Government Specifications

Cleveland O. H. Mullion Sets make narrow mullion possible by eliminating intermediate weight boxes. Overhead pulleys are also made for single windows as they provide additional travel for weights, allowing larger light areas and permitting the use of iron weights, instead of lead.

All Cleveland overhead pulleys are easily removable without disturbing the window frame in the event of chain breakage, etc. Chain grooved wheels, plain axles, and wrought bronze face are furnished on all Cleveland Overhead pulleys unless otherwise specified. The same variety of finishes and bearings may be furnished as shown for side pulleys.

Arrangements for Quadruplicate, Quintet frames, etc., will be furnished upon request.

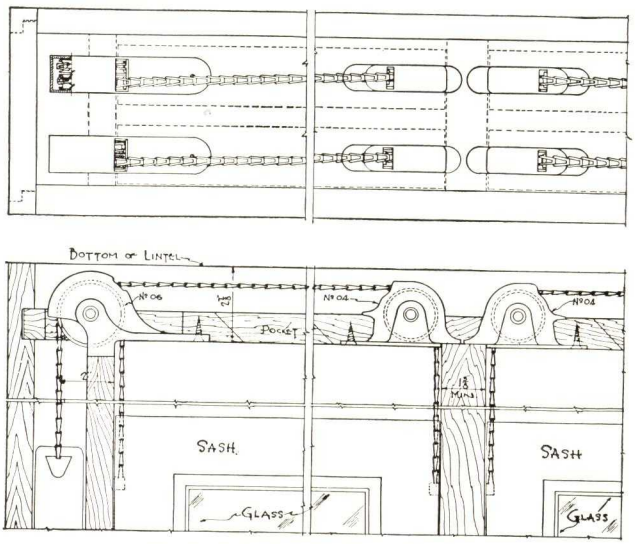
We furnish samples gratis for mortising purposes.



Overhead Pulleys for Single Windows

Single overhead set consisting of four No. 4028 pulleys, wrought bronze face, plain axle, two ½-in. wheel chain groove.

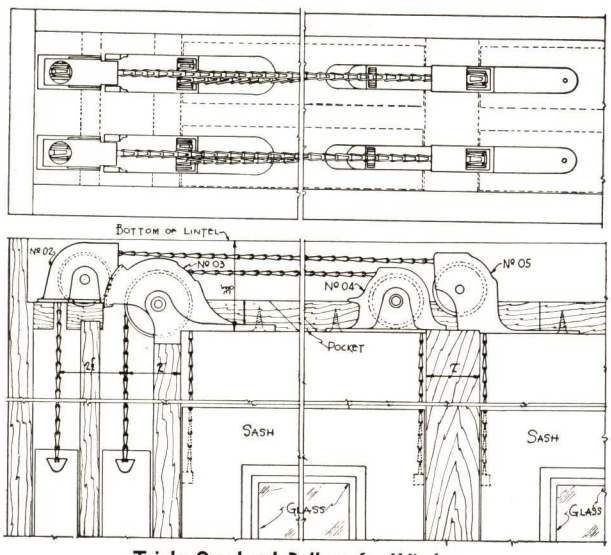
If other finish, bearing, wheel size or groove is desired, so specify



Overhead Pulleys for Twin Windows

Consisting of four No. 06 and four No. 04 pulleys, wrought bronze face, plain axle, chain groove.

If other finish, bearing or groove is desired, so specify



Triple Overhead Pulleys for Windows

Consisting of four each No. 02, No. 03, No. 04 and No. 05 pulleys with wrought bronze face, plain axle, chain groove wheel. If other finish, bearing or groove is desired, so specify.

Note: No. 02 and No. 03 pulleys are interlocked, making this the only triple set in which all pulleys are removable. This is a patented feature

GRAND RAPIDS HARDWARE COMPANY

Manufacturers of "Grand Rapids" Sash Pulleys

GRAND RAPIDS, MICH.

TRIED DEPENDABILITY OF SASH PULLEYS AVAILABLE FOR NARROW MULLION FRAMES

The new "Grand Rapids" No. 150 (Covered Wheel) and No. 151 (Open Wheel) Pulleys used with flat weights and our Weight Wheel Assemblies make possible 2⅞-in. mullions and even narrower side casings. No springs to give trouble in a few months, no painting difficulties, no windows that open only to a limited degree.

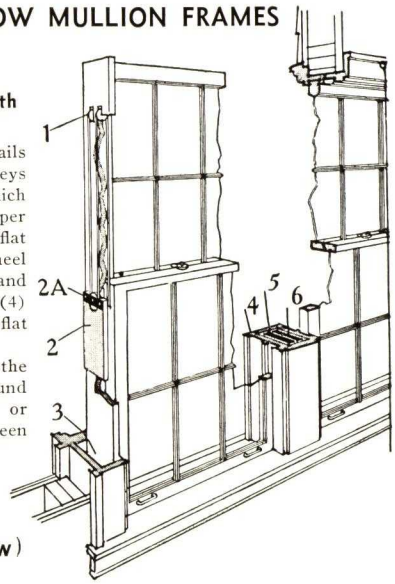
These new pulleys have 1½-in. wheels and 1x4½-in. faces. They measure just 1¼ in. from face to back of pulley body. Regularly furnished in baked mahogany finish.

Write for samples today and specify either "Grand Rapids" No. 150 or No. 151 Pulleys with flat weights for openings where narrow trim is essential.

How Pulleys Are Used with Flat Weights

In drawing on right, details are as follows: (1) two pulleys (Nos. 150 or 151) over which one cord or chain runs to upper and lower sash; (2) new flat weights; (2A) flat weight wheel assembly (made by "Grand Rapids"); (3) weight box; (4) narrow mullion; (5 and 6) flat weights.

Note two flat weights take the place of four old style round weights. A very thin metal or wood divider is used between weights



OTHER RESIDENTIAL SIZE PULLEYS

Open Wheel Type (Top)

No. 18: Axle bearing, 1x4½-in. face, 2-in. wheel, ¼-in. axle.

No. 140: Axle bearing, 1⅛x4½-in. face, 2-in. wheel, ¼-in. axle.

No. 20: Axle bearing, 1⅛x4½-in. face, 2¼-in. wheel, ¼-in. axle.

All above in Mahogany, Boston Bronze, Galvanized, or special platings or metals. Can be had with bronze wheel bushing.

We also make a complete line of Drive Pulleys that fasten in the wood automatically without the use of screws.

Covered Wheel Type (Below)

No. 2: Ball bearing.

No. 102: Cone bearing.

1⅛x4½-in. face, 2-in. wheel.

No. 3: Ball bearing.

No. 103: Cone bearing.

1x4½-in. face, 2-in. wheel.

Eleven ¼-in. balls packed in lubricant form the ball bearing. Large ⅝-in. truly rounded cone bearing holds wheel perfectly centered. In use for thirty-five years.

Mahogany or Galvanized finishes standard. Brass or Bronze faces available.

Open Face Type
(Nos. 18, 20, 140)

HEAVY DUTY SASH PULLEYS

Guaranteed to carry any sash

Available as No. 121 (2¼-in.) with cover over wheel or as No. 21 (2¼-in.) and No. 22 (2½-in.) with open wheel.

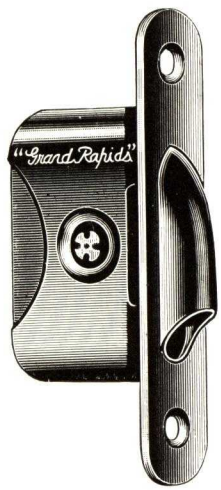
Face size: 2¼-in. wheel, 1⅛x5-in; 2½-in. wheel, 1⅛x5¼-in.

Axles: ⅜-in. from open hearth bar.

Bearing: Choice axle or ball. Bronze axle can be furnished.

Wheel groove: Will take American No. 50 chain or No. 12 cord. Wheel positively riveted at eight points—cannot be pulled apart by a weight that will snap heavy cord.

Specify "GRAND RAPIDS" Pulleys



No. 121 Hooded Heavy Duty Pulley
Nos. 21 and 22 differ only in open face

Covered Wheel Type
(Nos. 2, 102, 3, 103)

FINISHES AND METALS

	2¼-in. wheel				2½-in. wheel	
	Hooded style		Open style		Open style	
	Axle bearing	Ball bearing	Axle bearing	Ball bearing	Axle bearing	Ball bearing
Natural steel	121	121-B	21	21-B	22	22-B
Mahogany lacquered	121-M	121-MB	21M	21-MB	22-M	22-MB
Boston bronze lacquered	121-C	121-CB	21C	21-CB	22-C	22-CB
Galvanized	121-Gal.	121-Gal. B	21-Gal.	21-Gal. B	22-Gal.	22-Gal. B
Sol. brass face	121-D	121-DB	21-D	21-DB	22-D	22-DB
Sol. bronze face	121-E	121-EB	21-E	21-EB	22-E	22-EB
All sol. brass	121-F	121-FB	21-F	21-FB	22-F	22-FB
Brass plated on steel	121-G	121-GB	21-G	21-GB	22-G	22-GB
Bronze plated on steel	121-H	121-HB	21-H	21-HB	22-H	22-HB
Copper oxidized on steel	121-I	121-IB	21-I	21-IB	22-I	22-IB
Sol. brass face, sol. brass wheel	121-J	121-JB	21-J	21-JB	22-J	22-JB
Sol. bronze face, sol. brass wheel	121-K	121-KB	21-K	21-KB	22-K	22-KB

AMERICAN CHAIN DIVISION

AMERICAN CHAIN & CABLE COMPANY, INC.

GENERAL SALES OFFICE

BRIDGEPORT, CONN.

DISTRICT SALES OFFICES

230 Park Avenue
NEW YORK, N. Y.

701 American Bank Building
PITTSBURGH, PA.

12-251 General Motors Building
DETROIT, MICH.

400 West Madison Street
CHICAGO, ILL.

630 Third Street
SAN FRANCISCO, CALIF.

No. 25

No. 30

No. 35

AMERICAN SASH CHAIN

SPECIFICATIONS

New No.	Old No.	For single sash weighing not over	Metal gauges	Tensile strength		Weight per 500 ft. reel
				Steel	Bronze	
25	60	50 lbs.	.042	425 lbs.	375 lbs.	25 lbs.
30	0	60 lbs.	.028	375 lbs.	350 lbs.	24 lbs.
35	80	100 lbs.	.035	500 lbs.	425 lbs.	30 lbs.
40	100	150 lbs.	.042	600 lbs.	550 lbs.	35 lbs.
45	130	175 lbs.	.050	750 lbs.	675 lbs.	46 lbs.
50	250	200 lbs.	.060	900 lbs.	800 lbs.	57 lbs.
60	AA	.....	.062	925 lbs.	900 lbs.	74 lbs.
65	XXXX	.....	.072	1200 lbs.	1275 lbs.	96 lbs.

Nos. 60 and 65 are not illustrated.

No. 40

No. 45

No. 50

Actual No. 8 Size

Permanent—American Sash Chain is so strongly made and so resistant to wear and deterioration that it will normally last longer than the building in which it is used.

Easy to Operate—As shown in illustration each link is flat, flexible, and has free play. This makes it non-kinking, almost noiseless and allows the chain to run smoothly over pulley.

Fireproof—Being all-metal the American Sash Chain is naturally fireproof. This is in accordance with modern building requirements and construction methods.

Easy to Install—Proper fixtures have been designed especially for use with American Sash Chains. Installation is fast and simple.

MATERIALS

Copper-Bearing Steel—The American Sash Chain made from this metal offers high resistance to rust and corrosion. It is strong and durable. As stated below, it comes in a large variety of practical finishes.

American Bronze—Under some atmospheric, or industrial conditions an absolutely non-corrosive sash chain must be supplied. For this purpose American Bronze should be specified. It is a hard alloy specially mixed and will give perfect satisfaction.

FINISHES

American Sash Chain is regularly furnished in the following finishes: Bright—Hot Galvanized—Electro Galvanized (S.R.P.)—Coppered—Hercules Finish (Copper plating over hot galvanized)—Acco (Copper plating over S.R.P.) This gives it the appearance of bronze. Where price is an argument Hercules Finish is an excellent substitute for bronze and is considerably less in price.

PACKING

With the exception of No. 8 in the table above, American Sash Chain in either steel or bronze is shipped on steel reels each containing 500 ft. of chain. Two reels are enclosed in one wooden case. American Sash Chain No. 8 is not only shipped on reels as above but also comes packed in strong cloth bags—100 ft. chain approximating 4 lbs. complete. With the chains sufficient fixtures are packed for seven complete double hung windows. Dealer's counter display cartons of No. 8 Acco Sash Chain contain four pieces of chain each 4 ft. long with sufficient fixtures for one complete double hung window.

American Sash Chain

FIXTURES

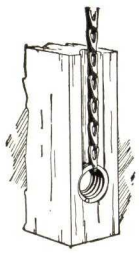


Illustration to left shows coil spring in single-hole sash.

Coil Spring Sash Fasteners are made in ¾, ⅞, and 1-in. diameter to fit the bore of any standard sash.

Weight Hooks are made of hard drawn steel wire coppered.

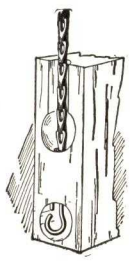
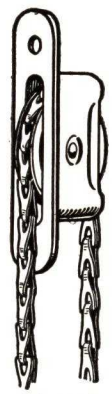


Illustration to right shows use of coil spring in two-hole sash.

ACCO SASH CHAIN No. 8

Acco Sash Chain No. 8 is a popular, permanent, noiseless and fireproof chain for double hung windows. It is famous for its flexibility and long life. It operates smoothly and with perfect satisfaction over any sash cord pulley. It is a favorite specification for apartments and other residential property.

American Sash Chain No. 8 is supplied in Coppered (Copper Plating over Hot Galvanized), Acco Copper Plating over S.R.P. (Electro-Galvanized) or any standard finish as shown here.



Showing ACCO No. 8 Sash Chain fitting perfectly in groove of cord pulley.

THE BEAD CHAIN MANUFACTURING COMPANY

123 Mt. Grove Street, BRIDGEPORT, CONN.

BEAD CHAIN FOR PLUMBING, ELECTRICAL FIXTURES, VENTILATOR CONTROL, AND VENETIAN BLINDS

What Bead Chain Is

BEAD CHAIN, as the name implies, is a type of chain formed of hollow metal beads, joined together by metal connectors. It is strong, flexible, non-kinkable and attractive.

BEAD CHAIN

Trade Mark Reg. U. S. Pat. Off.

For Plumbing and Heating

BEAD CHAIN is specified for utility, service and better appearance, for attachment to rubber stoppers in basins and baths, for shower curtain holdbacks and for high wall tanks. It is ideal for the smooth operation of all register and damper controls.

Electrical Fixtures

BEAD CHAIN has, for many years, been universally used on pull sockets, and is most practical and decorative for the suspension and ornamentation of electric light fixtures. Illuminating engineers specify BEAD CHAIN for suspension on luminous bowl fixtures because of its flexibility and ease of adjustment.

Ventilator and Air Conditioning Controls

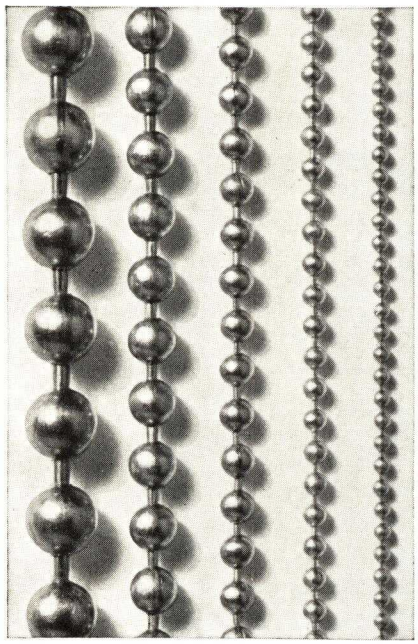
BEAD CHAIN, because of its rounded surfaces and non-kinking characteristics, operates smoothly over pulleys of small diameter, and has therefore been adopted with success on many types of dampers and ventilators.

Air Conditioning

In the development of automatic and other regulators for air conditioning, BEAD CHAIN is rapidly being adopted by the manufacturers of such units. Wherever smoothness of operation is desired, and particularly where its use is visible, architects and engineers are specifying BEAD CHAIN on air conditioning installations.

Venetian Blinds

BEAD CHAIN is now generally specified with the modern tilting devices for Venetian blinds. It is "slip-proof." For decorative purposes it is frequently used for the entire length, but operating lengths can be firmly spliced to cord with No. 10-V Cord and Chain Connectors.



No. 20 No. 13 No. 10 No. 6 No. 3

Bead Chain

Illustrations Actual Size

SIZES AND APPROXIMATE STRENGTH

Size No.	Diam. of bead, in.	Approx. tensile strength, lbs.
3	.093	15-20
6	.125	25-30
10	.187	45-50
13	.250	85-100
20	.375	175-200

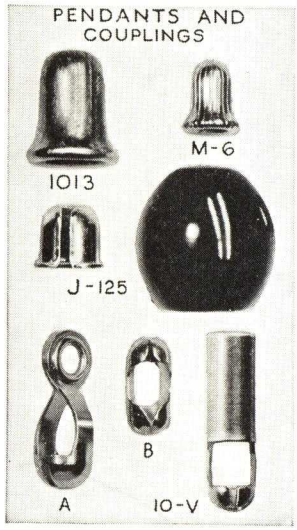
Cord and Chain Connector

A smooth strong connection is readily made with BEAD CHAIN and cord, by our 10-V Connector, particularly adapted to use with Venetian Blinds.

10-V Cord and Chain Connector

Bead Chain Attachments

A great variety of detachable and non-detachable pendants are regularly available, as well as end rings and couplings for all uses, splicing links, and cord and chain connectors.



Materials and Finishes

BEAD CHAIN is made in brass, bronze, gliding metal, nickel silver and aluminum, and finished either in the natural metal or with chromium, nickel, gold and silver plate.

How to Specify Bead Chain

When specifying BEAD CHAIN state the size number, material and finish wanted, as well as the assembly desired or the purpose for which it is to be used.

Experimental Samples and Information

Our Engineering Department is prepared to furnish sample lengths and attachments and assist in the design of assemblies and attachments where the use of BEAD CHAIN is necessary or desirable.

SAMSON CORDAGE WORKS

89 Broad Street
BOSTON, MASS.

Products

Manufacturers of BRAIDED COTTON CORD in all sizes and colors for all purposes, including SAMSON SPOT CORD, SAMSON WIRE CENTER CORD and other SASH CORDS.

Also manufacturers of Clothes Line, Ventilator Cord, Curtain and Shade Cord, Awning Line, Masons' Line, Dumbwaiter Rope, Arc Lamp and Trolley Cord, Signal Cord, Venetian Blind Cord, Cotton Twine, etc.

TRADE-MARK

Samson Cord

All cord bearing the trade-mark of Samson and the Lion is made of *extra quality* stock; is carefully inspected, and is guaranteed free from the rough places which destroy common cords so quickly.

The SAMSON CORDAGE WORKS manufactures several grades of sash cord, but the lower grades, made for competing trade in cheap work, do not bear the Samson trade-mark. They do not fill specifications for Samson cord, which is much more economical in the end.

Samson Spot Sash Cord

Samson Spot Cord is made in *one quality only,* the best sash cord we can produce after more than fifty years' experience. The colored spots are our trade-mark, used only with this extra quality. They serve as a means of identification after the label is removed.

Spot Cord will wear many times longer than common cord, made of inferior yarn roughly braided, poorly finished, and usually adulterated with loading material, causing early destruction by abrasion on the pulley. It is noiseless.

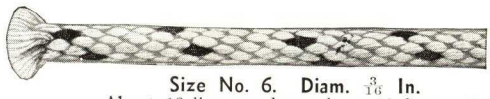
Specifications—Architects' specifications should read:

"Windows to be hung with Samson Spot Cord; size of cord and size of pulleys to agree with manufacturer's list." (See lower left-hand corner of this page.)

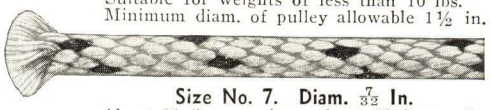
Sample Cards—Sample cards, showing proper sizes for use with different weights and pulleys, will be gladly sent to architects and builders.

Samson Spot Sash Cord

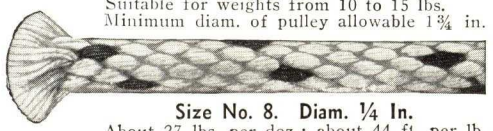
The number indicates the diameter in 32nds of an inch. Usually put up in 100 ft. hanks, 1 dozen hanks in a package.



Size No. 6. Diam. $\frac{3}{16}$ In.
About 18 lbs. per doz.; about 66 ft. per lb.
Suitable for weights of less than 10 lbs.
Minimum diam. of pulley allowable 1½ in.

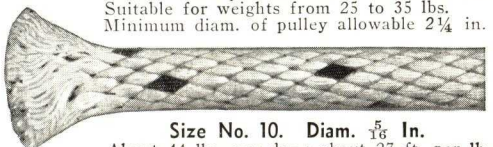


Size No. 7. Diam. $\frac{7}{32}$ In.
About 22 lbs. per doz.; about 55 ft. per lb.
Suitable for weights from 10 to 15 lbs.
Minimum diam. of pulley allowable 1¾ in.

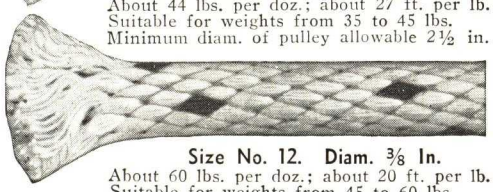


Size No. 8. Diam. ¼ In.
About 27 lbs. per doz.; about 44 ft. per lb.
Suitable for weights from 15 to 25 lbs.
Minimum diam. of pulley allowable 2 in.

Size No. 9. Diam. $\frac{9}{32}$ In.
About 33 lbs. per doz.; about 36 ft. per lb.
Suitable for weights from 25 to 35 lbs.
Minimum diam. of pulley allowable 2¼ in.



Size No. 10. Diam. $\frac{5}{16}$ In.
About 44 lbs. per doz.; about 27 ft. per lb.
Suitable for weights from 35 to 45 lbs.
Minimum diam. of pulley allowable 2½ in.



Size No. 12. Diam. ⅜ In.
About 60 lbs. per doz.; about 20 ft. per lb.
Suitable for weights from 45 to 60 lbs.
Minimum diam. of pulley allowable 3 in.

Samson Wire Center Sash Cord

Recommended for use in hanging heavy windows or where for any reason a metallic device is desired.

The cover is made of the same extra quality cotton yarn as used in Samson Spot Cord, with special steel wire center, manufactured under specifications for running over pulleys and of entirely different quality from ordinary wire.

The weight of the window is borne chiefly by the wire center, the cotton cover merely acting as a cushion, thus avoiding contact of metal with metal which causes wear and makes an unpleasant noise.

It is carried in mahogany color, marked with the same trade-mark as our Samson Spot Sash Cord, i.e., spots of a different color from the body of the cord. Carried in two sizes: Nos. 8 and 10.

No. 8 is suitable for weights up to 30 lbs. if used with pulleys not less than 2 in. in diameter, or for weights up to 50 lbs. with pulleys not less than 2½ in. in diameter.

No. 10 is suitable for weights up to 75 lbs. if used with pulleys not less than 2½ in. in diameter, or for weights up to 100 lbs. with pulleys not less than 3 in. in diameter.

Special Cords

Cords made to order for any purpose, in special braid, finish or color.

Territory

Samson Spot Cord and this company's other goods are sold all over the world, and are carried by dealers in all parts of the United States.

Catalogues

Send for catalogues and sample cards.

THE SMITH & EGGE DIVISION OF THE TURNER & SEYMOUR MFG. CO.

Smith & Egge Sash Chain and Fixtures

TORRINGTON, CONN.

REPRESENTATIVES

ATLANTA, GA., J. A. Buchanan, 170 Hurt Street
BOSTON, MASS., C. E. Harris Co., 44 Bromfield Street
CHICAGO, ILL., R. A. Twadell, 40 So. Clinton Street
CLEVELAND, OHIO, Gesing Bros., 1037 Terminal Tower
DALLAS, TEX., J. H. North, 1002 Woodlawn Avenue
DETROIT, MICH., H. C. Fuller, 18985 Santa Rosa Drive
INDIANAPOLIS, IND., C. F. White, 1939 No. Meridian Street
LOS ANGELES, CAL., A. F. Wheeler, 405 So. Hill Street
NEW ORLEANS, LA., W. V. Leland Co., 7733 So. Claiborne Avenue
NEW YORK, N. Y., Nepperhan Sales Co., 175 Fifth Avenue
OMAHA, NEB., S. M. Hawkins, P. O. Box 300
PHILADELPHIA, PA., K. G. Kredell, 504 Commerce Street
PITTSBURGH, PA., E. D. Randolph, P. O. Box 6332
ST. LOUIS, MO., D. A. McCarthy, 820 No. First Street
SAN FRANCISCO, CAL., R. R. Vought Co., 518 Monadnock Building

Originators of Sash Chain

More than forty years ago Mr. Frederick Egge invented an automatic machine for making sash chain. This was the development that made possible the use of sash chain for hanging windows.

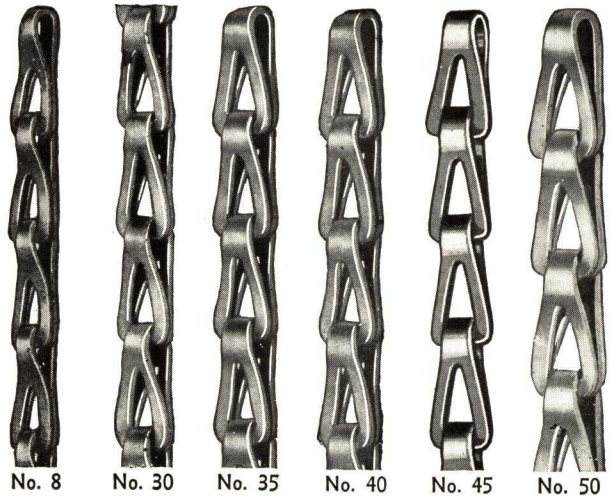
Strength, durability and uniformity of our chain have been so thoroughly tested during more than forty years that today it is known all over the country as the chain of quality.

Such modern buildings as the Bronx County Courthouse and the Metropolitan Life Insurance Building are equipped with S & E Sash Chain as are from coast to coast the Matson Building of San Francisco, Missouri Pacific Hospital of St. Louis, Statler Hotel of Detroit, Atlantic Refining Building of Philadelphia. These are but a few of many.

Features

Through years of research the method of manufacture to secure the greatest tensile strength and uniformity has been developed. The required tensile strength may be quickly figured by multiplying the weight of a single sash by four—this gives a safety factor of four to one—considered ample by the Board of Fire Underwriters.

Our Galvanized Steel Sash Chain has been tested and passed by the National Board of Fire Underwriters.



No. 8 No. 30 No. 35 No. 40 No. 45 No. 50

*TABLE OF CAPACITIES, WEIGHTS, ETC.

For single sash weighing not more than, lbs.	New No.	Old No.	Gauge	Giant Metal		Red Metal		Steel	
				Tensile str'gth	Ship. wt. lb.	Tensile str'gth	Ship. wt. lb.	Tensile str'gth	Ship. wt. lb.
.....	65	xxxx	.072	1475	228	1275	228	1200	220
.....	60	AA	.062	.....	.....	900	176	925	160
200	50	A	.060	850	126	800	126	900	120
175	45	A30	.050	750	92	675	92	750	99
150	40	1	.042	650	84	550	84	620	74
100	35	2	.035	475	74	425	74	500	71
60	30	0	.028	375	62	350	62	375	58
50	25	00/042	.042	.....	.....	375	68	425	60
40	8	00	.035	.....	.....	250	56	250	50

*For convenience both old and new numbers are given.
Data given in this table shows the number, gauge and weight established as standard by the Sash Chain Industry.

Steel Sash Chain

Nine sizes. Made from special alloy cold rolled steel especially manufactured for this purpose gives it great strength and durability. Can be furnished in plain steel or coppered, sherardized, galvanized, copper plated over sherardized (Sher-El-Copp), copper plated over hot galvanized.

Red Metal Sash Chain

Nine sizes. Made from a special bronze mixture and, with the exception of our Giant Metal, is not surpassed, gauge for gauge, by any other sash chain on the market.

Giant Metal Sash Chain

Six sizes. Made of a super bronze mixture controlled by us and entirely free from any impurities. Its tensile strength and durability have never been surpassed for sash chain. Many times those buying bronze chain in the belief that they are getting the equal of our Giant Metal are actually supplied with chain similar to our Red Metal.

Chains for Light Weight Sash

No. 8 sash chain is made in steel and Red Metal. Steel chains in any finish desired are put up in bags containing 100 ft. each and 7 sets of fixtures for attaching chain to weight and sash. Four hooks and four spirals are required for a window of two sashes—attached as shown below.

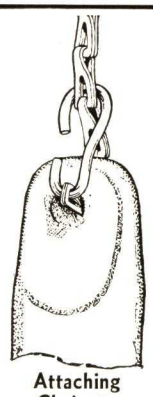
Cable Chain

Various sizes are made in copper and special high carbon steel. Especially recommended for use where great strength is required. Adapted for use on elevator or fire doors, safety gates, etc. Tensile strengths vary according to size of chain.

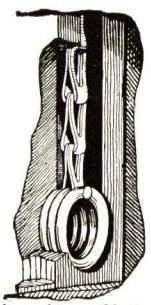
Cable Chain

Sash Chain Fixtures

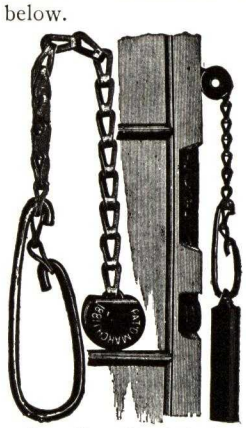
Various sizes. Available for each size of sash chain for attaching to weight and sash as illustrated.



Attaching Chain to Weight



Attaching Chain to Sash with Spiral



Attaching No. 1 Sash Fixtures

C. MALLOY, PRESIDENT

ACKER & MAN, INC.

H. MALLOY, TREASURER

Standard Approved Drop Forged Window Cleaner's Safety Devices and Equipment in Brass and Bronze

TELEPHONE
MUrray Hill 4-3812

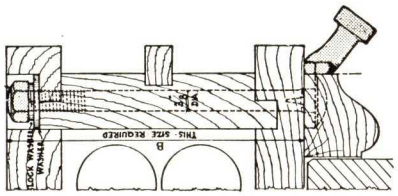
48 West 27th Street, NEW YORK, N. Y.

ESTABLISHED
1918

AGENTS IN ALL PRINCIPAL CITIES

Adaptability

All single head types shown are made with double heads for four-bolt system, and vice versa.

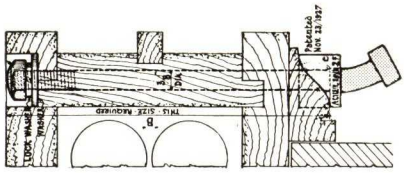


No. 2—For Wood or Kalamein Frames and Mullions

Installed at mill by frame-maker or at job by carpenter contractor

No. 2D—Front View

Double head type for wood or Kalamein frames and mullions

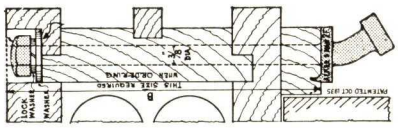


No. 2FC—For Wood or Kalamein Frames and Mullions

Undersurface of shoulder is made concave, flat or convex to match staff bead or plaster. Pat., Nov. 23, 1927

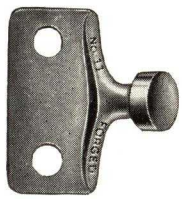
No. 10—Mullion Anchor

For steel sash mullions



No. 2F—For Wood or Kalamein Frames and Mullions

(Pat., Dec., 1935)



No. 11—Jamb Anchor

For steel sash jambs of the Fenestra, Truscon, William Bailey and similar type windows

No. 19—Window Cleaner's Safety Belt

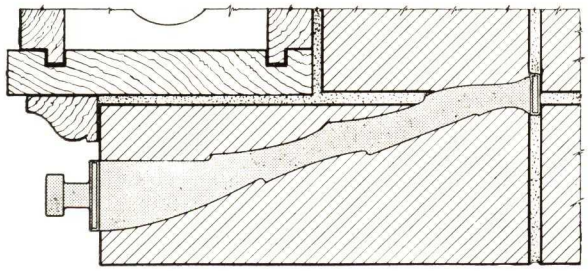
Made of canvas or leather. All hardware is forged

Architect's Specifications

All windows, which are to be cleaned from the outside, and which are 6 ft. or more above grade, roof, balcony or fire escape, shall be equipped with Ackerman Window Cleaner's Devices, as manufactured by ACKER & MAN, INC., New York, N. Y.

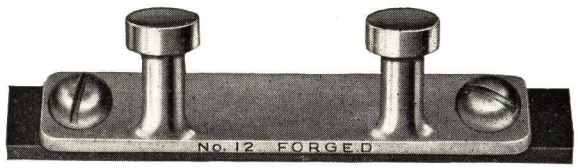
Install two (2) to each window, 46 to 51 ins. above sill.

Select the type from illustrations to suit type of construction.



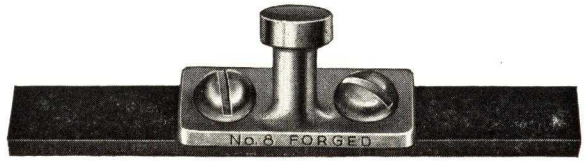
No. 7A—Masonry Anchor Installed by Mason Contractor During Construction

No. 14—Double Head Anchor for Installation in Masonry



No. 12—Double Head Anchor for Hollow Metal Frames

Reinforcing plates are attached by frame maker during fabrication of frames. Can be installed on old buildings



No. 8—Single Head Anchor for Hollow Metal Frames

A Few of the Many Buildings Where Our Equipment Is Installed and in Use

NEW YORK—American Telephone & Telegraph Co. General Office Building, Rockefeller Center, Loft Candy Buildings, St. Luke's Hospital, Ritz Tower Hotel and Empire State Building
BROOKLYN—Mergenthaler Linotype Co. and E. R. Squibb & Sons
JERSEY CITY—Colgate Palmolive Peet Co.
PATERSON—General Hospital
NEW BRUNSWICK—Johnson & Johnson Buildings
NEWARK—Military Park Building and Presbyterian Hospital
ELIZABETH—St. Elizabeth's Hospital
HARTFORD—Etna Life Insurance Building
PHILADELPHIA—Warwick Hotel, Bonbright Building and U. S. Navy Buildings
JOHNSTOWN—Garfield Junior High School
BRADDOCK—Carnegie Steel Co.
PITTSBURGH—Lauer-Magee Hospital
ATLANTA—Rhodes Haverty Building
WASHINGTON, D. C.—Agricultural Buildings

ALLITH-PROUTY INC.

Manufacturers of Hardware for all Types of Rolling Doors

DANVILLE, ILL.

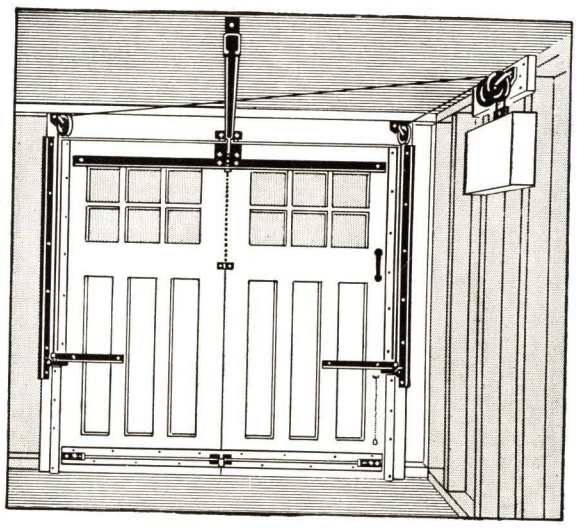
PRODUCTS

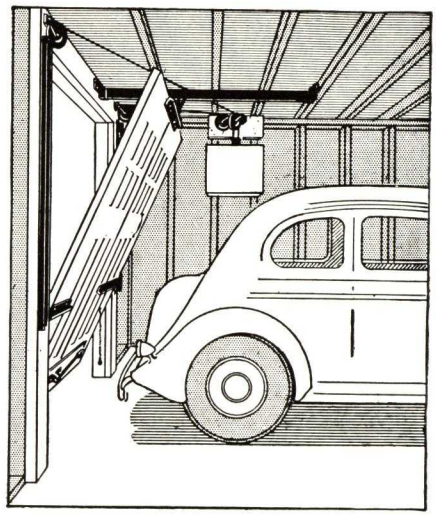
Accordion Door Hardware
Airport Door Hardware
Barn Door Hardware
Fire Door Hardware (Underwriters)
House Door Hardware (Sliding)
Industrial Door Hardware
Round House Door Hardware
Vertical Slide Door Hardware

TRADE-MARK

Heavy Type Door Hinges
Overhead Carriers
Garage Door Hardware
Folding-Sliding
Overhead Type
Round-the-Corner
Straight Sliding
Rolling Ladders (Shelving)
Stadium Seat Brackets

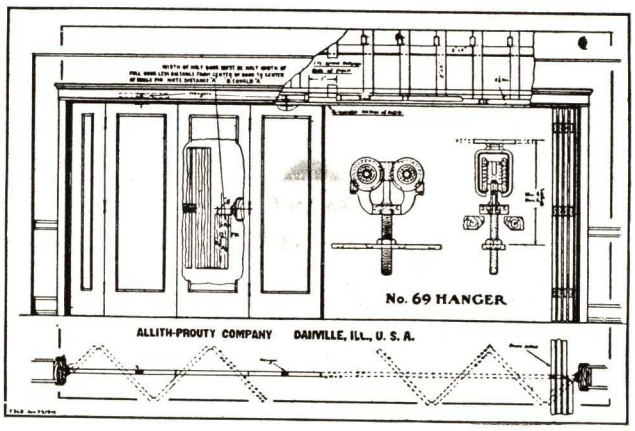
ALLITH "PUSH-OVER" HARDWARE FOR ONE-PIECE OVERHEAD DOOR





The most economical hardware set ever produced, we believe. Its smooth, trouble-proof operation and low cost makes it a most desirable set, not only for new construction, but for substitution on swinging doors.

The set includes all necessary hardware for uniting two or more door panels into a one-piece unit and also includes the reinforcing angle and truss rod as part of the set.



Lock supplied with set is entirely new and is an improvement over anything offered.

This hardware provides a more weatherproof installation. It is a universal set and can be installed under most any condition. It is ideal for basement installation as but 5½ in. of headroom is required. There is ample clearance for any of the modern cars.

At slight additional cost, an automatic opening fixture is available.

ALLITH ACCORDION DOOR HARDWARE

The hardware for these installations usually requires special fabrication and drawings. Full information may be obtained by an explanation of the conditions.

While hangers are usually placed in the center of top rail of doors, they may be placed in any position, including the edges.

When installed other than centrally a floor guide is used.

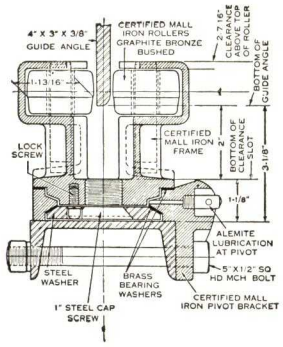
A passage door is permitted.

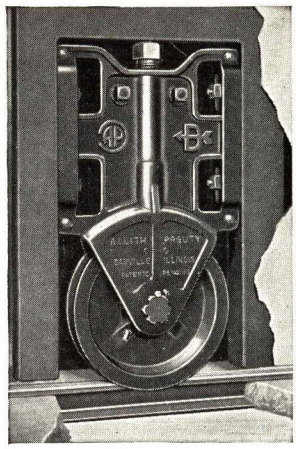
ALLITH AIRPORT DOOR HARDWARE

The rollers illustrated have been made in greater quantities than any other.

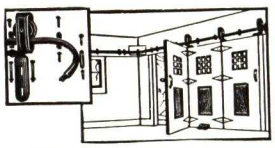
The conditions and variations in construction and size of hangar doors make it necessary to handle each job specially.

Blueprints and specifications to meet any requirement are available.





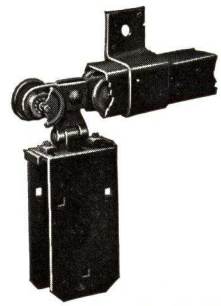
Allith Folding-Sliding Hardware
Offered in flat, round and trolley tracks in all necessary sizes to carry doors of any weight



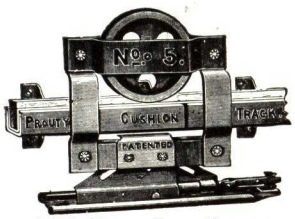
Allith Round-the-Corner Hardware
Offered in flat, round and trolley tracks. Any desired number of doors per opening

ALLITH DOOR HANGERS AND TRACKS

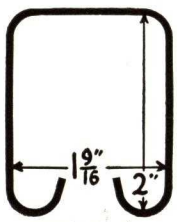
Allith Reliable Round Track Door Hangers
Available in four sizes and many types, to carry doors of any weight
Handles doors in parallel or in continuous runs



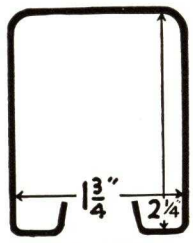
Allith Hangers for Trolley Tracks
Malleable and steel pendants, trucks and door plates. Durable roller bearings. All necessary sizes available



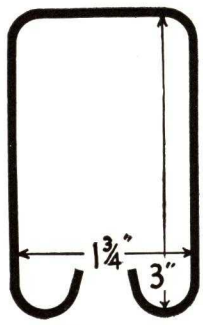
Allith House Door Hanger
The Allith-Prouty No. 5 Hanger is one of the best known and best selling parlor door hangers. Quiet and trouble-proof



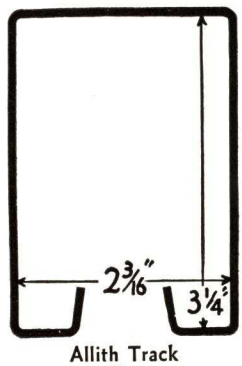
Allith Track
No. 60-X 16 gauge
No. 62-X 14 gauge



Allith Track
No. 240-X 16 gauge
No. 242-X 14 gauge

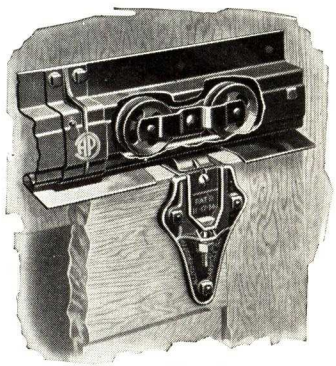


Allith Track
No. 71-X 14 gauge

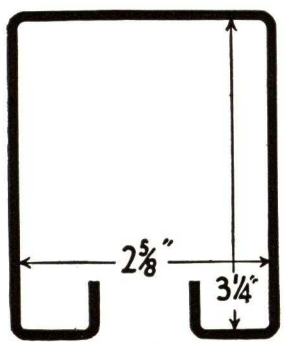


Allith Track
No. 270-X 14 gauge

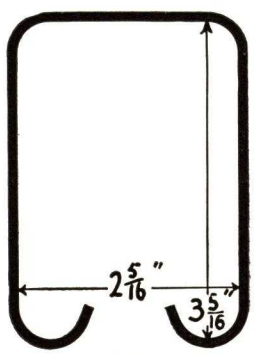
Brackets available for any of these tracks to meet any condition



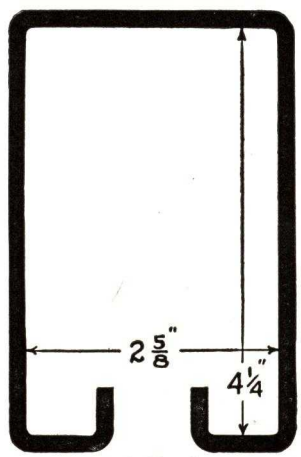
Allith "Ten-Ten" Watershed Hangers and Tracks
Heavy Malleable Hanger provides trouble-proof service for the life of the building. Track is made of 14-gauge steel, formed to insure weathertight construction at top of door.
Smaller sizes available



Allith Track
No. 280-X 13 gauge
No. 288-X 10 gauge



Allith Track
No. 67-X 13 gauge
No. 68-X 10 gauge



Allith Track
No. 290-X 10 gauge

BARBER-COLMAN COMPANY

Barcol OVERdoors and Door and Gate Operating Equipment

ROCKFORD, ILL.

For our pages on Temperature and Humidity Control Equipment and Uni-Flo Grilles and Registers, see File Index

Barber-Colman Doors and Operators

Barcol OVERdoors — An improved type of overhead or upward-acting door suitable for residence and commercial garages, automobile service stations, factories, fire stations, terminals, etc. Three models.

Door Operators — Motor-driven equipment for opening and closing all types and sizes of doors. All conventional controls.

Gate Operators—Motor-driven equipment for opening and closing swinging and sliding gates. All conventional controls.

Radio Control—A special control for door (or gate) operators. Garage doors can be opened and closed from moving automobile.

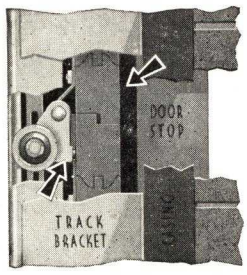
Information, installation and service on all these items are provided by branch offices and representatives in principal cities.

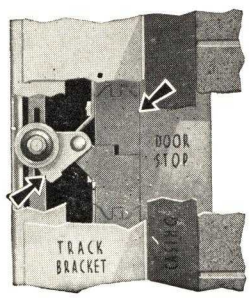
In Canada the Barcol OVERdoor is manufactured by the A. B. Ormsby Co., Ltd., Toronto, Ontario, under the name Ormsby-Barcol OVERdoor.

Barcol OVERdoors

The Barcol OVERdoor is an *improved* overhead door which is *weather-tight but easy working.*

Closing Action—A special closing action provides a positive, weather-tight, rattleproof fit, and at the same time prevents sticking and dragging between door and jamb. (Detail at hinge shown below.) The top illustration shows how the door is always carried by the rollers well away (½ in.) from the stop strips, except when fully closed. As the door closes, a stop on the track engages a lever, which, by links, draws up all the hinge roller cranks, as shown in the lower illustration, and pushes the door uniformly and firmly against the stop strips on sides and top. Because of this, the door runs freely even in wet weather when the wood parts swell, but closes with a weather-tight fit.





Counterbalancing — Accurate counterbalancing is provided by two six-inch diameter tailored "twin torsion" springs, one above each side of the door, connected to the lower corners by flexible steel airplane cables. The arrangement is neat, *safe,* strong, quiet, and easily adjusted.

Rollers—Rollers are equipped with one piece steel tires and ball bearings with large diameter race. They are designed to run easily and stand hard use.

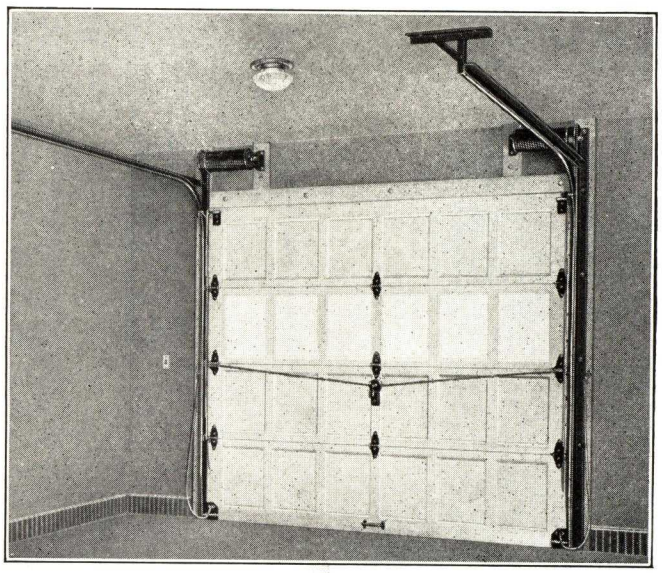
Vertical Track Brackets—Vertical track brackets are continuous, forming a rigid support for vertical track and counterbalancing spring assembly. The continuous bracket also shields the roller and cable mechanism from damage and from possible contact with anyone standing near the door.

Hinges—An ample number of tubular pin hinges are provided to insure proper operation and endurance.

Door Sections—Standard wood sections are made of full 1¾ in. Sitka Spruce or Western Pine stiles and rails and three-ply fir panels. Joints are mortised, glued with waterproof glue, and steel pinned through the tenons.

Latch and Lock—The door latches and locks the same as a house entrance door. Spring-operated bolts engage adjustable bolt strikes when door is closed. One central handle withdraws both bolts simultaneously. Handle locked by *full size* standard cylinder lock with night latch.

Models—Three models are available. Model 75 is the best door, with refinements such as zinc-cadmium plated hardware, rubber astragal, and primed wood sections. Model 50, which is considered the "standard" door is the same as Model 75 without the refinements. Model 40, the lowest priced OVERdoor, is the same as Model 50 except that it does not have the special closing action, and is equipped with a cremone bolt lock. Its points of superiority to competitive doors are its "twin torsion" spring and its continuous track brackets.



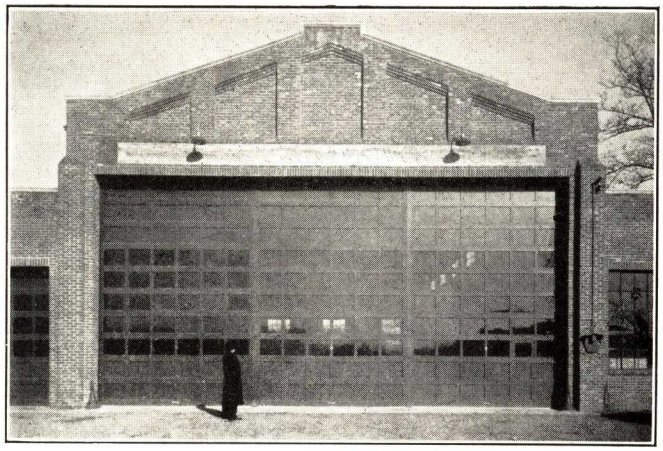
Standard Model 50 Barcol OVERdoor
Showing Position of Tailored "Twin Torsion" Counterbalancing Coil Springs

Stock Sizes—All models are available in three stock sizes: 8 x 7 ft., 8 ft. x 7 ft. 6 in., and 8 x 8 ft. Special sizes up to 20 ft. wide and 16 ft. high can be provided.

Special Designs—Special design doors to match architectural style of building can be made to order. Metal or metal-covered door sections are available in several types.

Special Devices—Many special devices are available, including provision for low headroom, a wicket door, reinforcement for wide doors, removable mullions, chain hoist, vertical doors, extra vertical clearance, etc.

OVERdoors on Service Station



Large Institution Garage

Sample Specifications

Model 50—Doors shall be Barcol OVERdoors, Model 50, as manufactured by Barber-Colman Company, Rockford, Ill. They shall be of a size as shown on the plans, and shall be accurately counterbalanced by means of tailored "twin torsion" springs connected to the lower corners by flexible steel airplane cable of ample strength.

Doors shall be equipped with a closing action which shall provide not less than ¼-in. clearance between door and door stops when the door is 3 in. and more open, but which shall bring it snugly against the stops at top and sides when closed.

Vertical tracks shall be furnished with continuous track brackets.

Doors shall latch automatically when closed. Locking shall be by means of standard size lock cylinder and night latch.

Doors shall be installed by the local distributor of the manufacturer.

Model 75—(The following three items convert Model 50 to Model 75. Any of them can be furnished on Model 50 as an extra.)

Hardware shall be zinc-cadmium plated.

Sections shall be primed before delivery.

A rubber astragal in the form of an upright "U" shall be fastened to the bottom of the door for its full width.

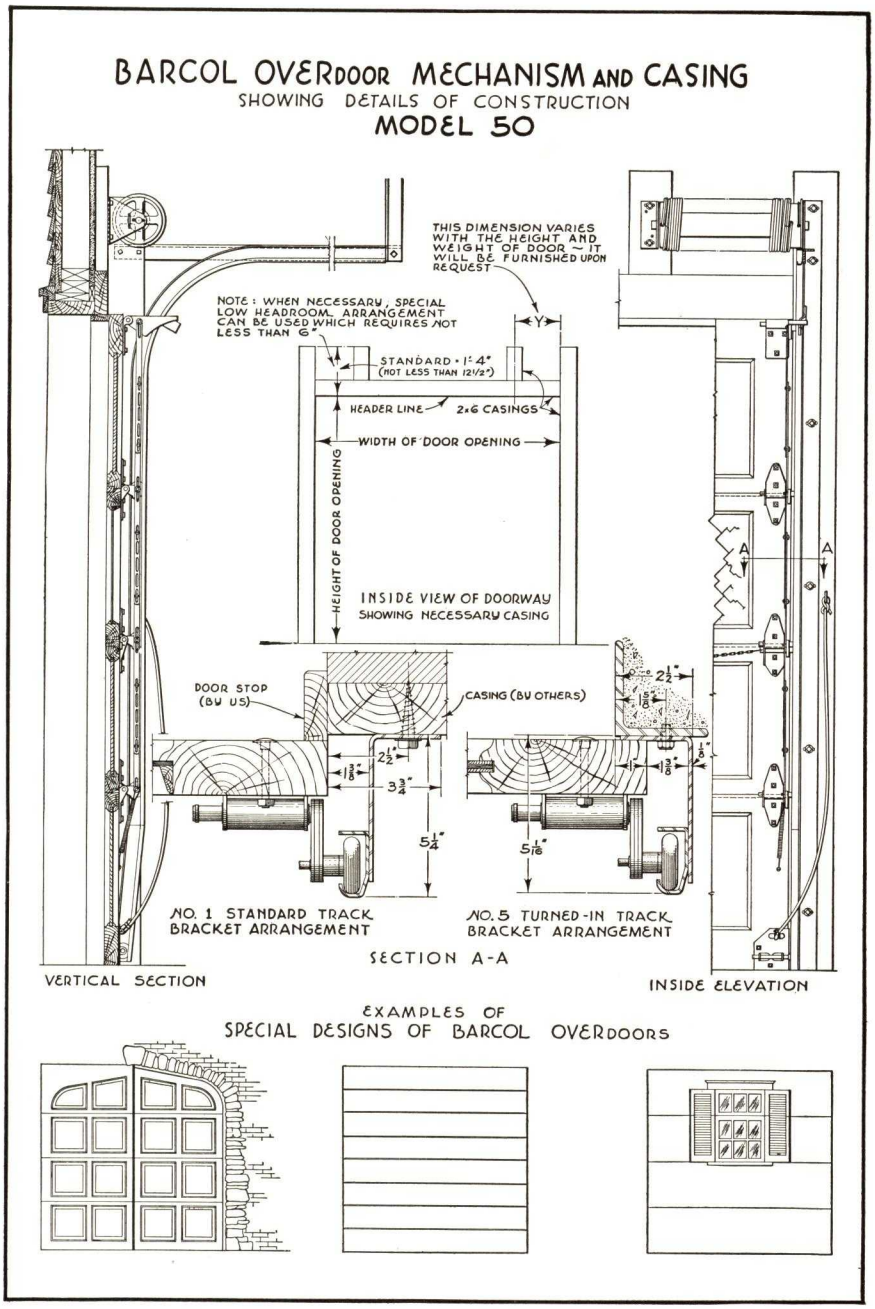
Model 40—Doors shall be Barcol OVERdoors, Model 40, as manufactured by Barber-Colman Company, Rockford, Ill. They shall be of a size as shown on the plans, and shall be accurately counterbalanced by means of tailored "twin torsion" springs connected to the lower corners by flexible steel airplane cable of ample strength.

Vertical tracks shall be furnished with continuous track brackets.

Doors shall be installed by the local distributor of the manufacturer.

Casing Specifications—(To be included in the carpenter's specifications).

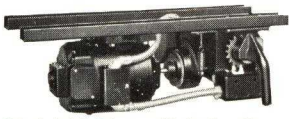
Door opening shall be cased with standard 2x6 lumber as shown on the detail to be furnished by the local distributor of Barcol OVERdoors.



For Barber-Colman Door and Gate Operating Equipment See Next Two Pages

OPERATING EQUIPMENT

Electric Door Operators



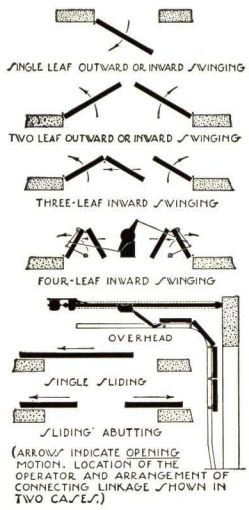
Model M Motor Unit for Overhead and Sliding Doors

Motor-driven Door Operators provide a means for opening and closing doors by power, and find their principal applications in residence and commercial garages, and some industrial buildings.

Barber-Colman Door Operators are simple and rugged in construction, and provide proper operation of the door at lowest maintenance cost.

An electric motor, through a clutch, drives a speed reduction mechanism which is linked to the door. Limit switches are provided which automatically stop the door accurately when fully opened or closed.

Model V Motor Unit for Swinging Doors



The various types of doors which can be handled by these operators are diagrammed above. Two principal types of operators are provided: the Model M for overhead and sliding doors, and the Model V for swinging doors. The Model S is a special form of the Model M, for residential overhead garage doors.

Control for these operators is obtained from any of the conventional types of switches, or from the "electric eye," or from the Radio Control. Switch controls include: the regular wall switch, the driveway post, the driveway plate, and wall switches suitable for exterior mounting. Special delayed-operation controls can also be provided.

Electric Gate Operators

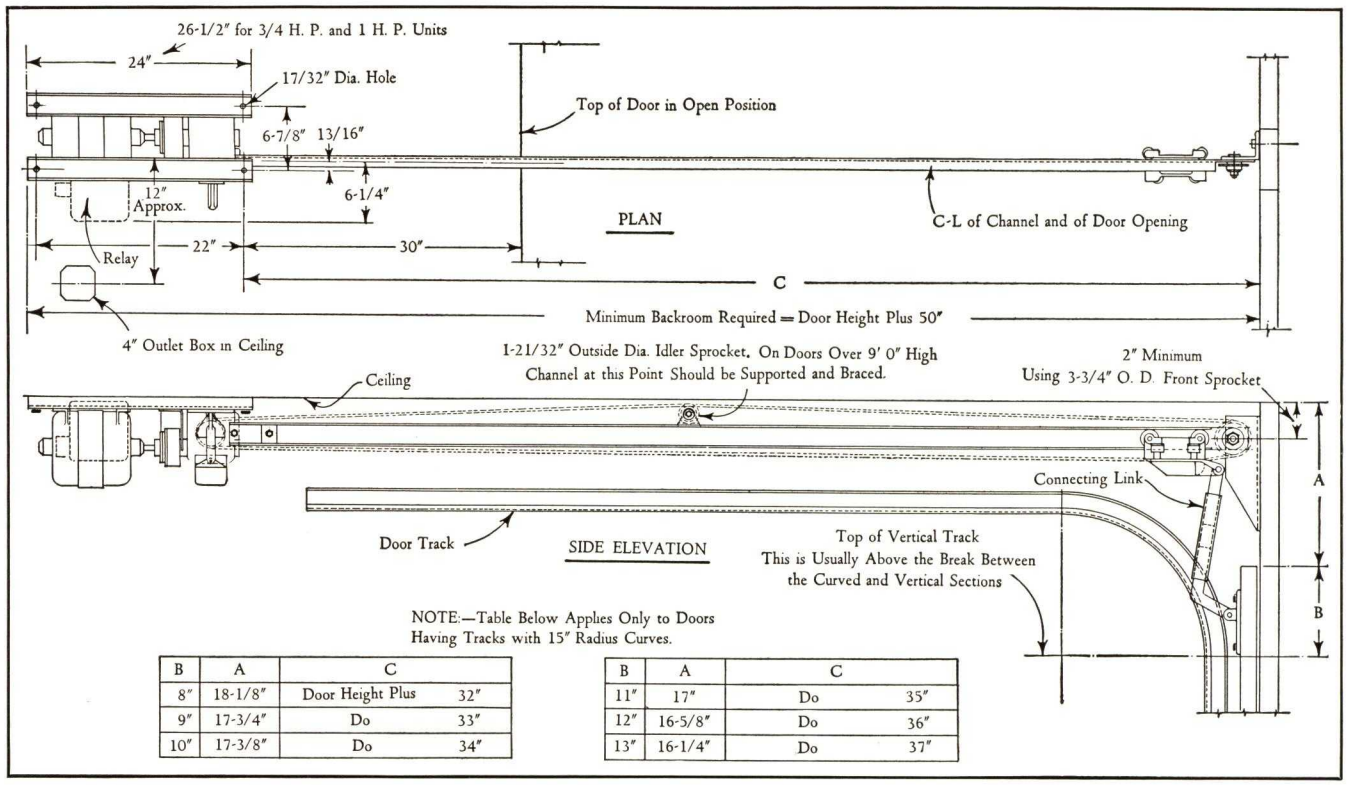
Motor-driven Gate Operators can be provided for most types of swinging and sliding gates, such as are found at entrances to estates, clubs, some residences, public buildings, factories, stadiums, etc.

The motor drives a speed reduction mechanism which is linked to the gate in the proper manner to operate it as required.

All parts are carefully protected from the weather and are ruggedly made to insure lasting service.

The same types of controls used on Door Operators can be applied to the Gate Operators, including the Radio Control.

Standard Installation Layout of Models M and MR Operators for Overhead Type Door

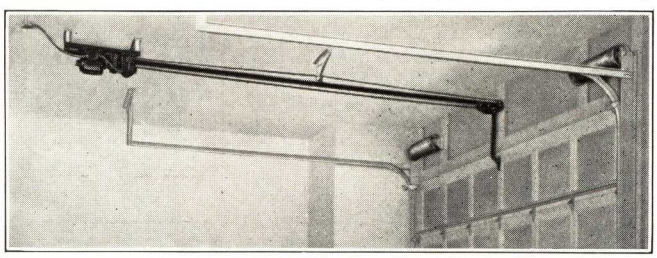


NOTE:—Table Below Applies Only to Doors Having Tracks with 15" Radius Curves.

B	A	C	
8"	18-1/8"	Door Height Plus	32"
9"	17-3/4"	Do	33"
10"	17-3/8"	Do	34"

B	A	C	
11"	17"	Do	35"
12"	16-5/8"	Do	36"
13"	16-1/4"	Do	37"

Sample Specifications for Operator for Overhead Type Door



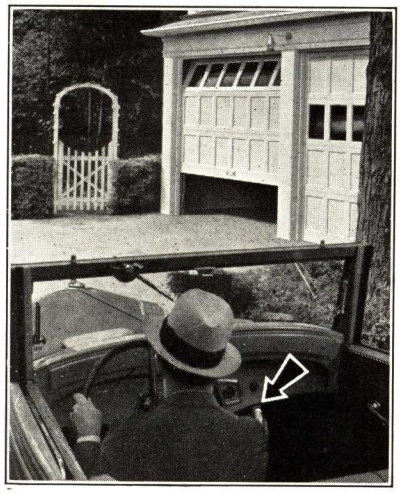
Door Operator shall be Model —— as manufactured by BARBER-COLMAN COMPANY, shall require but momentary (or constant) contact of the control switch, and shall include the following: Westinghouse, General Electric, or Leland motor of ample power and adapted to the type of electric power available; speed reduction by worm and worm gear running in oil; limit switch to shut off motor when door is fully open or closed; slip clutch for safety; *release device so door can be operated manually, if power is off, without removing bolts or pins or disturbing adjustment. *(Omit on residential jobs.)

Control shall be by wall switches located as shown on plans.

RADIO CONTROL

A Proven Convenience Backed by the Standard Barber-Colman Guarantee

The Radio Control is a Barber-Colman development which provides a means for opening and closing garage doors from a moving car. The driver pulls a knob or pushes a button on the instrument board and this sends a signal from the car as it approaches the garage. This signal actuates the standard operator, which opens the doors in the usual manner. Another signal from the car causes the doors to be closed. It is not necessary to stop the car, or get out of it, or reach out in any way.

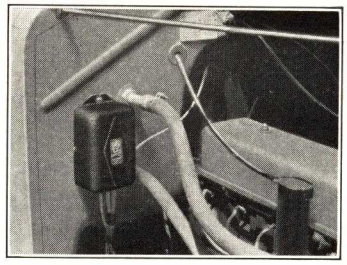


Opening the Doors with the Radio Control

As an additional feature, at night the lights in the garage and along the driveway are turned on when the doors are opened.

Special coding or frequency of the automatic transmitter of the Radio Control provides privacy and prevents operation due to other electric impulses such as lightning.

The Radio Control includes the automatic transmitter installed in the car and an automatic analyzing receiver located in the garage. The signal from the car is picked up by a receiving antenna in the driveway.

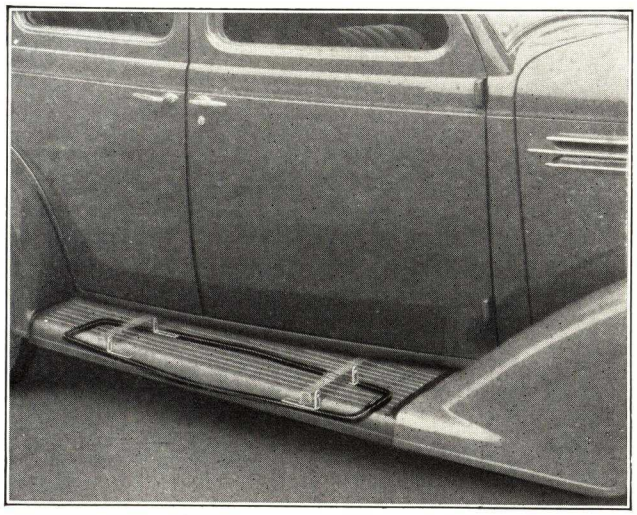


Model C Transmitter on Dash Board

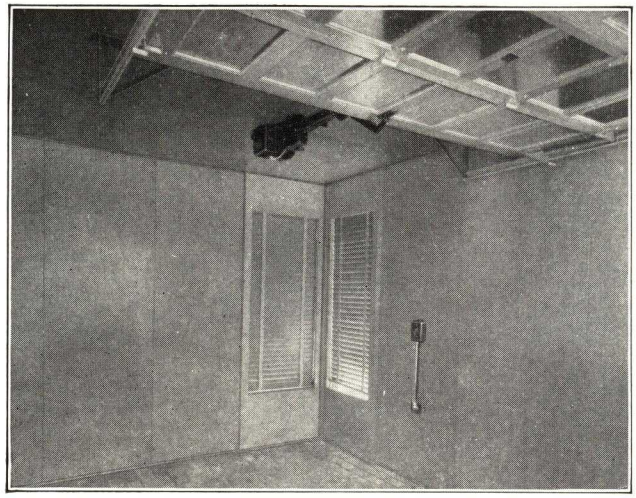
This device is entirely reliable, as shown by numerous fine residence garage installations which have been operating continuously for the past seven or eight years.

The Radio Control can also be used in connection with Barber-Colman Gate Operators, affording an unusual convenience at entrances where there is no gatekeeper.

Transmitting equipment can be readily removed from one car and installed in another.



Model C Transmitting Coil Under Running Board

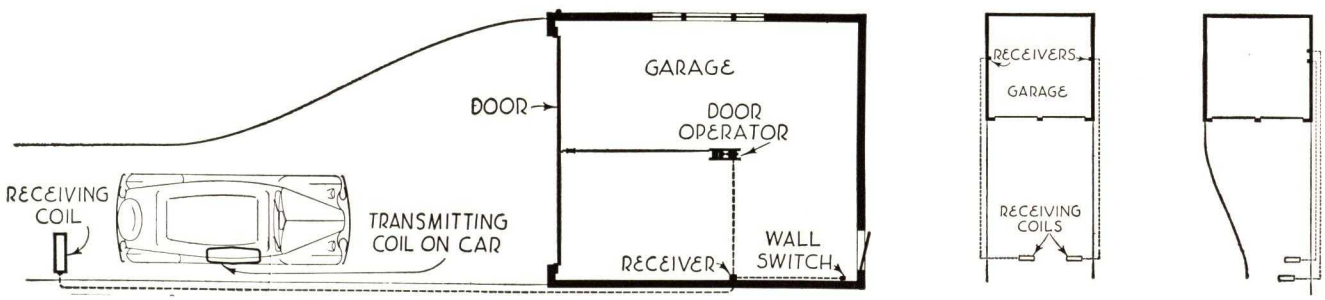


Model C Receiver on Wall in Garage

Sample Specifications

Control of garage doors and lights shall be by wall switches located as shown on plans and from the car by Barber-Colman Radio Control—the latter to be selective between installations by difference in coding or frequency, and not permit operation of the doors by other electrical impulses such as lightning.

Typical Layouts — Model C Radio Control



Radio Control is now available in simplified form at lower cost.

BETTER BILT DOOR CO.

Manufacturers of Overhead Type Doors

GENERAL OFFICES
115 West Avenue
JENKINTOWN, PA.

NEW YORK CITY OFFICE: 103 Park Avenue—Telephone, Caledonia 5-3060
DISTRIBUTORS IN PRINCIPAL CITIES

Better Bilt Specifications

Space Requirements—*Headroom* 12½-in. *Sideroom*—3¾-in.

Stiles and Rails—Douglas Fir or Sitka Spruce.

Panels—Fir laminated.

Track—*Vertical*—Continuous angle mounted. *Horizontal*—Angle mounted on all doors over 100 sq. ft.

Joints—Mortise and tenon waterproof glued, steel pinned. Ship-lap between sections.

Hardware—Extra heavy. *Guaranteed.*

Note: 12-in. hinges; angle-mounted vertical track; solid steel rollers; rollers and sheaves operate on ball bearings. Chain used for lifting. Cylinder type lock, operating lock bars across the entire width of door. All wide doors are braced on each section with *steel struts.*

Illustration by permission of Coca-Cola Co.

Better Bilt Door facilities enable them to build doors up to 35 ft. wide and almost any height, manually or electric operated

Superiority of Better Bilt Doors

(1) Highest quality millwork and hardware. Doors are full 1¾ in. thick.

(2) All rollers and sheaves are ball bearing.

(3) Simplicity of construction. Quick and easy installation.

(4) Rigid vertical track construction. Continuous angle iron mounting, assuring easy operation.

(5) Bar type locking device with cylinder lock. Rugged, safe and neat.

(6) Guarantee on all material and workmanship for one year. *The balancing springs are guaranteed for a period of five years.*

(7) Our Engineering Department is at your disposal to solve your door problems.

Accessories

In connection with Better Bilt Doors the following accessories can be furnished:

Wicket Doors
Swinging or Sliding Posts (require 22½-in. headroom).
Chain Hoist Operators (require 21½-in. headroom and 7½-in. sideroom on chain operator side of door only).
Electric Operators with any desired type of control (require 4-in. headroom in addition to that required by door or accessories).
High Lift to clear hydraulic greasing lifts.

Better Bilt Doors Are Easy to Install

In the past, it has been generally understood that overhead type doors could be installed only by experienced mechanics employed by the agents of the door manufacturer. There is no more skill or experience required to erect a Better Bilt Door than a swinging or sliding door. In fact, it is easier and faster to erect.

Directions furnished with each door, or our local distributor will supply erectors, if desired.

Stock Door Sizes

Stock sizes are as follows: 8-ft. x 7-ft.; 8-ft. x 7-ft. 6-in.; 8-ft. x 8-ft., doors 1¾ or 1⅜-in. thickness.

We also manufacture any size or style of door to your details and specifications.

Note: Doors of special detail can be manufactured meeting the various architectural design requirements. In this, and matters of special track layouts, our Engineering Department is completely at your service, furnishing proposed designs and possible arrangements of accessories to answer your problem. Better Bilt Door offers a complete line of accessories, wicket doors, low headroom, posts, etc., as already listed.

Metal Covered Kalamein or Tubular Steel Doors

Better Bilt Doors can also be furnished in metal covered kalamein or tubular steel. Further information on request.

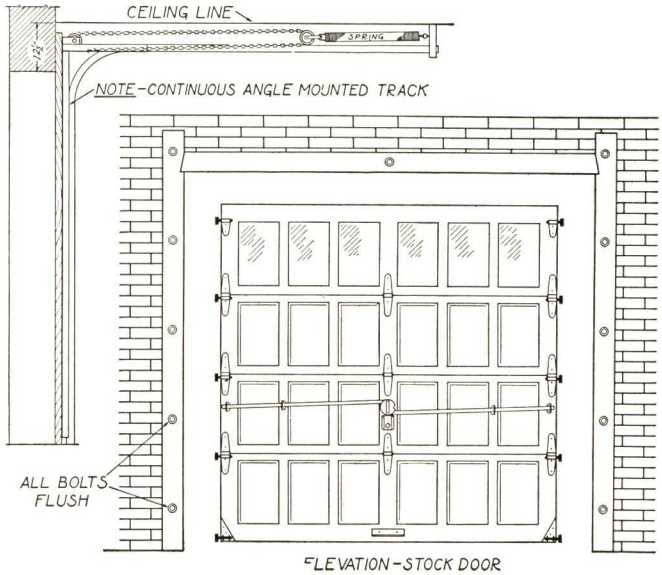
Sections for Door Height

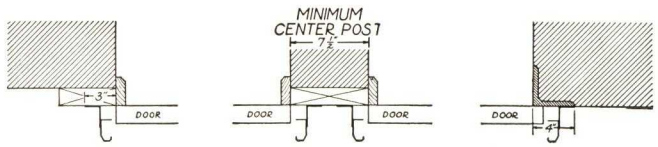
Doors up to 8-ft. 6-in.....Four sections
Doors 8-ft. 6-in. to 10-ft. 6-in.....Five sections
Doors 10-ft. 6-in. to 12-ft. 6-in.....Six sections
Doors 12-ft. 6-in. to 14-ft. 6-in.....Seven sections

Note: All doors of special "built-to-order" type are built up in unit sections of approximately 2 ft. in height.

Shipping Facilities

Shipment of above stock sizes can be made within 48 hours. Other sizes made to order and shipped within 10 days. Shipments made from our plant via water, rail or motor truck.





Details of Better Bilt Overhead Type Doors

FRANTZ MANUFACTURING CO.

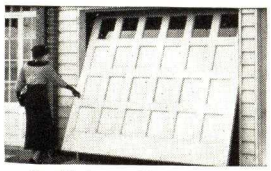
STERLING, ILLINOIS

NEW YORK, N. Y., 71-73 Murray Street — LOS ANGELES, CAL., 420 So. San Pedro Street

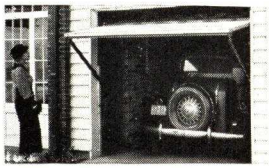
"OVER-THE-TOP" DOOR EQUIPMENT

(TRADE MARK REG. U.S. PAT. OFF.)

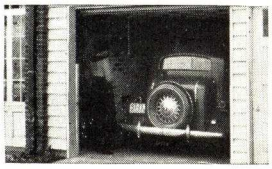
U.S. PATENTS NO. 1,926,871 - 1,960,307 - 1,879,790



A slight pull on the automobile type handle-lock starts the door up



The door continues upward to a full open position without further aid



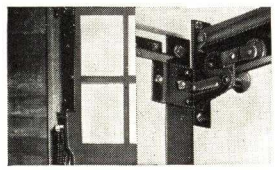
It's up, out of the way in 3 seconds. Closing is just as simple

"Over-the-Top" Door Equipment is manufactured and sold by makers of Frantz *Guaranteed* Builder's Hardware; it is backed by 25 years' experience in the building field.

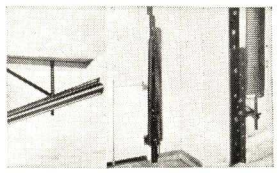
Features

"Over-the-Top" Door Equipment introduced a new principle for the operation of doors overhead. Instead of requiring the customary special, horizontal section doors, it is quickly applicable to *old* or new standard vertical doors. Strong angle irons furnished join doors into a solid, single unit.

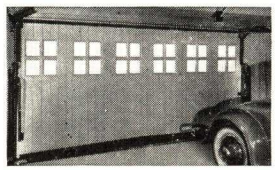
"Over-the-Top" Door Equipment is, we believe, the simplest and most foolproof device made for overhead operating doors. The one-piece door is supported overhead by two silent, roller bearing hangers, each running in a length of track at either side of the opening. The power to operate the door upward is supplied to two channel bar-lifting arms by heat treated and oil tempered coil springs. These springs are adjustable to balance the weight of the door so perfectly that, once started, the upward movement is automatic. An automatic brake on each arm stops the door as it reaches full open or closed position, preventing slamming. All-steel weatherstrip with holes located for bolts and other hardware not only assures a permanently weathertight job but also simplifies installation and eliminates guess work.



All-steel weatherstripping simplifies installation. Hanger runs noiselessly



Only 2 lengths of track needed. Powered by 2 oil-tempered springs



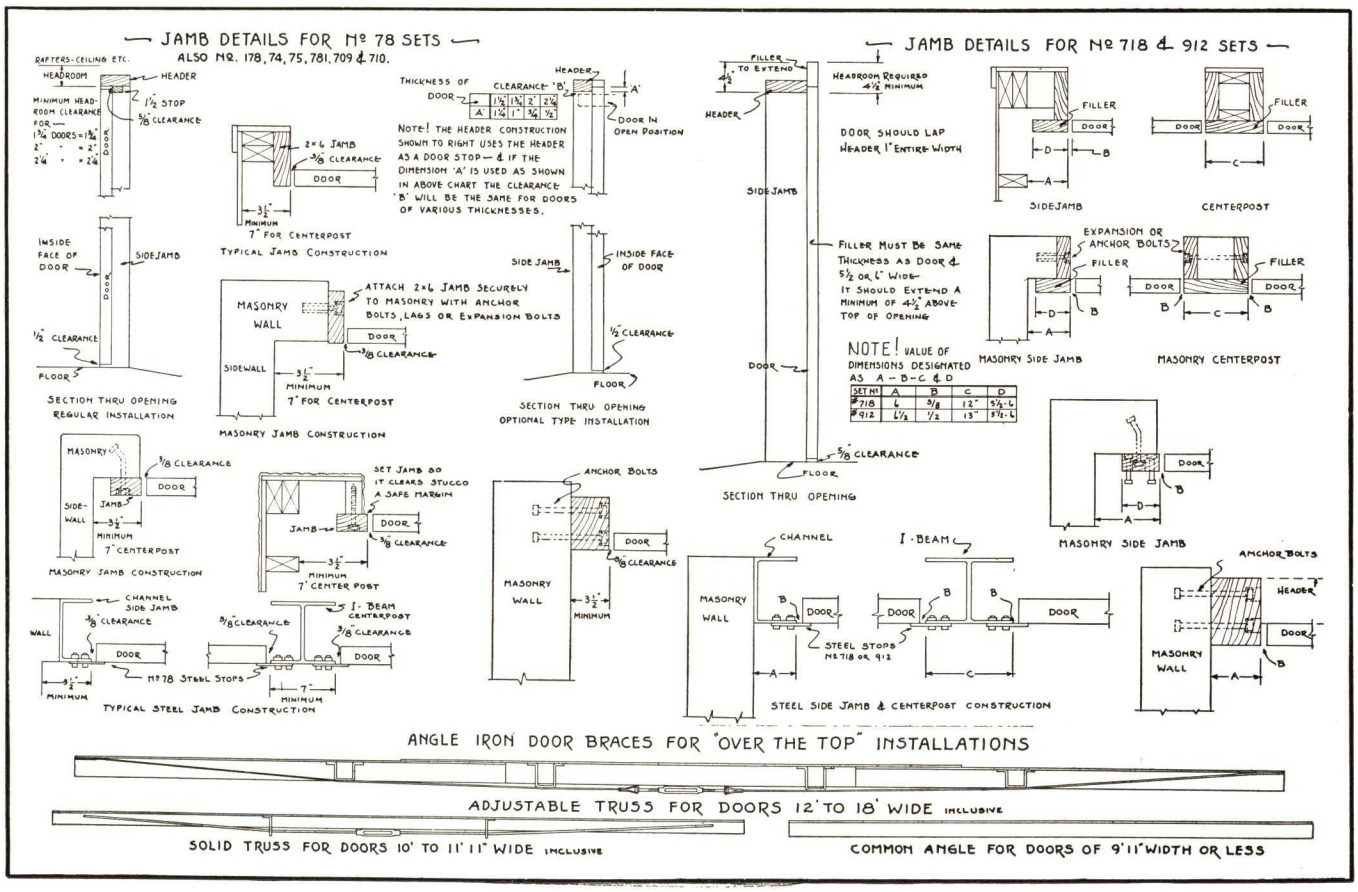
Applicable to door openings from 7x7 ft. to 18x12 ft. (see details below)

Installation

Installation of "Over-the-Top" Door Equipment is but a matter of a few hours. After the door has been fitted to the opening, the hardware can be quickly bolted in place. Once properly adjusted, an installation should never require servicing.

Specifications

"Over-the-Top" Door Equipment is made in 35 sizes — for openings ranging from a minimum of 7 ft. wide by 6 ft., 6 ins. high, up to a maximum of 18 ft. wide by 12 ft. high. Write for brochure, "Garage Door Magic," which gives complete information and specifications.



THE KINNEAR MANUFACTURING CO.

820-870 Field Avenue

COLUMBUS, OHIO

BRANCH OFFICES

BALTIMORE, MD., 210 Fidelity Building
BOSTON, MASS., 6 Jersey Street
CHICAGO, ILL., 1919 Randolph Wells Building
CINCINNATI, OHIO, 1357 Delta Avenue, Hyde Park
CLEVELAND, OHIO, 7704 Carnegie Avenue
DETROIT, MICH., 7710 Woodward Avenue
NEW ORLEANS, LA., 529 Hibernia Bank Building
NEW YORK, N. Y., 30 Rockefeller Plaza, R. C. A. Building
PHILADELPHIA, PA., 1321 Arch Street
PITTSBURGH, PA., 1200 Century Building
SAN FRANCISCO, CALIF., 361 Brannan Street
WASHINGTON, D. C., 410 Bond Building

AGENTS IN PRINCIPAL CITIES

KINNEAR DOORS

For Complete Catalog of Kinnear Doors, see File Index

RoL-TOP—(Wood—Sectional overhead type).

All-Steel RoL-TOP (overhead type).

RoL-TOP Electric Operators and Control Equipment.

Tip-Top Hardware (for converting regular garage doors to overhead operation).

Steel Rolling Service Doors (Coiling interlocking slat type).

Akbar Steel Rolling Fire Doors (Automatic Underwriters' labeled).

Superior Automatic Fire Shutters (Interlocking steel slat type).

Steel Rolling Grilles (also stainless steel, bronze and aluminum).

Door Power Units (Electric).

Bifolding Doors—Wood or Steel (Jack-knife and telescoping type).

Wood Rolling Doors and Partitions (Coiling slat type).

Vertical Sliding Doors—Wood or Steel.

RoL-TOP DOORS (Wood or Steel)

The RoL-TOP Door is ideal for residence garages and any type of commercial or industrial opening. Besides the numerous advantages afforded by its upward-action, it has the added feature of admittance of light. It is composed of hinged sections built of wood or steel, which operate in steel tracks extending back from the opening overhead. Door is counterbalanced by one or more springs.

Built in any practical size or panel design and operated manually, mechanically or electrically. Can be used with removable center mullions and other Kinnear auxiliary equipment. *Be sure to see Kinnear's complete catalog in this file.*

Wood RoL-TOP

All-Steel RoL-TOP

Tip-Top Door Hardware

For those desiring to economically convert the old conventional type of door into convenient upward-action, Kinnear also offers Tip-Top Door Hardware . . . a simple, ingenious and complete set of hardware that is inexpensive and easy to install.

Specialized Door Manufacturers for Over 40 Years

McKEE DOOR COMPANY

MAIN OFFICE AND FACTORY
6224-6228 South Oakley Avenue, CHICAGO, ILL.
BRANCH OFFICES
ST. LOUIS, MO., McKee Door Co. of Missouri, 1322 Delmar Blvd. PITTSBURGH, PA., McKee Door Co. of Penna., 261 Broadmore Ave.
REPRESENTATIVES IN PRINCIPAL CITIES
Representatives for Metropolitan New York Area, McKee DOOR SALES CO., 168-45 88th Ave., Jamaica, L. I., N. Y.—Telephone, Republic 9-7016

Products

Manufacturers of "McKee Doors," "McKee Steeldor" of sectional overhead type for residential garages, service stations, factories, warehouses, loading platforms, commercial garages, and many other uses; "Vertical Lift" Weight Counterbalanced Doors where adaptable.

Description

Doors are furnished of different constructions for any opening, manually or electrically operated. Auxiliary equipment includes: "Extra Clearance Construction" for more space above opening under door when open, "Low Headroom Construction," "Movable Center Post," "Chain Hoist Operation," "Heavy 3-in. Track Hardware," "Auxiliary Center Track," "Built-in Service Door," and "Electric Operators."

Sizes of sections, hardware and counterbalance are designed for each particular size door of proper strength and rigidity for operation and service.

Specifications

"McKee Doors" are furnished complete, including door sections, hardware, locking device, counterbalancing means, tracks, stop moulding, hangers. Installation is made by factory or their representatives with trained skilled mechanics, insuring proper door operation.

Opening preparation and jambs by others.

No painting or glass furnished unless specified.

Doors give full clear opening when open.

Wedge closing action as doors are moved to full closed position gives weather-tight fit all around, yet freeing itself from jamb stop when opened, allowing free operation.

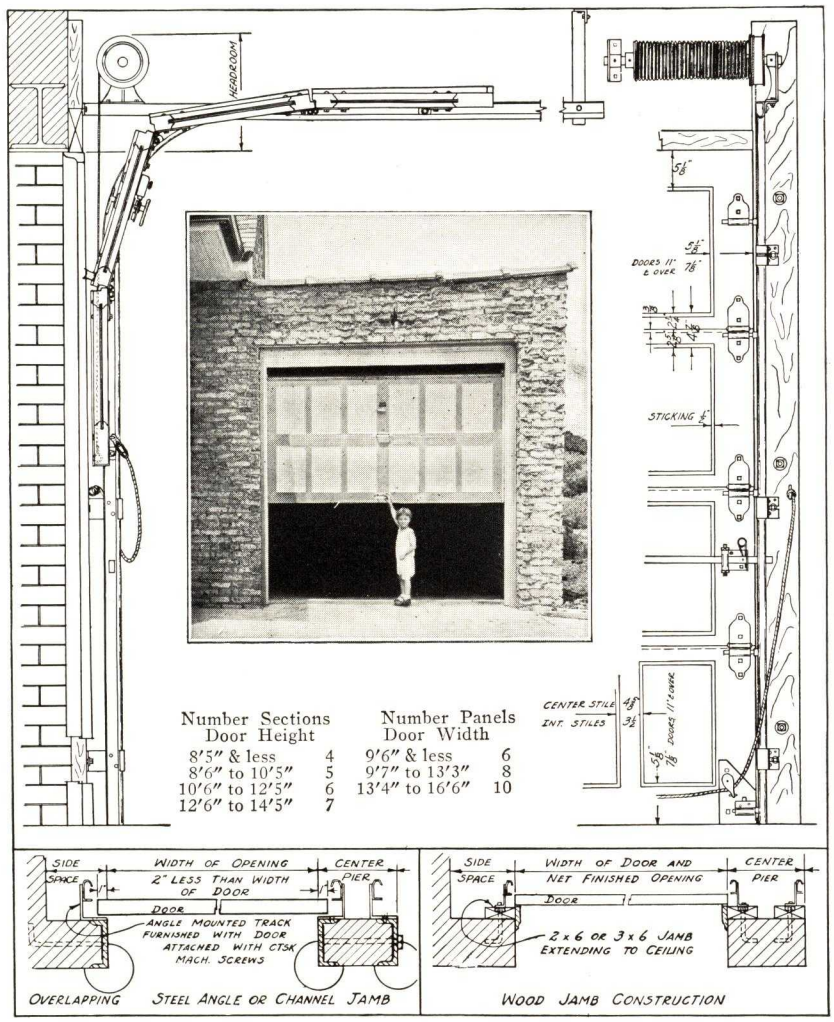
Locking device is Sargent Cylinder Lock, key operated outside, engaging with heavy steel bars positively bolting through tracks on both sides of opening. Cylinders keyed alike or master-keyed if desired. Adaptable also "Inside Lock Only" when specified.

All moving parts are roller or ball-bearing design with floating roller shafts. Heavy sash cord pull down ropes furnished and suitable lift pulls each door. All hardware applied with carriage bolts.

Twin spring counterbalance with direct pull to door, enabling perfect balance in all positions, each spring developing and thereby exerting proper tension to respective side of door, eliminating binds.

Doors give easy, quiet, smooth operation.

Standard doors are paneled design, stiles and rails of Sitka Spruce, 1¾ in. thick, ⅜-in. 3-ply Fir panels, mortised and tenoned construction, ⅞-in. rabbeted section joints. All sections furnished paneled or any open for glass in positions specified. Special door designs as Batten Type, Raised Panels, Raised Moulding, Segment Head, Special paneling arrangements and Special lumbers available.



Number Sections Door Height		Number Panels Door Width	
8'5" & less	4	9'6" & less	6
8'6" to 10'5"	5	9'7" to 13'3"	8
10'6" to 12'5"	6	13'4" to 16'6"	10
12'6" to 14'5"	7		

OVERLAPPING — STEEL ANGLE OR CHANNEL JAMB

WOOD JAMB CONSTRUCTION

RESIDENTIAL MODEL

Stock Sizes—8'0"x8'0", 8'0"x7'6", 8'0"x 7'0", 1⅜" and 1¾".

Tracks—2"-13 gauge, 15" radius, special steel formed section, bracket mounted.

Rollers—Ball-bearing, pressed steel, hardened raceways.

Hardware and Hinges—12 gauge.

Counterbalance—Twin, encased ball-bearing motor spring assemblies, direct pull, oiled tempered spring steel.

Lifting Means—3/16" 7x19 aeroplane cable, 3300-lb. tensile.

Space Requirements—Headroom 16", Side Space 4", Center Pier 8".

Low Headroom Construction

12" Headroom—Springs mounted rearwardly, cable operates over idlers.

6" Headroom—Quick turning special track assembly, springs mounted rearwardly. Side space 6", Center pier 12".

Special Features

Used where specified only

Rubber Astragal on bottom rail. Udylite Hardware Finish "Cadmium Plating" or other rust proofing process.

LARGER SIZES

Tracks—2"—13 gauge 15" or 20" radius, mounted with continuous angles.

Rollers—Ball-bearing fully machined raceways, case hardened. Roller shaft engages two end hinges, doors over 11' wide.

Hardware and Hinges—12 gauge and heavier.

Trusses—All doors 12' and wider have section reinforced with steel truss member.

Counterbalance—Twin Torsional roller-bearing spring assemblies, direct pull, oil tempered spring steel, adjustable for exact tension.

Lifting Means—3/16" 7x19 aeroplane cable, 3300-lb. tensile.

Space Requirements—Headroom for 15" radius tracks 18"; Headroom for 20" radius tracks 22". Side Space 4", Center Pier 8".

Special Construction adaptable for 2" less headroom than shown, or 12" headroom construction available.

MOVABLE POST

For wide openings to give full unobstructed width.

Construction—Post moves out of opening on special guide track to side of doorway specified. When closed it engages and locks to floor and overhead tracks securely.

Space Requirements—Headroom 24", Side Space to which post rolls 18".

Special Construction adaptable for 4" less headroom than shown, available.

HEAVY LARGE DOORS

Recommended over 180 sq. ft. and over 16'6" wide.

Tracks—3"—11 gauge 20" radius, mounted with continuous angles.

Space Requirements—Headroom 22", Side Space 5½", Center Pier 11".

Chain Hoist

Recommended over 190 sq. ft., over 18' wide, over 13' high.

Not required if electric operated.

Construction—Drive shaft over doorway engaging chain lifting means with a hoist hand wheel geared to drive shaft on side of door specified.

Space Requirements—Headroom 22", Side Space 5½", Side Space for Hand Wheel side 14".

Auxiliary Track

Recommended all doors 20' wide and over.

Construction—Horizontal center support to sustain rollers fastened to center of door when door is open.

SERVICE DOOR

Not recommended for doors over 12' wide.

Construction—Size of service door approximately 2'x5'6", built up in lower three sections on side of door specified. Furnished to open outwardly, kept constantly closed by spring closer, with cylinder lock for same.

EXTRA CLEARANCE CONSTRUCTION

Construction—Furnished as Large Size Door Equipment with tracks normally extended vertically above door opening before turning horizontally. Double track radius above door head available for fitting parallel with pitch of roof or for effective counterbalance when required.

Counterbalance—Twin Torsional roller bearing spring assemblies, oil tempered spring steel, with special cone drum for change in radius arm to effectively counterbalance while the travel of the door is moving in the full vertical position.

Space Requirements—Door tracks overall to within 10" of ceiling. Available also tracks to within 6" of ceiling, and pitch upwardly to rear.

ELECTRIC OPERATORS

Construction—Heavy unit particularly adaptable for commercial uses to withstand constant and continuous operation. Momentary contact unit, Built-in Gear Reduction in motor Magnetic Brake, Limit Switch veneer adjustment, Reversing Relay, Three Button Control, "Up", "Down", "Stop."

One Control Station furnished. Extra and Special Type Controls when specified.

Wiring to circuit by others.

Low Voltage Control equipment optional.

Space Requirements—Headroom 20".

Note: For Steel Jambs; all tracks continuous angle mounting, requires 1 in. additional side space; 2 in. additional center pier width. For lesser space requirements; Special Constructions available to fit in particular conditions. Consult us for details.

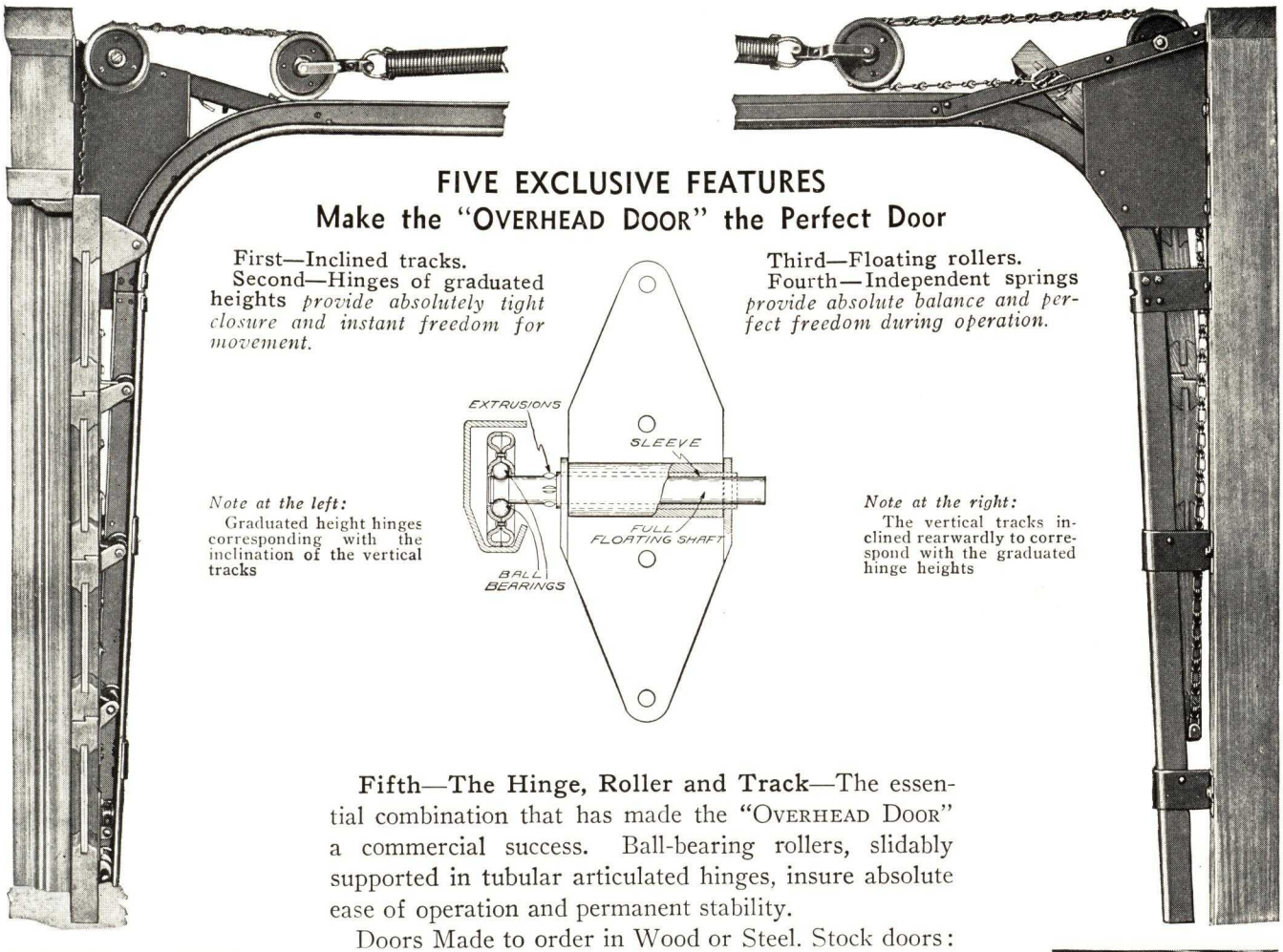
MEMORANDA

OVERHEAD DOOR CORPORATION

Manufacturers of The "OVERHEAD DOOR" for Any Opening from the Private Garage to the Largest Airplane Hangar

MAIN OFFICE AND FACTORY
HARTFORD CITY, IND., U. S. A.

THE "OVERHEAD DOOR" WITH *Salt Spray Steel* TRACKS AND HARDWARE **TESTED** BY A STANDARD SALT SPRAY TEST



FIVE EXCLUSIVE FEATURES
Make the "OVERHEAD DOOR" the Perfect Door

First—Inclined tracks.
Second—Hinges of graduated heights *provide absolutely tight closure and instant freedom for movement.*

Third—Floating rollers.
Fourth—Independent springs *provide absolute balance and perfect freedom during operation.*

Note at the left:
Graduated height hinges corresponding with the inclination of the vertical tracks

Note at the right:
The vertical tracks inclined rearwardly to correspond with the graduated hinge heights

Fifth—The Hinge, Roller and Track—The essential combination that has made the "OVERHEAD DOOR" a commercial success. Ball-bearing rollers, slidably supported in tubular articulated hinges, insure absolute ease of operation and permanent stability.

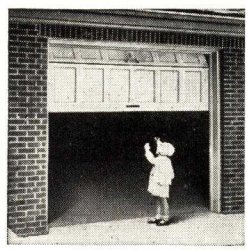
Doors Made to order in Wood or Steel. Stock doors: 8 ft. x 7 ft.; 8 ft. x 7 ft. 6 in. and 8 ft. x 8 ft.

"Overhead Door" Service

Our representative will call upon you personally and stamp his address in this space, so that you will know where to get the information or service you may need.

We Manufacture the Door and Hardware Complete and Install Anywhere in U. S. A.

Stock Door—Closed

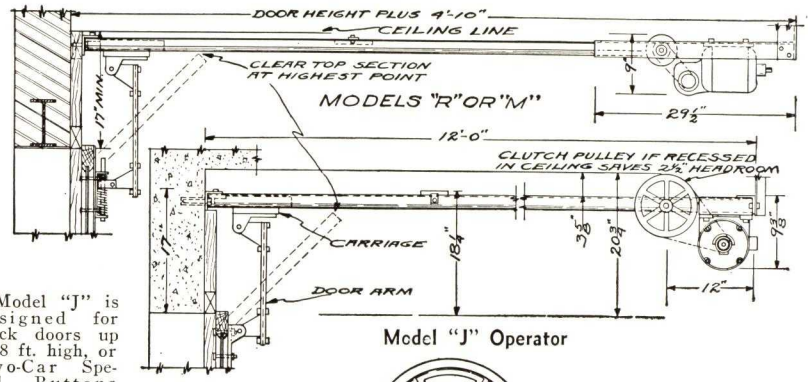


Stock Door—Partly Open

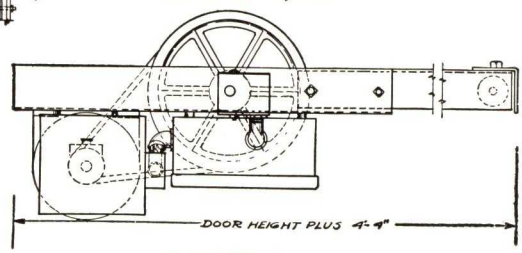
THE UNDERWRITER APPROVED "OVERHEAD DOOR" ELECTRIC OPERATORS

Model "J" is designed for stock doors up to 8 ft. high, or Two-Car Special. Buttons are held during the period of operation.

Model "A," fully automatic, is designed for the same doors as Model "J" and also for commercial doors up to 10 ft. wide by 10 ft. high. Model "R" push buttons are held during operation. Model "M" is fully automatic. Type "C" and "D" (not illustrated) for large doors. Any "Overhead Door" can be arranged for electric operation.

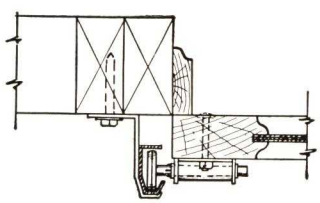


Model "J" Operator

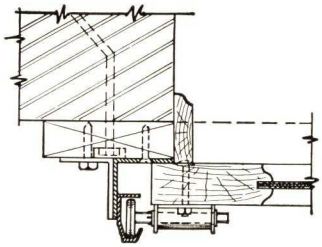


Model "A" Operator

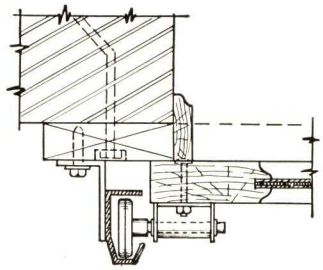
CLASSIFICATION OF TRACK



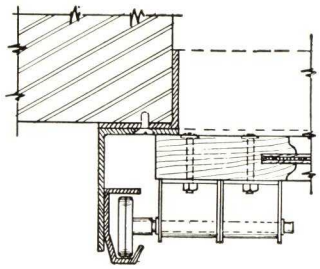
Track One
Bracket mounted 2-in. track



Track Two
Angle mounted 2-in. track



Track Three
Bracket mounted 3-in. track



Track Four
Angle mounted 3-in. track

Track One—"A"
2½-in. angle reinforced horizontals in place of 1¼-in. angle

Track One—"B"
2½-in. angle reinforced verticals for drill and tap job

GENERAL SPECIFICATIONS

Stock Doors

Stock size doors are 8 ft. wide by 8 ft. high; 8 ft. wide by 7 ft. 6 in. high; 8 ft. wide by 7 ft. high, either 1¾ or 1⅜ in. thick.

Stock doors 1¾ in. thick are made with 4-in. wide center stiles, 5¼ in. end stiles, 2 5/16-in. center rails, 4-in. top rails, 5-in. bottom rails. Stock doors 1⅜ in. thick, 3¼-in. center, 7⅛-in. end stiles; 2 5/16-in. center, 5-in. bottom and 4-in. top rails. Each section is made with 5 center stiles and 6 three-ply fir panels ⅜ in. thick, any or all may be left open for glass.

Two-Car-Special

Single door, 12 to 16 ft. wide, up to 8 ft. high, 1⅜ in. thick, made in 4 sections. Sections are properly strutted to give absolute rigidity. This light door of great strength is easily operated by hand. The Model "J" or "A" operator is well adapted to this Two-Car-Special door.

Doors Made to Size

Doors other than stock, 1¾ in. thick, in general, are constructed as follows: Doors up to 10 ft. 2 in. wide are made with 3¼-in., 4-in. or 5-in. center stiles, 2 5/16-in. center rails, 5-in. end stiles, 5-in. top rails and 6-in. bottom rails. The bottom rails can be furnished extra wide if desired.

Doors from 10 ft. 3 in. to 16 ft. wide are made with 5-in. wide center stiles, 2 13/16-in. center rails, 6-in. end stiles, 6-in. top rails, 7-in. bottom.

Stock Materials

Stiles and rails mortised and tenoned, casein glued, steel doweled, are milled of straight grained Sitka Spruce, free from knots. Panels are three-ply fir, ⅜ in. thick, manufactured with waterproof and termite-proof glue. Sections are sanded, ready for paint or varnish. 1¾ in. or 1⅜ in. is standard thickness. 5/16-in. rebated weather-joint used throughout. Special material includes clear cypress, white pine (2¼ in. thick available) chestnut, or red oak. Panels may be solid, decorative or raised. Hardware specifications, see Track 1, 2, 3, 4, 1"A" and 1"B" above.

Tracks and Hardware of Salt Spray Steel

All the tracks and hardware for The "Overhead Door" are made of Salt Spray Steel, a metal that is made by fusing hot zinc into hot steel. All metal parts are stamped and formed from this metal ready to fabricate, without any further rust-resisting methods to be applied. By this process, the user is assured of maximum protection against atmospheric corrosion.

Number of Sections Required

Doors up to 8 ft. 6 in..... 4 sections
Doors from 8 ft. 6 in. to 10 ft. 6 in..... 5 sections
Doors from 10 ft. 6 in. to 12 ft. 6 in..... 6 sections
Doors from 12 ft. 6 in. to 14 ft. 6 in..... 7 sections

Glass Arrangement

Glass may be substituted for one or all panels in any section. Glass not furnished unless specified.

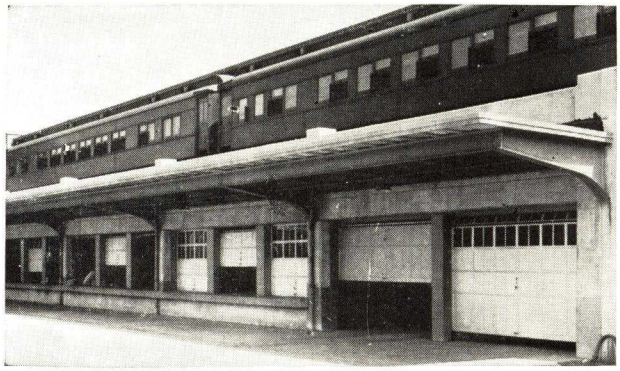
Doors of Stock Design

From the beginning The "Overhead Door" was planned to meet the architectural trends. The stock stiles and rails may be arranged to meet with any glass and panel design, if necessary.

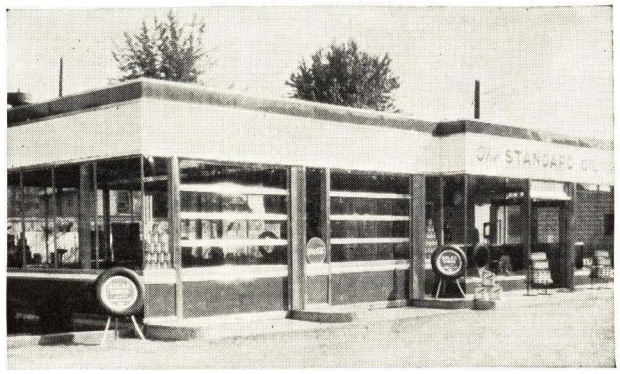
Doors Furnished Complete

Every "Overhead Door" is a complete unit. The sections are designed for "Overhead Door" operation. The hardware is designed to properly support and guide the sections. Every door includes all necessary hardware for installation.

"OVERHEAD DOORS," TUBULAR STEEL CONSTRUCTION



Union Station, Dayton, Ohio



Standard Oil, Zanesville, Ohio

TUBULAR STEEL CONSTRUCTION

Tubular steel "OVERHEAD DOORS" are constructed of specially rolled sections forming the rails and stiles. All joints are electric welded and ground smooth. Any or all sections may be arranged for glass. Metal panels and glass are set in rubber channel, insuring watertight construction. Bronze weatherstrips are used at the sides and top. A rubber weatherstrip is used at the bottom. Metal doors cannot be scribed to "fit the floor." Care must be taken to make the floor level.

Tubular steel doors have the same general appearance of wood doors. All steel doors are finished with a blue gray synthetic lacquer. Chain hoist will be found of great advantage in operating heavy steel doors. Electric controls are available on all steel doors. Consult our Certified Representative or write OVERHEAD DOOR CORPORATION, Hartford City, Ind. for complete information.

A NATION WIDE SALES AND INSTALLATION SERVICE

Afforded by the following "OVERHEAD DOOR" COMPANIES and their Representatives, in every community. This great network of Sales and Installation Service is ready to assist in selecting the proper door and equipment. We take full responsibility in the matter of installation and render future service that assures lasting satisfaction.

"OVERHEAD DOOR" DISTRIBUTORS

OVERHEAD DOOR CO. OF NORTHERN ALABAMA
Moore-Handley Hardware Co., Birmingham, Ala.

OVERHEAD DOOR CO. OF SOUTHERN ALABAMA
P. O. Box 441, Montgomery, Ala.

OVERHEAD DOOR CO. OF OKLAHOMA AND ARKANSAS
308 W. 7th St., Little Rock, Ark.
2030 N. W. 5th St., Oklahoma City, Okla.

OVERHEAD DOOR CO. OF NORTHERN CALIFORNIA
608 16th Street, Oakland, Calif.

OVERHEAD DOOR CO. OR SOUTHERN CALIFORNIA, INC.
216-222 No. Howard St., Glendale, Calif.

OVERHEAD DOOR CO., COLORADO, INC.
129 W. Third Ave., Denver, Colo.

OVERHEAD DOOR CO. OF NEW YORK
885 Congress Ave., New Haven, Conn.

OVERHEAD DOOR CO. OF DELAWARE
3212 Lancaster Ave., Philadelphia, Pa.

OVERHEAD DOOR SALES
727 First St., N. W., Washington, D. C.

OVERHEAD DOOR CO. OF FLORIDA & GEORGIA, INC.
17 Alexander St., N. W., Atlanta, Ga.
202 E. Emma St., Tampa, Fla.

OVERHEAD DOOR CO. OF IDAHO
811 Bannock St., Boise, Ida.

OVERHEAD DOOR CO. OF ILLINOIS
2820 So. Parkway, Chicago, Ill.

OVERHEAD DOOR CORPORATION
Hartford City, Ind.

OVERHEAD DOOR CO. OF INDIANAPOLIS
117 E. Vermont St., Indianapolis, Ind.

OVERHEAD DOOR CO. OF IOWA, INC.
63rd and Ingersoll Sts., Des Moines, Iowa

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4200 Tulane Ave., New Orleans, La.

OVERHEAD DOOR CO. OF MAINE
53 Pennsylvania Ave., So. Portland, Me.

OVERHEAD DOOR SALES CO.
6523 Maplewood Rd., Govans, Baltimore, Md.

OVERHEAD DOOR SALES COMPANY
70 Needham St., Newton Highlands, Mass.

OVERHEAD DOOR SALES OF MICHIGAN
108 Howard Ave., Lansing, Mich.

OVERHEAD DOOR COMPANY
6511 Strong Ave., Detroit, Mich.

OVERHEAD DOOR CO. OF MINNESOTA, INC.
1934 Riverside Ave., Minneapolis, Minn.

OVERHEAD DOOR CO. OF MISSISSIPPI
2000 No. Mill St., Jackson, Miss.

OVERHEAD DOOR CO. OF KANSAS CITY
2051 Main St., Kansas City, Mo.

OVERHEAD DOOR CO. OF MISSOURI, INC.
1039 So. Big Bend Blvd., St. Louis, Mo.

OVERHEAD DOOR SALES
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OVERHEAD DOOR CO. OF NEBRASKA, INC.
12th & Nicholas Sts., Omaha, Neb.

OVERHEAD DOOR COMPANY OF NEVADA
Box 220, Reno, Nev.

OVERHEAD DOOR COMPANY OF NEW HAMPSHIRE
310 Second St., Manchester, N. H.

OVERHEAD DOOR COMPANY, INC.
630 Ramsey Ave., Hillside, N. J.

METROPOLITAN OVERHEAD DOOR CO.
424 Madison Ave., New York, N. Y.

OVERHEAD DOOR CO. OF ARIZONA & NEW MEXICO
Southwestern Sash & Door Co., Albuquerque, N. M.
1745 E. Lester St., Tucson, Ariz.

OVERHEAD DOOR CO. OF NEW YORK, INC.
Cortland, New York

OVERHEAD DOOR CO. OF THE CAROLINAS
115 Latta Arcade, Charlotte, N. C.

OVERHEAD DOOR CO. OF NORTH DAKOTA
519 Second Ave., No., Fargo, N. D.

THE OVERHEAD DOOR COMPANY
2028 E. 71st St., Cleveland, Ohio

OVERHEAD DOOR CO. OF CINCINNATI
2259 Gilbert Ave., Cincinnati, Ohio

OVERHEAD DOOR COMPANY, INC.
4703 S. E. 24th Ave., Portland, Ore.

OVERHEAD DOOR CO. OF PENNA., INC.
Lewistown, Pa.

OVERHEAD DOOR SALES CO.
87 Weybosset St., Providence, R. I.

OVERHEAD DOOR CO. OF SOUTHERN CAROLINA
Box 413, Columbia, S. C.

OVERHEAD DOOR SALES OF SOUTH DAKOTA
211 E. 13th St., Sioux Falls, S. D.

OVERHEAD DOOR CO. OF MEMPHIS
677 No. Main St., Memphis, Tenn.

OVERHEAD DOOR CO. OF CENTRAL TENNESSEE
149 Fourth Ave., No., Nashville, Tenn.

OVERHEAD DOOR CO. OF CHATTANOOGA
1300 Carter St., Chattanooga, Tenn.

OVERHEAD DOOR CO. OF KNOXVILLE
510 No. Broadway, Knoxville, Tenn.

OVERHEAD DOOR CO. OF TEXAS
1317 Plowman Ave., Dallas, Tex.

OVERHEAD DOOR CO. OF UTAH
206 S. W. Temple, Salt Lake City, Utah

OVERHEAD DOOR SALES CO.
Box 124, Rutland, Vt.

OVERHEAD DOOR CO. OF VIRGINIA, INC.
210 E. Franklin St., Richmond, Va.

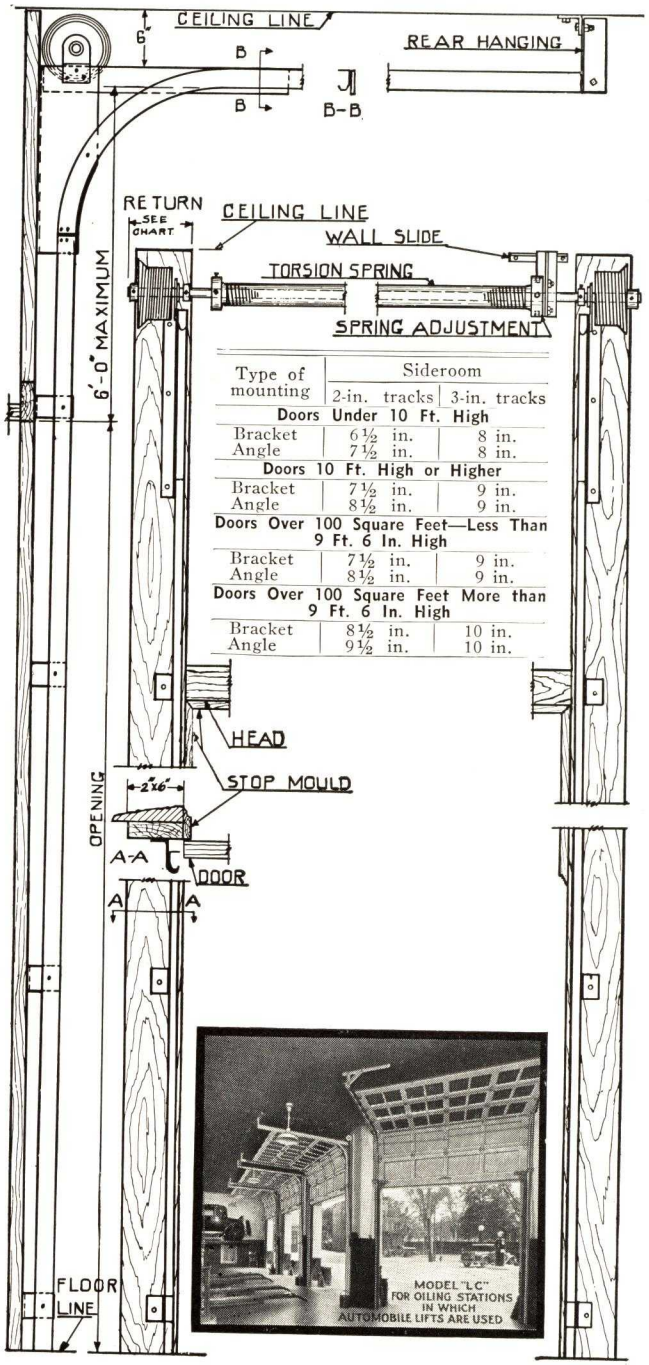
OVERHEAD DOOR CO. OF WASHINGTON STATE
1310 Ide Ave., Spokane, Wash.

OVERHEAD DOOR CO. OF WEST VIRGINIA, INC.
502 Chapline St., Wheeling, W. Va.

OVERHEAD DOOR CO. OF WISCONSIN, INC.
1736 No. Second St., Milwaukee, Wis.

OVERHEAD DOOR CO. OF WYOMING
15th St. and Bent Ave., Cheyenne, Wyo.

MODEL "LC" DOORS WITH VERTICAL TRAVEL HIGHER THAN REGULAR

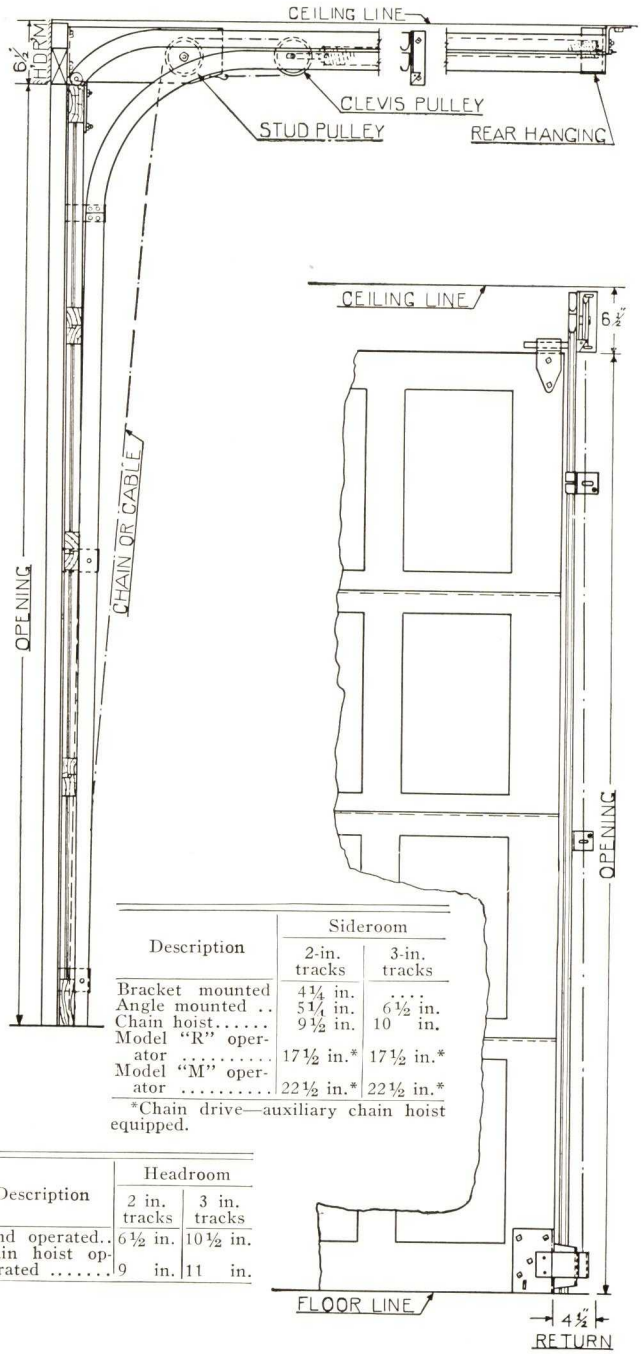


Type of mounting	Sideroom 2-in. tracks	Sideroom 3-in. tracks
Doors Under 10 Ft. High		
Bracket	6½ in.	8 in.
Angle	7½ in.	8 in.
Doors 10 Ft. High or Higher		
Bracket	7½ in.	9 in.
Angle	8½ in.	9 in.
Doors Over 100 Square Feet—Less Than 9 Ft. 6 In. High		
Bracket	7½ in.	9 in.
Angle	8½ in.	9 in.
Doors Over 100 Square Feet More than 9 Ft. 6 In. High		
Bracket	8½ in.	10 in.
Angle	9½ in.	10 in.

"Overhead Doors" are designed to be installed in such a manner, that when open, clearance will be available for elevating a car upon a greasing hoist. Vertical travel from the header to the underside of the horizontal track cannot exceed 6 ft. "LC" doors may be erected upon 2 or 3-in. track. For *Side Room,* see chart above which includes both brackets and angle mounted track.

"LC" equipment is adapted to nearly all doors made in either wood or steel. Torsion spring with cable and drums are standard equipment. If "LC" equipment is required on large or heavy doors, consult the Engineering Department for detailed information.

MODEL "LH" DOORS REQUIRING ONLY 6½-IN. HEADROOM ABOVE HEADER



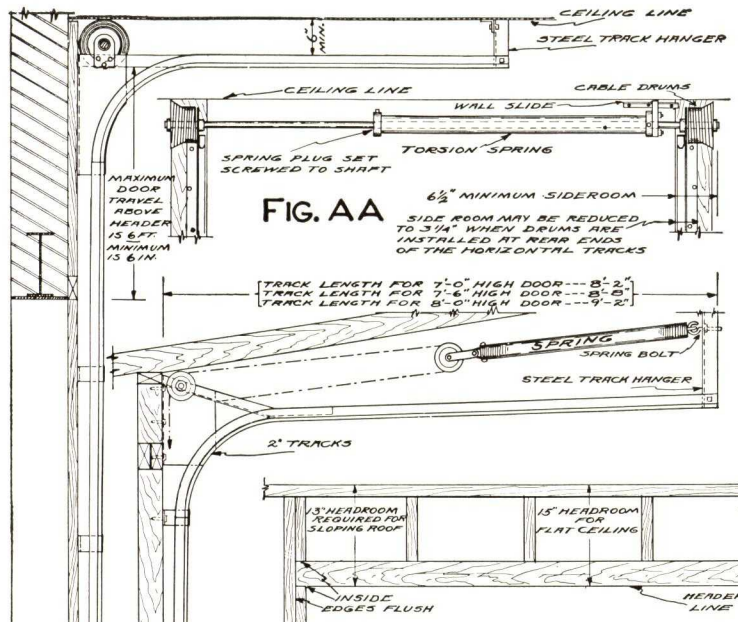
Description	Sideroom 2-in. tracks	Sideroom 3-in. tracks
Bracket mounted	4¼ in.	....
Angle mounted ..	5¼ in.	6½ in.
Chain hoist.....	9½ in.	10 in.
Model "R" operator	17½ in.*	17½ in.*
Model "M" operator	22½ in.*	22½ in.*

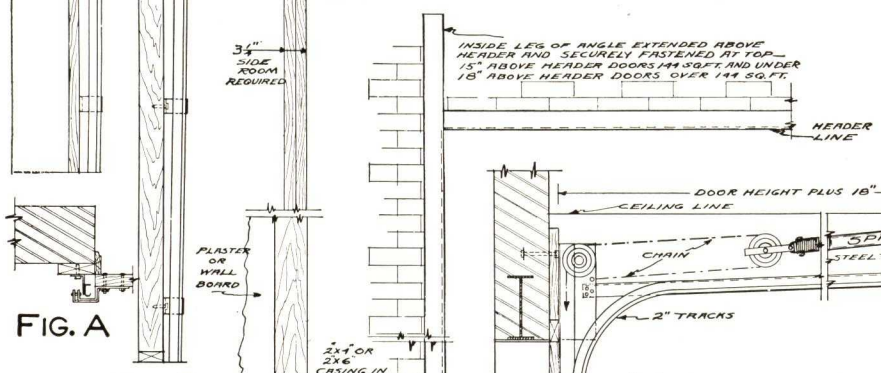
*Chain drive—auxiliary chain hoist equipped.

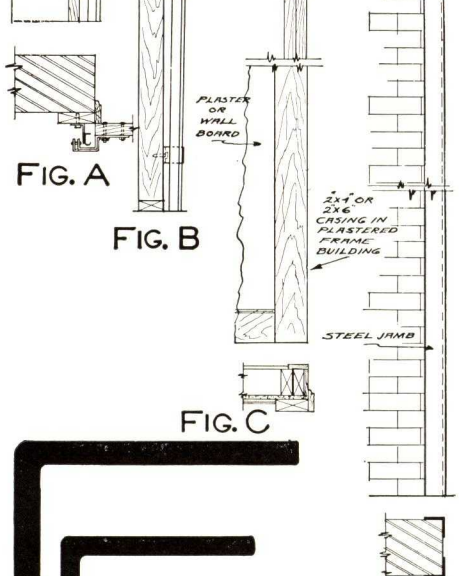
Description	Headroom 2 in. tracks	Headroom 3 in. tracks
Hand operated..	6½ in.	10½ in.
Chain hoist operated	9 in.	11 in.

Openings in which the clear space above the header is limited, require the use of Low Headroom Equipment. The door is carried by the regular vertical and horizontal tracks while the top of the door is guided by a second horizontal track. Low headroom equipment will permit installation in cases where the ceiling is but 6½-in. above the header or lintel. Controls may be used with the following headroom requirements:

Model	Track	Headroom with control
Model "J"	2 in.	9½ in. Pulley recessed; 13 in. not recessed.
Model "A"	2 in.	9½ in. Pulley recessed; 13 in. not recessed.
Model "R"	2 in.	9½ in.
Model "M"	2 in.	10½ in.







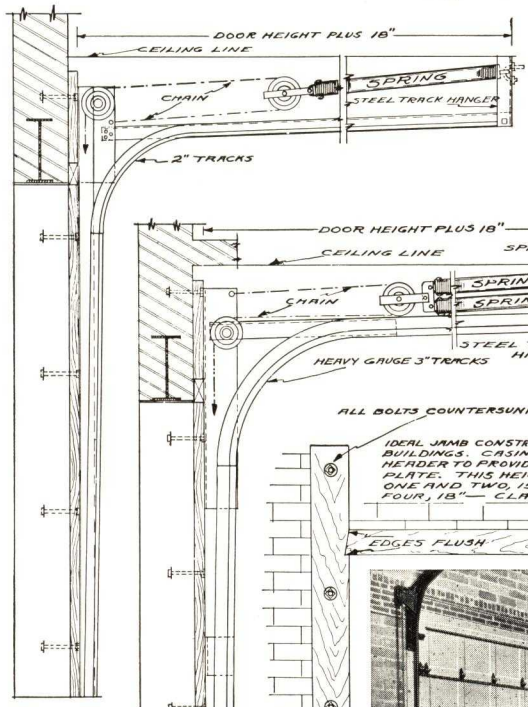


Fig.	Head Room (inches)	Side Room (inches)
A		6½–9
B	15	3¼
E	15	5¼
E*	18	5¼
F	18	5¾
F*	24	5¾

*With double springs.

Fig. A—"LC" Construction (Auto Lift Clearance). Headroom 14 in. minimum, sideroom 6½ in. minimum. Many doors may lie within 6 in. of ceiling. Door may be made to follow ceiling line. 2-in. bracket mounted track, torsion spring, cable, taper drums, ball bearing, cross-header shaft. Steel jambs use angle mounted track. "LC" equipment adapted to nearly all doors.

Fig. AA—Typical installation of torsion spring, cross-header shaft, drums and cable.

Fig. B—Stock doors and up to 144 sq. ft., Track One. Headroom 15 in., sideroom 3¼ in.—see Fig. C. 2-in. bracket mounted track, independent helical springs. Torsion springs may be used—see Fig. A. Steel jambs, use angle mounted track, Fig. E. (See Low Headroom.)

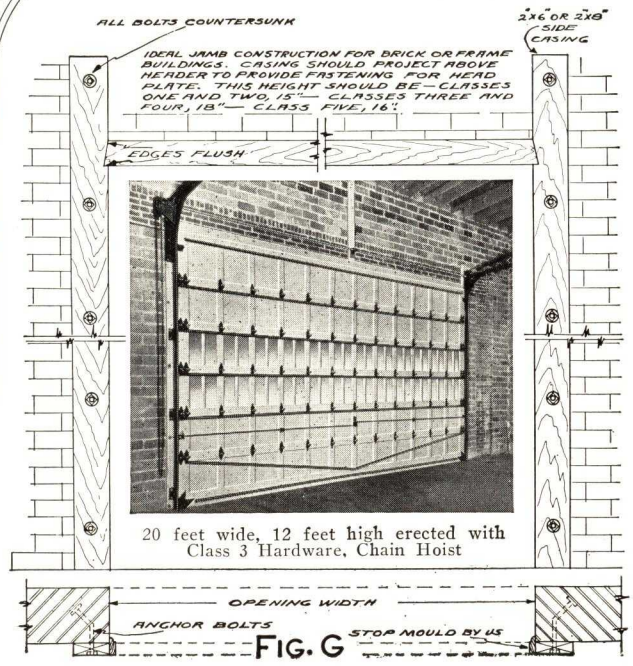
Fig. C—Ideal jamb construction for frame buildings. Headroom, slope ceiling 13 in. Note 2x4 arrangement and 2x6 casing. All inside edges flush.

Fig. D—Ideal steel jamb construction for masonry. Note inside member extends above header. Jambs should be flush fastened throughout.

Fig. E—Doors to 144 sq. ft., Track Two. Headroom 15 to 18 in., sideroom 5¼ in. Doors overlap jamb 1 in. on either side—see Fig. D. 2-in. angle mounted track, independent springs. Torsion spring—see Fig. AA. (See Low Headroom.)

Fig. F—Doors over 144 sq. ft., Track Three (3-in. track is bracket mounted), Track Four (3-in. track is angle mounted). Headroom 18 to 24 in. (see Fig. G.), sideroom 5¾ in. Springs independent (pairs) or torsion—see Fig. AA. (See Low Headroom.)

Fig. G—Ideal jamb construction for all doors. Casings, header, should all be flush inside.



20 feet wide, 12 feet high erected with Class 3 Hardware, Chain Hoist

RICHARDS-WILCOX MANUFACTURING CO.

INCORPORATED

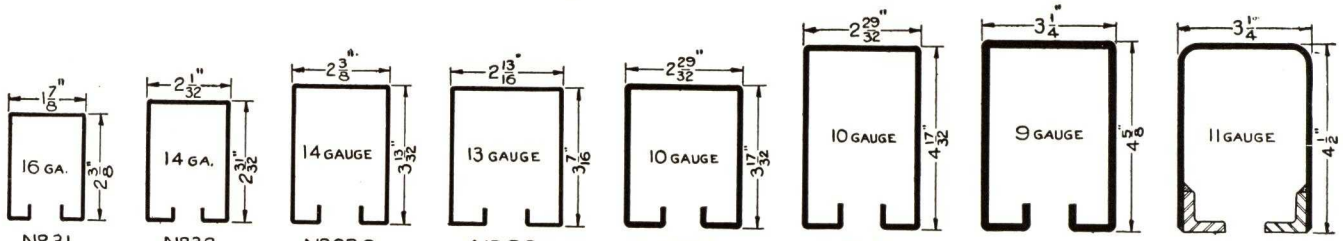
Manufacturers of Door Hangers and Hardware Specialties

AURORA, ILL.

BRANCHES IN ALL PRINCIPAL CITIES

For Other R-W Products, see File Index

R-W LOCK JOINT TROLLEY TRACKS



All the Above Tracks Are Manufactured for Use with Genuine R-W Patented Lock-joint Brackets, Assuring Positive Alignment and Preventing Separation of Track Sections at Joints

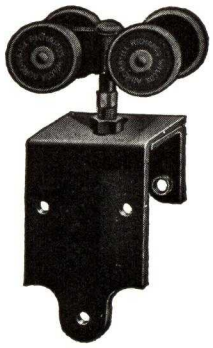
STRAIGHT AND PARALLEL SLIDING DOOR EQUIPMENT

Hanger No.	Track No.	For doors weighing, lb.	Thickness of doors, in.	Top of door to bottom of track, in.	
				Minimum	Maximum
20½B	31	300	1¾–2½	1 3/16	2 5/16
27½B-1	31	300	1¾–2	1 3/16	2 5/16
27½B-2	31	300	2¼–2¾	1 3/16	2 5/16
28½B-1	32	400	1¾–2	1 3/16	2 5/16
28½B-2	32	400	2¼–2¾	1 3/16	2 5/16
29½B-1	232	600	1¾–2	1⅛	2½
29½B-2	232	600	2¼–2¾	1⅛	2½
123½B-1	33	800	1¾–2	1¼	2⅜
123½B-2	33	800	2¼–3	1¼	2⅜
150½B-1	33	800	1¾–2	1¼	2⅜
150½B-2	33	800	2¼–3½	1¼	2⅜
499-1	233	1200	1¾ to 2	1¼	2⅜
499-2	233	1200	2¼ to 3½	1¼	2⅜
155½B	375	1500	2¼ to 3½	5½	6¾
149-1	145	2000	1¾ to 2¼	1¾	3¼
149-2	145	2000	2½ to 3¼	1¾	3¼
149-3	145	2000	3½ to 4¼	1¾	3¼
598-1	533	2000	1¾ to 2¼	1¾	3¼
598-2	533	2000	2½ to 3¼	1¾	3¼
598-3	533	2000	3½ to 4¼	1¾	3¼
1098-1	533	3000	1¾ to 2¼	5½	6½
1098-2	533	3000	2½ to 3¼	5½	6½
1098-3	533	3000	3½ to 4½	5½	6½
1049-1	145	3000	1¾ to 2¼	5½	6½
1049-2	145	3000	2½ to 3¼	5½	6½
1049-3	145	3000	3½ to 4¼	5½	6½

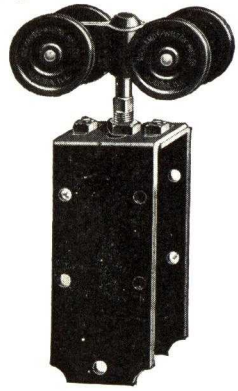
R-W LOCK JOINT TROLLEY TRACKS

Track No.	Gauge	Outside measurements		Standard lengths, ft.
		Width, in.	Height, in.	
31	16	1 7/8	2 3/8	Up to 12
32	14	2 1/32	2 31/32	Up to 12
232	14	2 3/8	3 13/32	Up to 12
33	13	2 13/16	3 7/16	Up to 12
233	10	2 29/32	4 17/32	Up to 12
375	10	2 29/32	3 17/32	Up to 12
*145	11	3¼	4½	Up to 12
533	9	3¼	4 5/8	Up to 12

*This track has a steel angle iron tread ¼-in. thick.



R-W No. 20½B Ball Bearing Hanger



R-W No. 150½B Ball Bearing Hanger

To specify. Furnish and install Richards-Wilcox Ball Bearing Hanger No. .... (see table) and Track No. .... opening .... ft. wide, ... ft. high, doors .... ins. thick.

Note: State whether overhead or wall attachment.

R-W NO. 235 "SLIDASIDE" GARAGE DOOR EQUIPMENT

R-W "Slidaside" is made for several types of right-angle door installations. Set AA single door; BB double doors where there is 2 ins. or more space between jamb and side wall. Set CC single doors; DD double doors where there is less than 2 ins. space between jamb and side wall. Set EE single doors; FF double doors where there is 26 ins. or more space between jamb and side wall, curved corner track used. Set GG 2 doors hinged together; set HH 2 pairs of doors hinged together where there is 26 ins. or more space between jamb and side wall, curved corner track used.

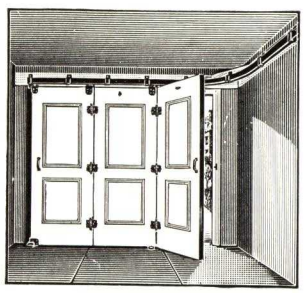
The JJ set is for 3 doors hinged together sliding around the corner on curved track, and the KK is for 2 groups of 3 doors hinged together, one group sliding around one corner, the other group sliding around the opposite corner. No limit to distance between jamb and side wall, curved corner track is used.

Specify whether doors are to be locked from inside and from outside, or if to be locked from inside only.

R-W NO. 235 "SLIDASIDE" GARAGE DOOR SETS FOR NO. 31 TRACK

Cat. No.	† Width of opening from, ft.	* Max. weight of each door, lb.	‡ Min. headroom, in.	Space jamb to side wall, in.
235-AA	8–10	200	9	2 or more
235-BB	8–10	200	9	2 or more
235-CC	8–10	200	6⅜	Less than 2
235-DD	8–10	200	6⅜	Less than 2
235-EE	8–10	200	6⅜	26 or more
235-FF	8–10	200	6⅜	26 or more
235-GG	8–10	200	6⅜	26 or more
235-HH	8–16	200	6⅜	26 or more
235-JJ	8–10	200	6⅜	No limit
235-KK	12–20	200	6⅜	No limit

*For doors weighing 200-350 lbs. each specify 232 track.
*For doors weighing 350-600 lbs. each specify 33 track.
†Be sure to specify actual width of opening.
‡For minimum headroom for heavy doors, see Catalog A-55.



No. 235-JJ Set, Three Doors Hinged Together Sliding Around the Corner on Curved Track

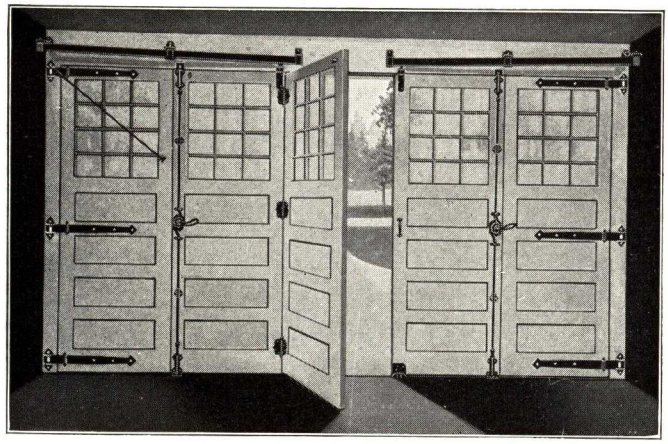
For opening with 6 doors, 3 doors slide around each corner on curved track, specify 235-KK

GARAGE DOOR EQUIPMENT

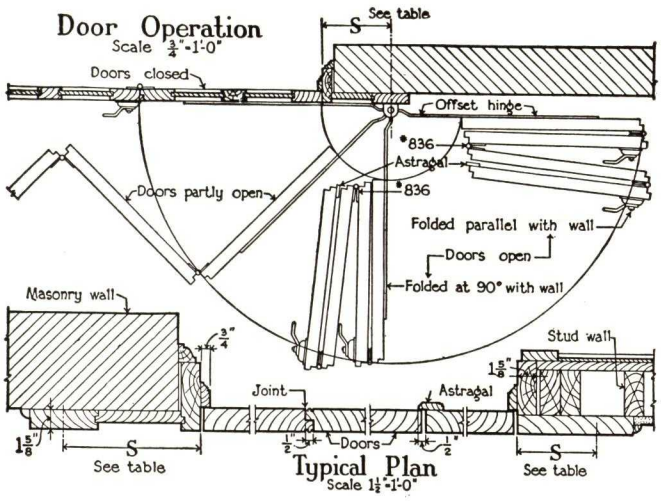
For Sliding Folding Doors

Opening From 8 to 30 Feet Wide

Slidetite



Slidetite Garage Door Equipment
In-Opening Set 1035-B5-31



NO. 1035 "SLIDETITE" STANDARD EQUIPMENT SETS

Number of doors	Maximum weight of each door using Track No.			"S" minimum, in.	
	31 100 lb.	232 175 lb.	33 250 lb.	Doors opening at 90° Thickness of: + in.	Opening parallel with wall, in.
3	1035-B3-31	1035-B3-232	1035-B3-33	2 doors +2⅛	1½
4	1035-B4-31	1035-B4-232	1035-B4-33	3 doors +2¾	1½
4	1035-B4½-31	1035-B4½-232	1035-B4½-33	2 doors +2⅛	1½
5	1035-B5-31	1035-B5-232	1035-B5-33	3 doors +2¾	1½
6	1035-B6-31	1035-B6-232	1035-B6-33	3 doors +2¾	1½
7	1035-B7-31	1035-B7-232	1035-B7-33	4 doors +3¼	1½
8	1035-B8-31	1035-B8-232	1035-B8-33	5 doors +6¼	1½
8	1035-B8½-31	1035-B8½-232	1035-B8½-33	4 doors +3¼	1½
9	1035-B9-31	1035-B9-232	1035-B9-33	5 doors +6¼	1½
10	1035-B10-31	1035-B10-232	1035-B10-33	5 doors +6¼	1½

Minimum headroom where two doors fold in one direction: No. 31 track = 6 ins., No. 232 track = 8¼ ins.; No. 33 track = 8½ ins. When three doors fold in one direction: No. 31 track = 8¼ ins.; No. 232 track = 11¼ ins.; No. 33 track = 11½ ins. When more than 3 doors fold one way, the figure for No. 31 track is increased to 9 ins.

Note: To designate sets for out-opening doors, prefix the letter "O" to the first numeral, thus O1035. All dimensions for out-opening sets are the same as above except the dimension "S" where the plus figures for sets O1035-B3 and B4½ is 4½ ins.; for sets O1035-B4, B5 and B6 is 5¼ ins.; for sets O1035-B7 and B8½ is 8¼ ins.; for sets O1035-B8, B9 and B10 is 9 ins.

No. 1035 Equipment—***Operation***—This hardware is available for openings from 8 to 30 ft. wide containing from 3 to 10 sliding-folding doors. Plan types at right show how many doors fold toward each jamb in the different arrangements. The weight of the doors is carried by hangers running in overhead trolley tracks.

When open, the doors are compactly folded together and swing clear of the jamb line opening, standing either at an angle to the front wall or, where space is sufficient, folded parallel with the front wall.

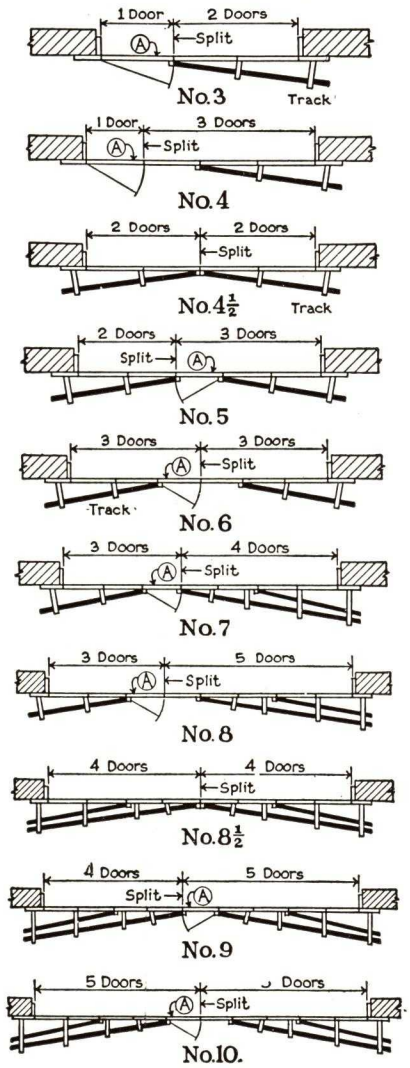
Although in-folding is recommended, "Slidetite" equipment is equally adapted to doors opening out.

Specification—Furnish and install in accordance with the manufacturer's erection details, Richard-Wilcox "Slidetite" Garage Door Equipment as follows:

Doors *(number or otherwise locate)*: No. .... "Slidetite" for opening ..... wide, ... high; door thickness .....

PLAN TYPES

NOTE: Grouping of doors may be reversed to swing from either jamb from split.
NOTE: Door "A" is a free swinging door.



Note: If there is more than one opening and the equipment varies, list each door separately.

R-W AUT-O-DOR ELECTRIC DOOR OPERATORS

The Richards-Wilcox Aut-O-Dor Operators are noted for their sturdy construction, simplicity of design, and absolute dependability. There are thousands of these sturdy mechanisms installed throughout the United States and foreign countries, many of these installations having been in service anywhere from six to twelve years. There is one company which has now purchased more than 240 units of this equipment over a period of twelve years, and another company which has purchased 150 units in six years. This in itself should be conclusive proof of the reliability of this equipment.

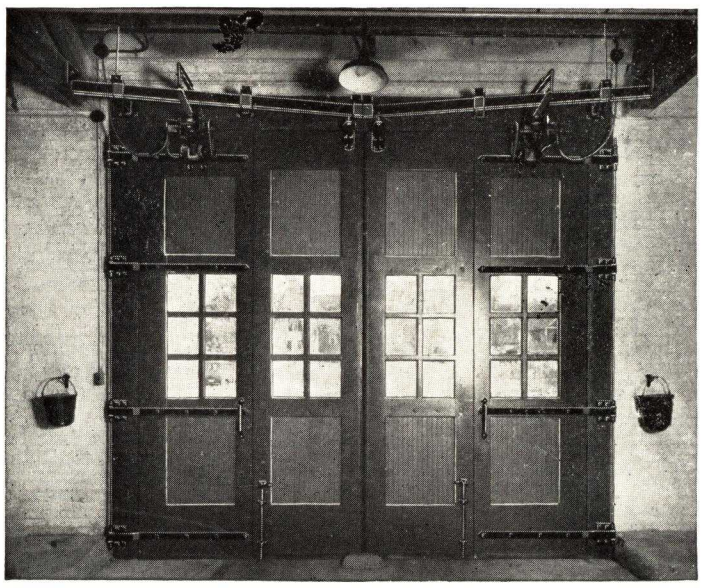
Aut-O-Dor Operators for

Plain Swinging Doors
Sliding-Folding Doors
Sliding Doors
Overhead Doors
Swinging Gates
Sliding Gates
Cooler Doors in Packing Plants
Trap Doors in Coal Mines
Deflectors on Conveyor Belts

For Swinging or Folding Doors

Our No. 1300 Operator requires one unit for each door or group of doors folding to the right and one unit for the doors folding to the left. Although the unit is small in size, we have embodied in our compact design every important feature that should be incorporated in a door operating mechanism. The operator works on the crank arm principle, which gives a slow start to the movement, the speed becoming rapid in the middle of the cycle of operation and then slowing down gradually at the end of the cycle thereby eliminating any jerk or jar on the operating mechanism. The crank arm is driven through a clutch so in case there is any obstruction to the free movement of the doors, the clutch will slip thereby preventing any damage to the operating mechanism. By a slight pull on a release chain hanging conveniently at each side of the opening, the doors may be opened manually with the same ease as though they were entirely hand operated. All gears are cut gears enclosed in a housing and running in oil. The motor is loosely connected to the motor frame, thereby automatically providing the proper tension to the drive belt. Due to the neat design and the total absence of complicated levers, this equipment appeals to the architect who is anxious not to detract from the interior appearance of the building.

For plain swinging doors, sliding-folding doors, swinging gates, cooler doors in packing plants, trap doors in coal mines, deflectors on conveyor belts, and for any other service where there is small reciprocating motion, specify our No. 1300 Electric Operator.



For Sliding or Overhead Type Doors

For all types of straight sliding doors or gates regardless of size, we recommend our No. 1250 Operator. This equipment, in like manner, is compact in size, the doors being driven through a friction clutch with a release provided for hand operation in case of power failure. These operators are built in sizes from ¼ h.p. on up. These operators are equipped with anti-friction bearings throughout, with precision ball bearings on the motor shaft and selected roller bearings on the slow speed shaft. The worm gear is a manganese bronze of a composition specially developed for this service. The worm is of high carbon steel properly processed to assure long life. The gear reduction and electric brake are integral with the motor proper.

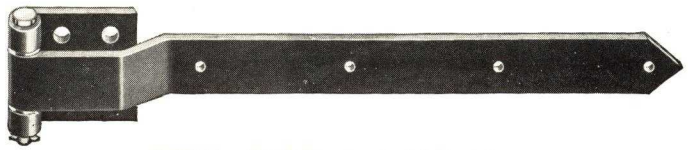
On overhead doors for openings up to 120 sq. ft. in area and not more than 8 ft. in height, for residential use or for situations where service is not heavy, we recommend as an inexpensive electric operator our No. 1251. This operator is controlled by constant pressure type push buttons. For industrial or commercial uses in openings up to 200 sq. ft. in area and not more than 16 ft. in height, specify No. 1253 Electric Operator. This operator is controlled by "open" and "close" push buttons and is reversible at the end of each cycle of operation. For larger openings or for openings less than 200 sq. ft. in area where it is desired to control the operators by "open," "stop," and "close" push buttons with reversal at any point in the operation, specify No. 1254. The No. 1253 and No. 1254 Operators use the same operating unit as described under No. 1250 in the preceding paragraph and have the same general characteristics.

Time Switch for Fire Station Use

For fire department use, we recommend our motor driven time switch. By a slight pull on a pendant switch cord hanging conveniently over the driver's seat, the doors will automatically open, remain open a pre-determined set time, and then automatically close. A second pull on the pendant cord automatically resets the timing. In summer the doors may be opened electrically by means of wall switches independent of the time element, remaining open indefinitely, but when the cord is pulled above the driver's seat, the doors will remain open and then automatically close after the fire apparatus has left the building.

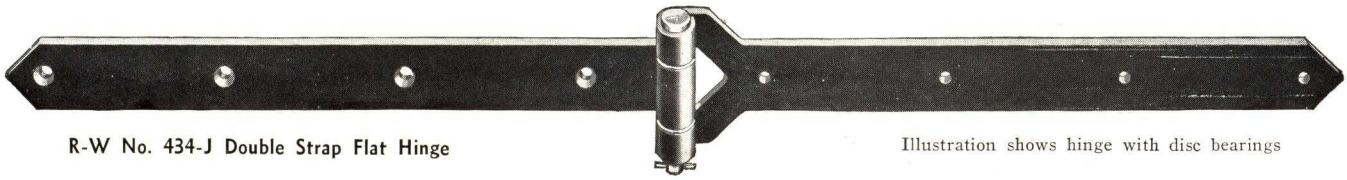
R-W HEAVY HINGES

R-W No. 434-C Single Straight Strap Hinge



R-W No. 434-B Reverse Pad Offset Hinge

All No. 434 Hinges are made either DB (disc bearing) like cuts, or BB (ball bearing). Straps are ⅜x2½ in.; ⅜x3 in. or ½x3 in., and made in any length up to 8 ft. Other types No. 434 Hinges are also available.



R-W No. 434-J Double Strap Flat Hinge

Illustration shows hinge with disc bearings

R-W No. 1035 and No. 1045 Offset Hinge with Surface Pintle

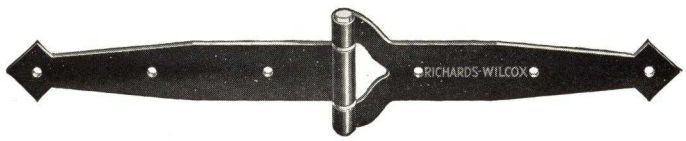
No. 1035 Straps are 2½ in. wide and from 18 to 48 in. long. No. 1045 Straps are 3 in. wide and from 30 to 48 in. long. Regularly furnished with disc bearings, but can be furnished with cadmium plated ball bearing units.

R-W No. 1036 Hinge with Mortise Pintle

No. 1036 Straps are 2½ in. wide in 10 to 24 in. lengths. Pintles 6 in. high are furnished with straps 2½ in. wide; 7 in. pintles with straps 3 in. wide. Furnished either disc or ball bearing.

R-W No. 1039 Reversible Pintle Hinge

The 10 and 12-in. hinges have plain bearings, and the 18 and 24 in. size have disc bearings. Can be used as a reverse pad hinge or a mortised pintle hinge.



R-W No. 1040 Double Strap Surface Hinge

For use on in-opening doors. Each leaf is 14 in. long, 2½ in. high, ¼ in. wrought steel. Furnished either disc or ball bearing as desired.

OFFSET SURFACE HINGES

Cat. No.	Size of leaf, in		Offset, in.	Stock, gauge
	High	Wide		
*636	7	4	¾	No. 12
*636	12	4	¾	No. 10
*836	7	4	1½	No. 12
*836	12	4	1½	No. 10
1636	7	4	¾	No. 5
1636	12	4	¾	No. 5
1836	7	4	1½	No. 5
1836	12	4	1½	No. 5

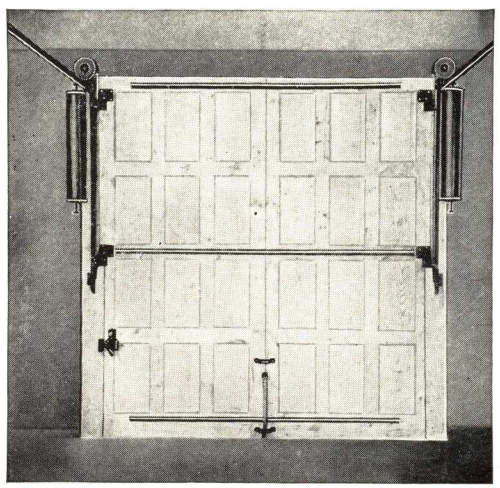
*Also made in other sizes. See Catalog No. 60.

Offset Surface Hinges
Nos. 636, 836, 1636 and 1836

R-W NO. 1299 "TOPFLITE" GARAGE DOOR EQUIPMENT

This is a one-piece turnover door, counterbalanced by weights which assures a permanent fixed adjustment. The door rises vertically three inches before swinging out, and even then does not swing out at right angles with the wall line, but travels upward and outward at the same time so that the door can be easily operated from the outside without danger of having it swing out abruptly, causing injury. This feature permits the door to be tightly closed and locked, even if snow and ice have gathered underneath. When open, door is entirely inside the garage.

This door requires 6 in. minimum headroom. It can be installed with only 3 in. if necessary, but the vertical lift is not then available. Side wall space of 9 in. is required on each side of door if weights are hung on front wall. Weights can be hung on back wall if desired; this of course requires extra cable and cable pulleys. The vertical stiles for this door should be 6½ in. wide.

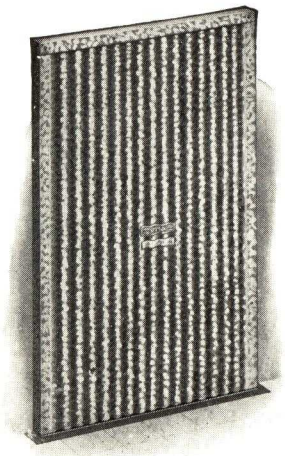


R-W No. 1299 "Topflite" Door

R-W FIRE DOORS

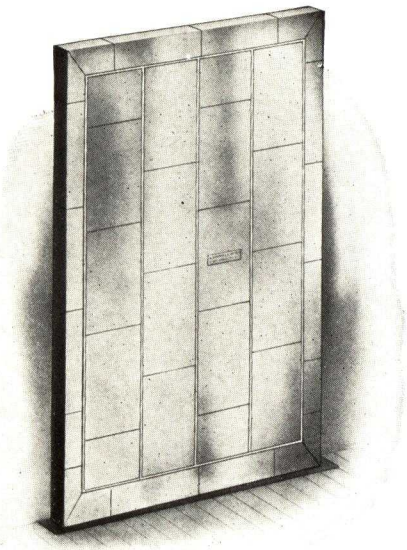
R-W No. 647 FyeR-Ward

A flush surface door, 1 $\frac{13}{16}$ inches thick. Makes an attractive appearing door which can be grained if desired, to look like a wood door. It weighs only 4½ to 5 lbs. per sq ft. Doors bear the Underwriters' label



R-W No. 447 FyeR-Wall

A corrugated sheet metal door, 2$\frac{5}{8}$ inches thick. Weighs 5 lbs. per sq. ft. Bears the Underwriters' label

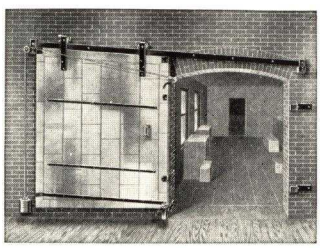


R-W No. 446 Tin Clad

This door has wood core and is tin clad. Made in two-ply (1¾ inch thick) and 3-ply (2$\frac{5}{8}$ inch thick). Two-ply doors weigh 6 lbs. per sq. ft., and three-ply doors weigh 8 lbs. per sq. ft.

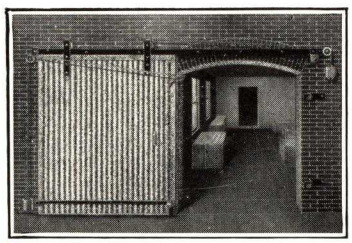
The R-W line of Fire Doors and Hardware is inspected by the Underwriters' Laboratories, Inc., under the direction of the National Board of Fire Underwriters, and bears the Underwriters' label.

Many doorway openings which should be protected by fire doors are not, for the simple reason that the ordinary fire door would not harmonize with the surroundings. Here is where the R-W No. 647 FyeR-Ward door fits in. It is a door of distinction and character; a door which enhances rather than detracts from its surroundings. All of the metal work of this door is galvanized steel, the outside face being No. 22 gauge. The door presents an entirely flush surface on both sides, made up from steel panels about 10 inches wide extending the full height of the door. The door panels are channel shaped interlocking members, with the legs of the channels forming the panels on each side of the door staggered so that there is a flange every 5 inches measured in the horizontal plane, through the full height of the door. Steel rods, approximately 18 inches on center, extend through the door horizontally through holes in the flanges of the channels, serving to unite the two sides of the door into a rigid construction. A sheet of corrugated asbestos is installed between the metal sheets forming the two sides of the door. This door carries the same credit for insurance rates as the three-ply tin clad door.



R-W No. 201 Single Link Flat Track Fixtures

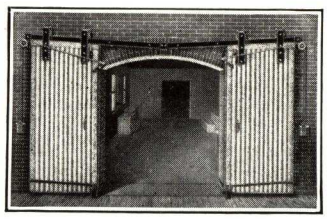
This fixture is for single sliding doors and requires 13½ in. on side wall toward which door closes and width of opening plus 19 in. on the opposite side. Fusible link is exposed in the opening. When specifying width and height, do not say doors when you mean openings, as doors must lap 4 in. on each side and at top



R-W No. 1303 Single Link Flat Track Fire Door Fixtures

This fixture is used for openings where there is not enough headroom to place track on an incline of ¾ in. to the foot. Two sets of weights are used to balance the door. The back weights are held in position by a fusible link. In case of fire, this link fuses and allows back weights to drop, and the front weights then pull the door shut.

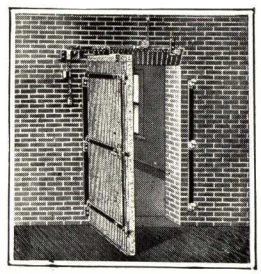
Same style as No. 201 except that it operates on level track. Has one fusible link which is exposed in the opening



R-W No. 1204 Single Link Flat Track Fire Door Fixtures

This fixture is the same as No. 201 except that it is applied to pairs of doors. Designed to meet special conditions, such as not sufficient space on one side to slide a large door, or if an overhead carrier system track passes through the opening.

This type has one fusible link on each door, and both are exposed in the opening

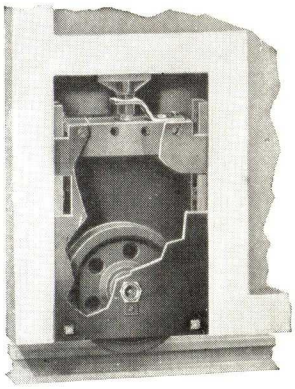


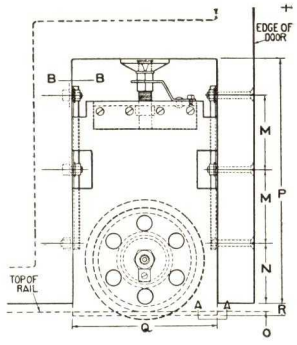
R-W No. 1406 Automatic Fire Door Fixtures

The automatic link and cord arrangement on this fixture extends above the opening to ceiling, and when used with doors on both sides of wall same extends through, so that the fusing of link on either side will cause the doors to close. No. 643 Door Closer and Check may be substituted for weight closing device if desired. Fixtures furnished for either flush or lap doors

R-W TOP AND BOTTOM ROLLERS FOR AIRPLANE HANGAR DOORS

No. 573 and No. 673 Bottom Roller for Straight Slide Doors





*DIMENSIONS OF NO. 573 AND NO. 673 ROLLERS

Roller	M	N	*O	P	Q	R	Wheel	
							Tread diameter	Over-all diameter
573	6	5	¾	20	12	1½	8⅝	9⅞
673	16½	2½	¾	22	15½	1½	11	12¼

*These dimensions are normal. Adjustment is provided to raise the door ¾ in. or lower it ½ in. All dimensions in inches.

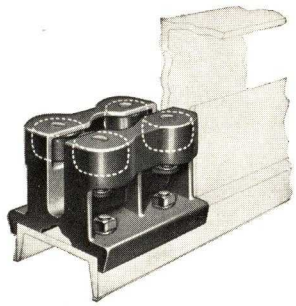
No. 573 and No. 673 Bottom Rollers come assembled as complete units ready to be set into spaces provided in the doors to receive them. Each unit is quickly, easily, and firmly attached to the door by bolts through the side members of the roller. Made entirely of malleable iron and steel. The tread of the wheel is machined.

No. 573 Bottom Rollers are designed for use on doors weighing up to 3000 lbs. and No. 673 Bottom Rollers are designed for use on doors weighing up to 7000 lbs. No. 573 Bottom Rollers are equipped with double row ball bearings; and No. 673 Bottom Rollers are equipped with double Timken bearings. All bearings are protected from dust and grit by felt washers and are lubricated by Alemite or Zerk fittings. A large diameter bearing plate transmits the weight of the door to the top of the heavy vertical adjusting screw. Means are provided for positively locking the vertical adjusting screw in place.

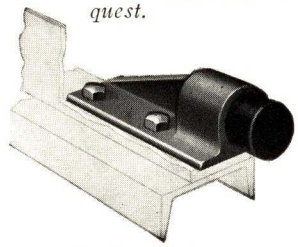
No. 782 Top Guide is designed for use with single angle top guide members in the structure of the building. They are suitable for use on doors 4 in. or more in thickness. The rollers are provided with self-lubricating graphited bronze bearings.

No. 589 Bumpers are also designed for use with single angle top guides. The rubber bumper is 1¾ in. in diameter.

Description of complete line of hangar door equipment will be submitted on request.



R-W No. 782 Top Guide



R-W No. 589 Bumper

R-W NO. 448 "SupeR-Way" DOORS

Adapted To—SupeR-Way doors are especially recommended for railroad freight sheds, baggage rooms, warehouses, airplane hangars, shops, round houses and for all factory purposes where strength and permanence are essential. This is a slow burning door and for all ordinary purposes is practically fire safe.

Frame—Each SupeR-Way door has a steel frame formed of 2½-in. steel angles. All hinges, overhead trolley track carriers, top guide rollers and bottom rollers (in other words all door supports) are fastened directly to the steel frame. This provides a "steel to steel" construction which insures long life and prevents sagging, warping, and pulling apart common to ordinary doors.

Wood Units—These are slightly rounded 1¾-in. squared tongue and groove wood strips which are dipped before assembling. They are fitted into the steel frame and spiked every 4 in. through the tongue and groove, piece by piece to each other. The spikes are thus imbedded between the strips—not a spike exposed anywhere. This forms a rigid structure of unusual strength. The ordinary SupeR-Way door is 2¼ in. thick, but large size doors are sometimes made 3 in. thick. These doors are suitable for straight sliding, sliding fold, or hinged doors.

Construction of No. 448 Door

ROWE MANUFACTURING CO.

Manufacturers of Ro-Way Overhead Type Doors and Electric Operators
GALESBURG, ILL.

RO-WAY
OVERHEAD TYPE DOOR

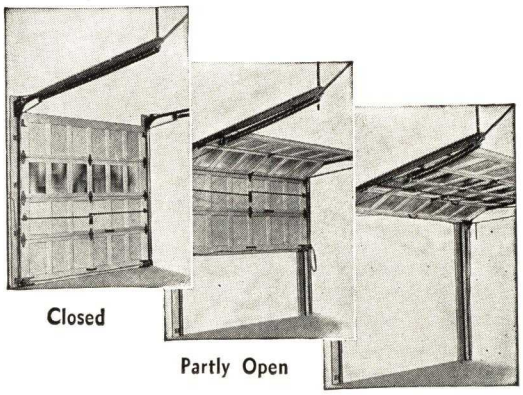
Description

Ro-Way Overhead Type Doors open "Overhead and Out of the Way" leaving the floor space and sidewalls within the building entirely clear. Horizontal sections, approximately 2 ft. high, operate on ball bearing track rollers and move to the overhead position in especially formed steel tracks.

Door Sections

All joints between stiles and rails are mortised and tenoned, waterproof casein glued, and steel doweled. The number of sections and panels is determined by the height and width of doors as follows:

Section Schedule		Panel Schedule	
Opening height	Number of sections	Opening width	Number of panels
Up to 8 ft. 6 in.	4	Up to 10 ft. 6 in.	6
8 ft. 7 in. to 10 ft. 6 in.	5	10 ft. 7 in. to 12 ft. 6 in.	8
10 ft. 7 in. to 12 ft. 6 in.	6	12 ft. 7 in. to 14 ft. 6 in.	10
12 ft. 7 in. to 14 ft. 6 in.	7	14 ft. 7 in. to 16 ft. 6 in.	12
14 ft. 7 in. to 20 ft. 0 in.	Varies	16 ft. 7 in. to 30 ft. 0 in.	Varies



Closed

Partly Open

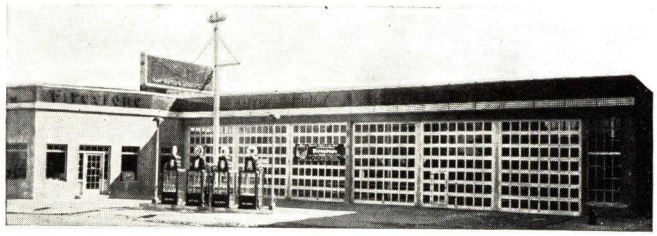
Fully Open

Hardware

All track rollers and chain sheaves are ball bearing with case hardened shafts and ball races. Specially formed 2-in. tracking is supplied on doors up to 170 sq. ft. in area; heavy duty 3-in. track is recommended on doors containing over 170 sq. ft. Two-inch vertical tracks are mounted on brackets or continuous angle irons for attaching to jambs; 3-in. vertical tracks regularly are mounted on 2½x3-in. continuous angle iron brackets. Adjustable extension springs are used on all "Regular Lift" Doors; "High Lift" Doors, used over hydraulic car lifts, are equipped with torsion springs. Locking equipment consists of two ¼x¾-in. slide bars which engage in slots in vertical tracks; operated by key from exterior, and by spring latch from interior. Doors are regularly supplied with chain; cable is available as optional equipment. Hardware, including tracking, is treated with black rustproof paint.

Stock Materials

Stiles and rails are made of finest grade Sitka Spruce, 1¾ in. thick. Minimum stile and rail widths are 5⅝ in. Large doors have wider members. Wood panels



Doors Installed for Firestone Tire & Rubber Co., Maple Street, Holyoke, Mass.

are laminated 3-ply Fir ⅜ in. thick and manufactured with waterproof glue. Residential doors are available with 1⅜-in. thick stiles and rails, and $\frac{5}{16}$-in. thick Fir panels.

Glass Sections

Any or all sections may be left open for glass. Glass not furnished unless specified.

Door Struts

Steel stiffening bars are supplied on doors over 12 ft. 6 in. wide.

Complete Door Equipment

The Ro-Way Door Line includes standard size doors (8 ft. x 7 ft.; 8 ft. x 7 ft. 6 in.; 8 ft. x 8 ft.), special size doors, chain hoists, high lift torsion spring doors, removable mullions, pass doors and electric operators.

Installation Requirements

Ro-Way Overhead Type Doors are extremely flexible so that they may be adapted to unusual opening conditions. Whenever possible, however, the following installation dimensions should be maintained:

Headroom required*—16½ or 13½ in. for 2-in. track; 21 in. for 3-in. track.

Sideroom required**—4½ in. for 2-in. track; 5½ in. for 3-in. track. (Extremely wide doors require more.)

*Special equipment is available, which permits installation when the available headroom is as low as 7½ in.

**Sideroom may be reduced ¾ in. by using ¾-in. thick mould.

Special Designs

Ro-Way Doors can be built to conform to the architecture of a particular building.

Write for Architects' Manual No. D-78.

Specifications

Overhead Type Doors shall be "Ro-Way" as manufactured by the Rowe Manufacturing Co., Galesburg, Ill.

Sections shall have 1¾-in. thick stiles and rails of Sitka Spruce with mortised and tenoned joints waterproof glued and steel doweled. Panels shall be three-ply Douglas Fir.

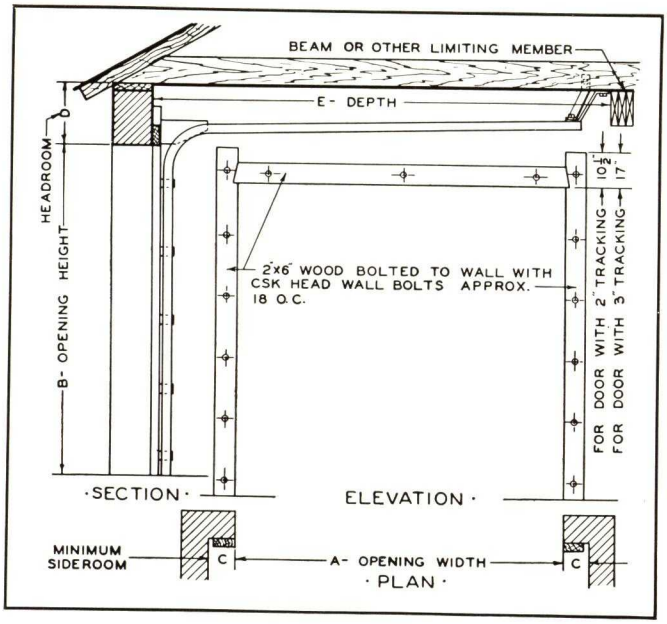
Hardware shall include especially formed 13-gauge tracks. Locking equipment shall consist of ¼x¾-in. steel bar extending through slot in each vertical track; lock bar shall be key operated from exterior and by thumb spring latch from interior.

Extension spring shall be securely mounted as integral part of horizontal track assembly; action of springs shall be such that pull is diverted to upper track bracket on wall.

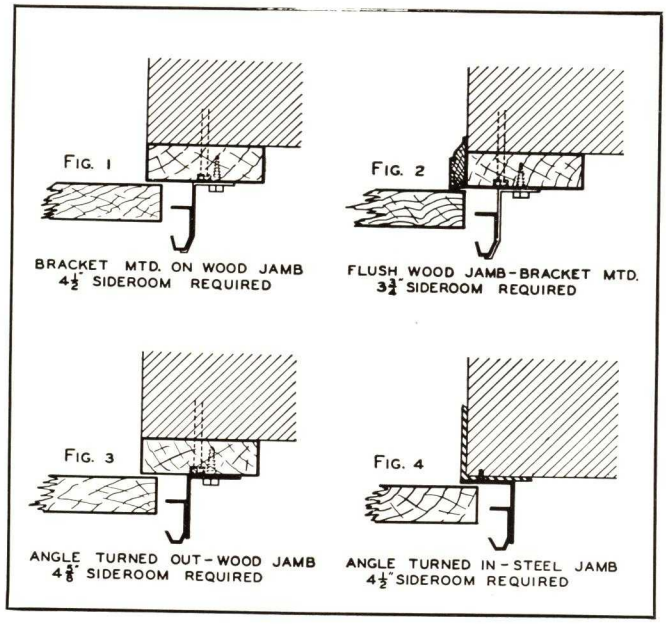
Track rollers and sheaves shall be full ball bearing. All track roller and sheave shafts shall be case hardened.

RESIDENTIAL AND COMMERCIAL TYPE DOORS AND ELECTRIC OPERATORS

Typical Framing Detail



Typical Jamb Details



ELECTRIC CONTROLS FOR OPERATORS

Description

The Ro-Way Operator permits opening the door by simply pressing a button. A key switch or pull chain located in driveway is available for additional convenience.

A wide variety of other types of control switches may be had to provide maximum convenience and

Door Electrically Operated with Key Switch in Driveway Post

service. In case of power failure, Ro-Way Operators may be quickly disconnected to permit manual operation. Write for special electric operator catalog.

Residential and Commercial Types

The Ro-Way Electric Operator Line includes controls for both residential and commercial doors. A special, inexpensive operator is available for the smaller doors.

Heavy duty operators may be had for large doors in commercial or industrial buildings.

A large selection of control switches is offered for all types of service.

Specifications

Electric Operator shall be as manufactured by the ROWE MANUFACTURING CO., Galesburg, Ill. Control shall be of the [constant contact two-button type] [single button momentary contact type] [toggle switch instantaneous reversing type] [three-button momentary contact type]. *(Strike out types not applicable.)* Motor shall be wired for 110-volt, one-phase, 60-cycle, a-c. Motor shall be protected by thermal cut-out switch.

Nation-wide Service

Ro-Way representatives are located in all principal cities. Their many years of experience qualify them to supply your door requirements in an efficient manner. These representatives are in position to not only efficiently supply you with doors and operators, but they are also able to furnish expertly trained erection mechanics who will assume full responsibility for the installation of a complete door and/or electric operator job. You are urged to write for the name of the Ro-Way representative in your city. Without obligation on your part, he will be glad to assist with your door problems.

THE STANLEY WORKS

Member of The Producers' Council, Inc.

NEW BRITAIN, CONN.

NEW YORK, N. Y., 100 Lafayette Street
CHICAGO, ILL., 61-67 West Kinzie Street
CLEVELAND, OHIO, 1404 Builder's Exchange Building
LOS ANGELES, CAL., 407 American Bank Building
SAN FRANCISCO, CAL., 576 Monadnock Building
SEATTLE, WASH., 568 First Avenue, So.

For Stanley Magic Doors, see File Index

STANLEY "ROLL-UP" DOORS

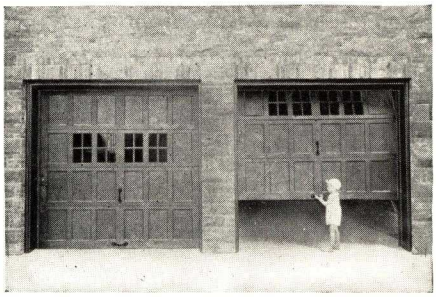
Practical, Easy Operating Spring Balanced Door Operation Doors and Hardware Complete

Doors roll up vertical tracks and rest on horizontal tracks when fully open. Large as well as small doors operate easily under all conditions.

Hardware, except outside handles, is inside out of the weather. Each door is provided with a heavy cylinder sliding bolt (with an adjustable stop strike) which engages in a slot in the track. A cord is provided for closing, with hand chain operation for large doors. Ball bearing rollers insure smooth, easy operation.

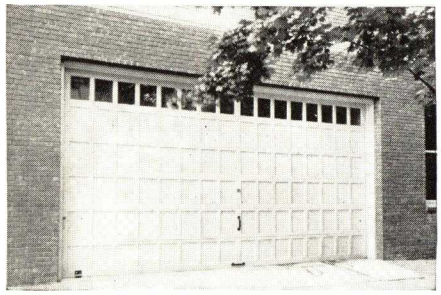
Doors regularly furnished unpainted and unglazed. Balanced before shipping for single or double strength glass. If other types are used order should so specify.

TYPES OF STANLEY "ROLL-UP" DOORS

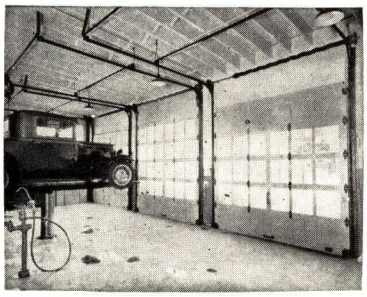


No. 2711
Residential Garages
Stock sizes 8x8 ft., 8x7 ft. 6 in., 8x7 ft.
1⅜ or 1¾ in. thick—4 panels high

No. 2715
Commercial Buildings
Doors 8x9 ft. to 175 sq. ft.
1¾ in. thick—4 or more panels high



No. 2712
Commercial and Industrial Buildings
Doors over 175 sq. ft. 1¾ in. thick
Hand chain operation



No. 2715HL
Service Stations
With high ceilings for hydraulic lifts
Same sizes as 2715

No. 2715MP
For Service Stations, Warehouse, Commercial Buildings, etc.
Same sizes as 2715—with movable center posts

Specificational Data

Doors

Furnished in four or more horizontal sections, with edges of each section rabbetted. Holes and mortises for hardware made at the factory. Made with No. 1 pine stiles and rails, dowelled and assembled with waterproof casein glue. Panels are three-ply fir veneer, with the center ply grain running opposite the outside plies. Sanded and free from knots.

Doors can be furnished to match any style of architecture. Special doors including tin-clad and steel doors, doors with built-in pass doors, high-lift doors for clearing cars on hydraulic lifts, and doors with movable center posts furnished to order.

Hardware

Hinges—Size 7⅞x2⅝ ins., of heavy wrought steel, bolted through the door.

Rollers—Three-piece construction, formed together. Fitted with tool steel ball bearings and assembled permanently to hinges. Have ½-in. axial movement to accommodate shrinkage or swelling of door. Doors over 8x8 ft. furnished with graduated cam rollers which engage in track brackets, insuring 100% weather-tight installation.

Track—13-gauge wrought steel. Vertical track equipped with heavy brackets which hold it firmly against door jambs. Horizontal track bolted to vertical track and to angle iron at rear. Crossed turnbuckle braces prevent spreading. Suspended from ceiling by chains.

Springs—Coil springs arranged vertically along side of door *(No. 2711)* or torsion spring over header *(Nos. 2715-2712)*.

Locking Bolt—Heavy cylinder sliding bolt (with adjustable stop strike) engages in slot in track. Backset 2 in., throw 2⅛ in. Furnished complete with cylinder and two keys.

Aircraft Cable—$\frac{3}{16}$ in. diameter, 7 strands 19 wires each, test 3200 lbs.

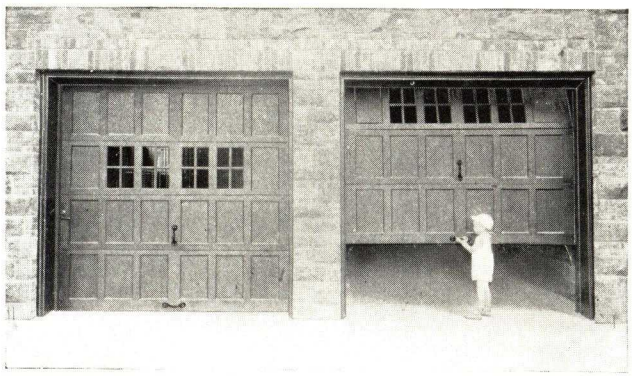
Note: Hardware regularly furnished in Japanned finish, with locking bolt, lag screws and bolts Cadmium-plated.

STANLEY 2711 "ROLL-UP" DOORS

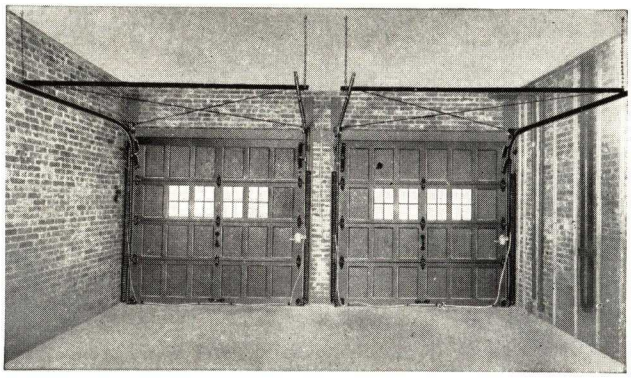
For Residential Garages

Furnished Complete with Doors and Hardware

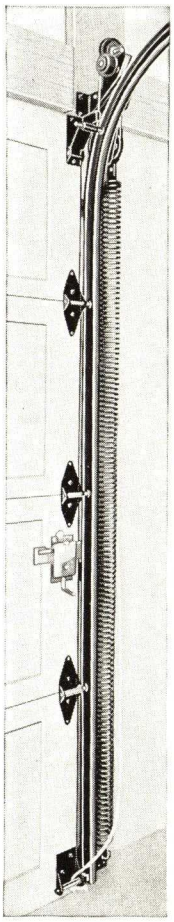
Stock Sizes 8'x8', 8'x7'6" and 8'x7'. Coil Springs at Side of Door



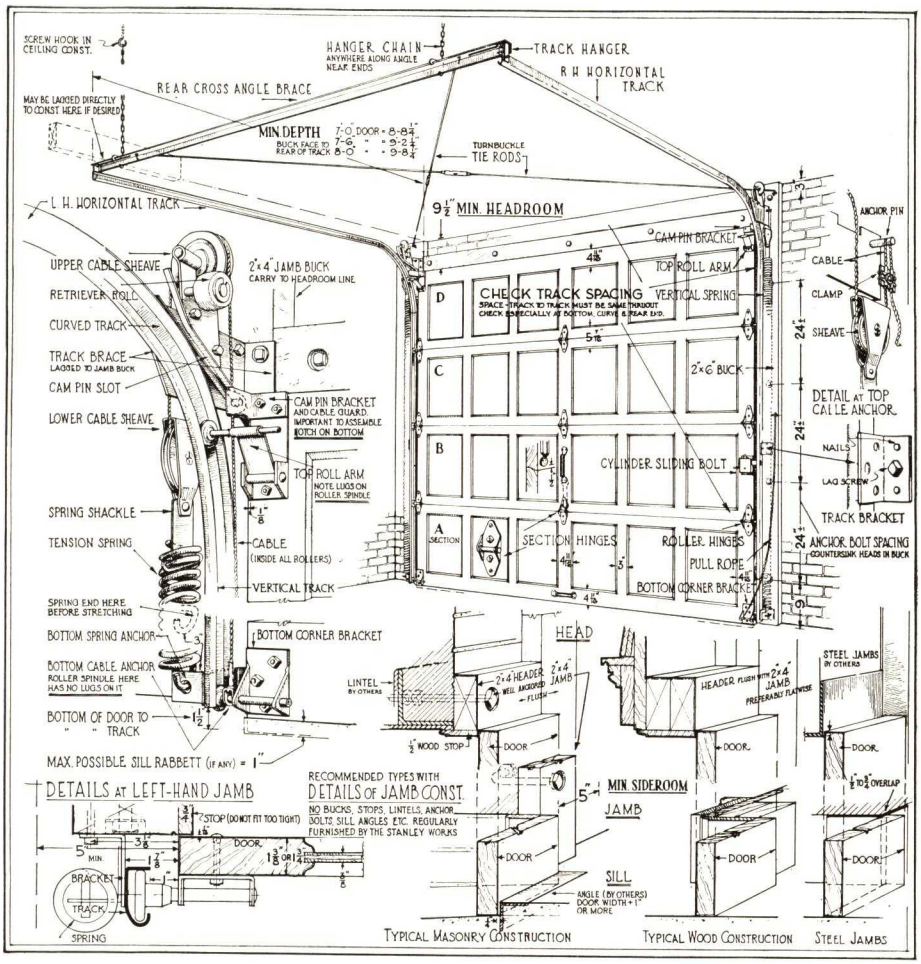
Stock 8x8-ft. Door—Outside View

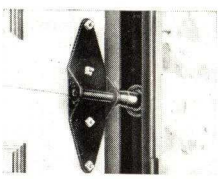


Inside View



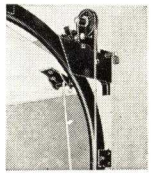
Showing Spring Arrangement



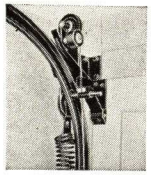


Side Hinge and Roller

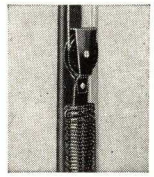
Cylinder Sliding Bolt



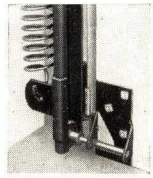
Top Pulley and Cable



Cam Pin and Bracket



Spring Adjustment Plate



Bottom Bracket

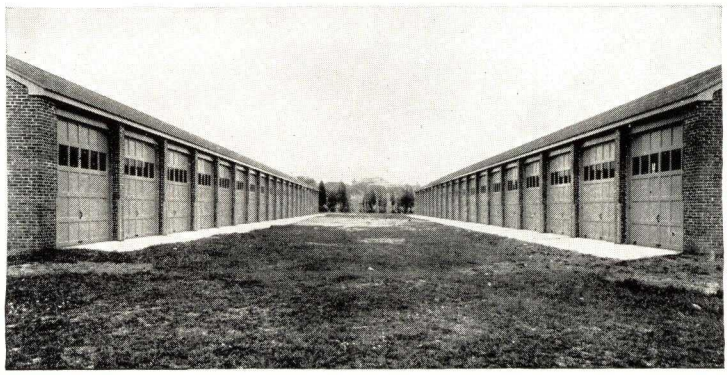
STANLEY 2715 "ROLL-UP" DOORS

For Commercial Buildings, Service Stations, etc.

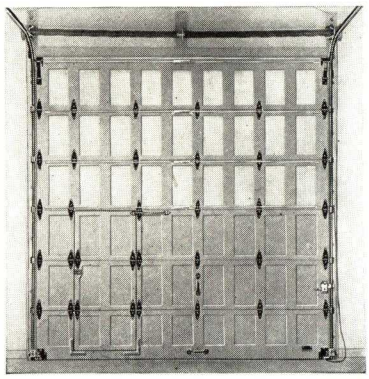
Furnished Complete with Doors and Hardware

Stock Sizes from 8'x9' to 175 Sq. Ft. Special Sizes to Order. Overhead Torsion Spring

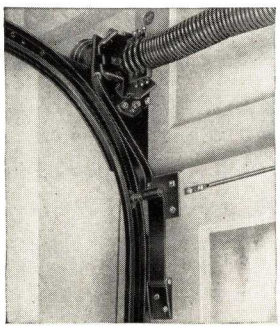
High-lift doors for clearing cars raised on hydraulic lifts are similar to type shown, with longer vertical tracks to permit doors to raise a maximum of 5 feet above header. Doors with movable center posts are also similar to type shown, except that the torsion spring is mounted at rear of track. Door sections are individually cammed against side jams.



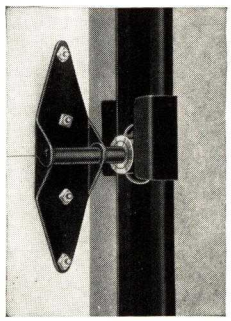
Battery of Doors, Size 10x11 Ft.



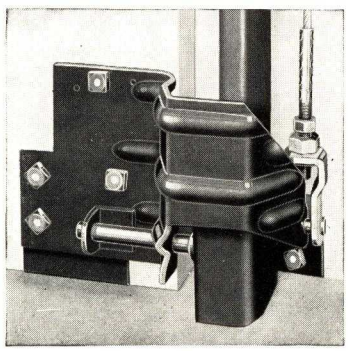
Inside View 12x12-ft. Door



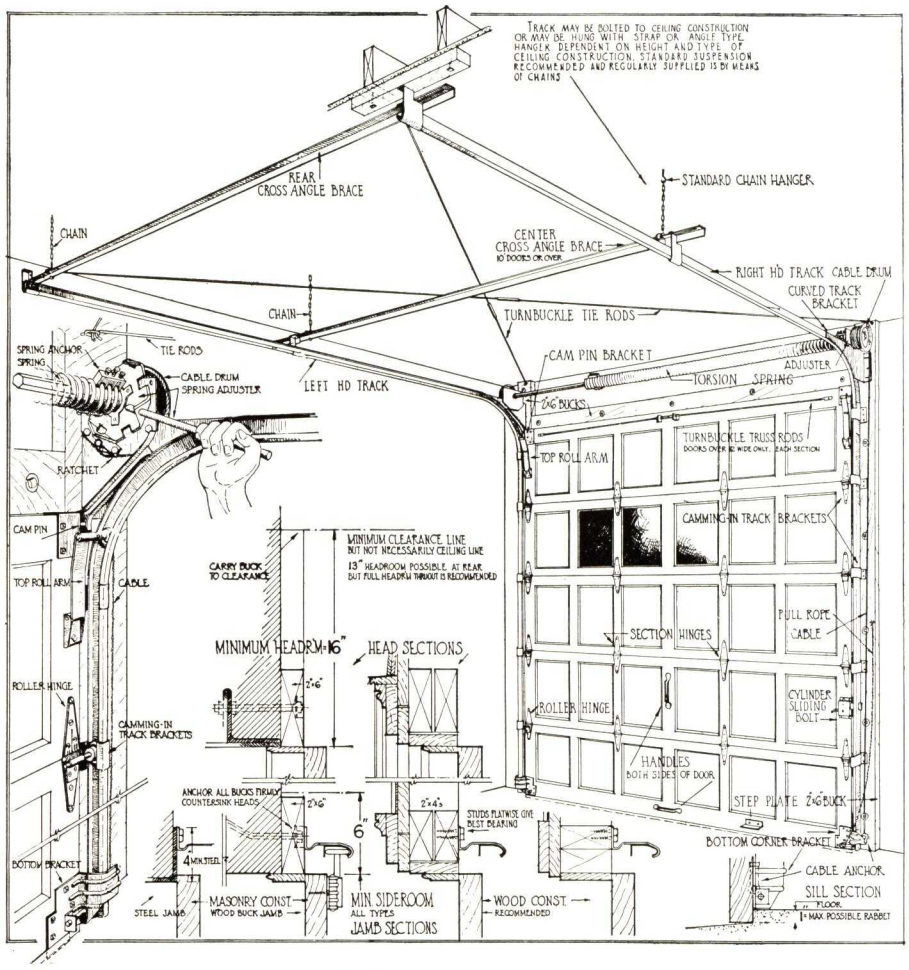
Showing Spring Arrangement

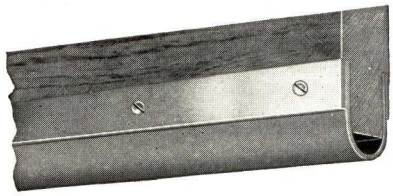


Side Hinge and Roller



Bottom Bracket





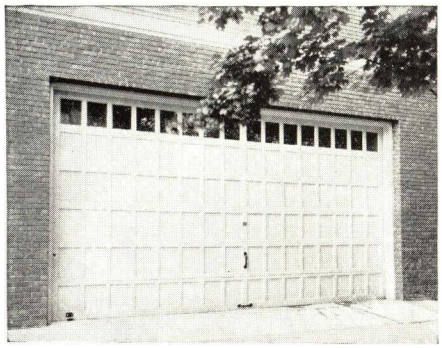
Rubber Weatherstrip (*left*) obtainable when desired. The rubber is flexible, and when door is closed affords a weather-tight installation. Also acts as a cushion for the door when coming into the closed position. Attached to door with metal strips.

STANLEY 2712 "ROLL-UP" DOORS

Extra Large or Very Heavy Doors for Commercial and Industrial Buildings

Furnished Complete with Doors and Hardware

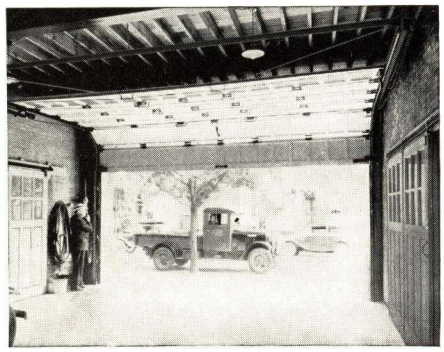
Made in Sizes 175 Sq. Ft. and Over. Overhead Torsion Springs



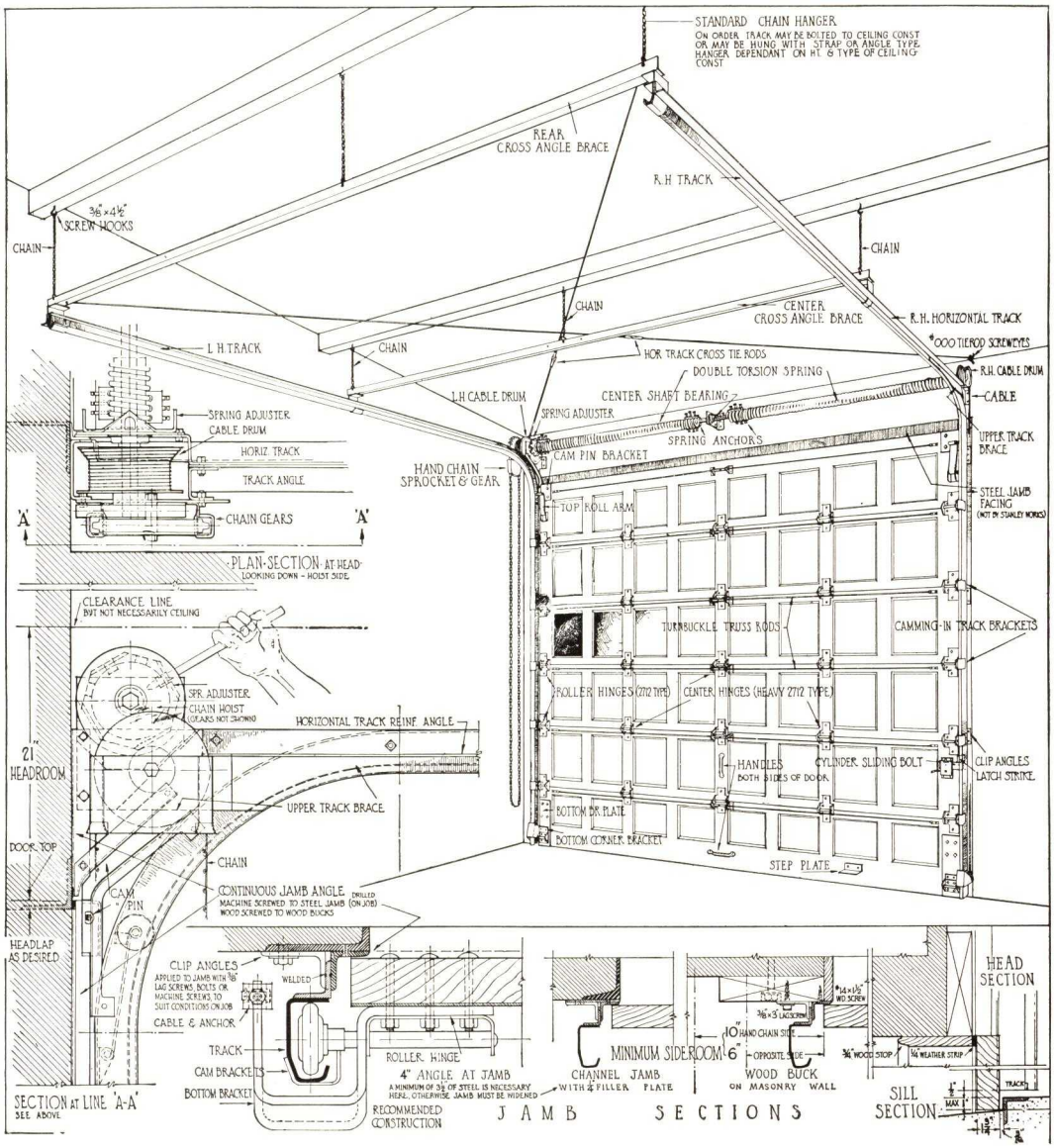
"Roll-Up" Door 20x12 Ft., Outside View

All hardware is extra heavy and the track is angle iron mounted. Each door section is equipped with a turnbuckle truss-rod extending the full width of the door, which strengthens it and prevents buckling. Graduated cam rollers are used on each section, engaging in track brackets, and forcing each section of the door tightly against the jambs. Hand chain operation is standard equipment, with electric operators available on order.

Furnished with step plate to assist in closing.



Inside View



STANLEY "SWING-UP" DOOR HARDWARE

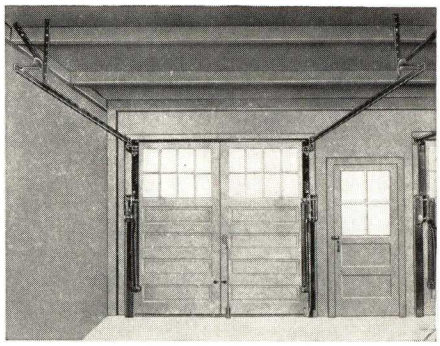
Hardware Only Furnished

No. 2732 for Light Doors
Doors to 8′x8′ and 200 lbs.

No. 2730 for Medium Weight Doors
Doors to 16′x9′ and 500 lbs.

No. 2734 for Heavy Doors
Doors to 16′x12′ and 750 lbs.

8x8-ft. Door (2730), Outside View



8x8-ft. Door (2730), Inside View

16x10-ft. Door (2734), Outside View

OPERATION

Designed on the pivot principle, swinging the one-piece door up into the open position through the use of heavy coil springs and angle iron lifting arms, where it rests on horizontal tracks. The operation is smooth and easy, due to perfect counterbalancing by the springs.

The door can be left open in any position for light or ventilation.

Doors are carried completely into the building, reducing height of opening only 4 in. The garage need be no longer than the car, as the door will operate with the rear bumper resting against it.

GENERAL CONSTRUCTIONAL DATA

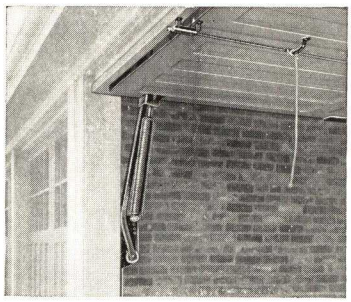
Employs standard door sections cleated together for most openings, although the hardware lends itself to any door treatment.

Hardware is exceptionally sturdy, with heavy heat treated coil springs of ample capacity. Heavy steel plates attached to hanger brackets and housings extend along the sides, acting as both side stops and weatherstrips. Angle iron braces at top and bottom securely fasten door sections together.

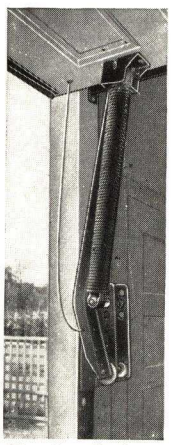
Track is 13-gauge for *No. 2730* and *No. 2732*, while that for *No. 2734* is ⅛ in. thick, angle iron mounted.

A unique safety device prevents accidental closing of the door. Rubber bumpers at rear of track prevent slamming or jarring.

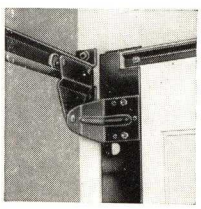
A locking bolt securely locks door in center (for doors over 10 ft. wide, the bolt locks door on both sides). Furnished complete with cylinder and two keys.



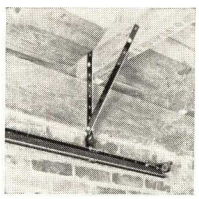
Showing Door Completely Inside



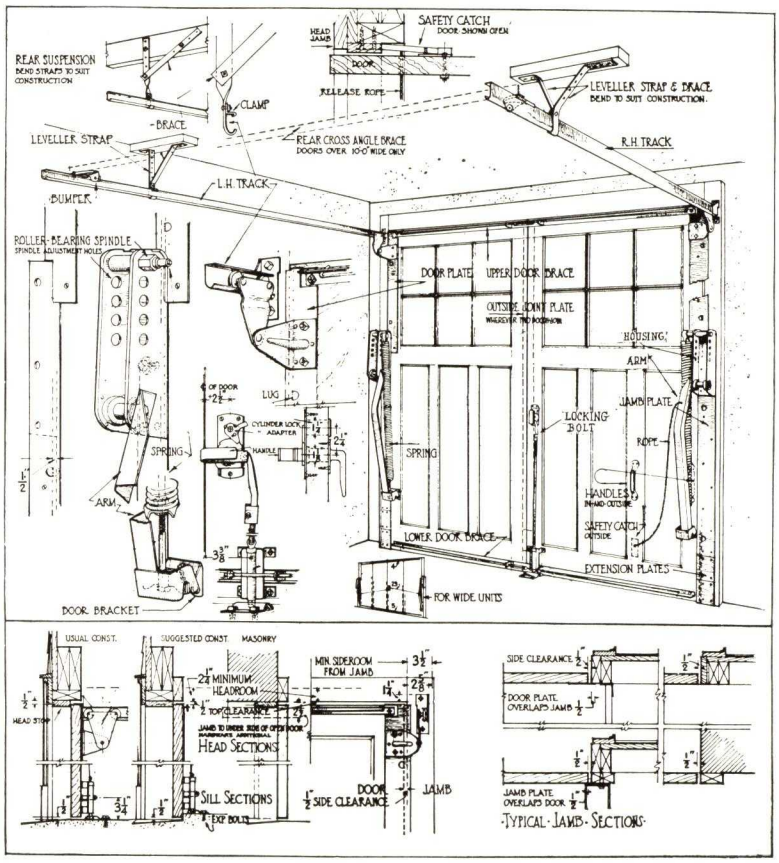
Showing Spring-door in Open Position



Hanger Bracket



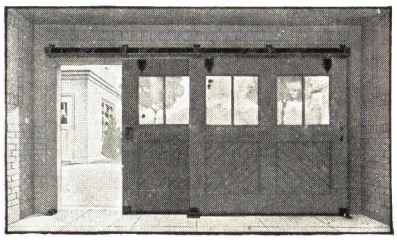
Rear Track and Bumper



COBURN TROLLEY TRACK CO.

60 Canal Street, HOLYOKE, MASS.

Coburn Sliding Door Hardware

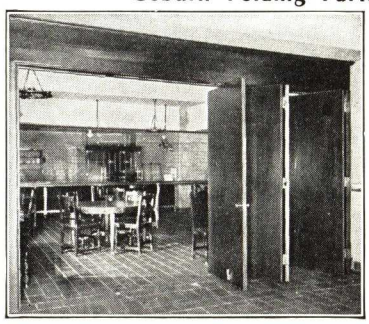


Coburn manufactures a complete line of door hangers and track for every type of sliding or folding door. Additional sliding door hardware products include door guides, guide rolls, door stops, flush and raised handles, chafe strip, bumper shoes, top bolts, foot bolts, cane bolts, and all kinds of hinges. Complete catalog will be mailed on request.

Coburn No. 750 Door Hangers and Track

No opening is too wide and no door is too heavy for this type of track and hanger. Track is made by fastening a special rounded steel section to the lower flange of a standard channel iron or I-beam. Hangers operate smoothly on ball bearings and permit the heaviest doors to roll open with ease. No supporting beam is required as this track in itself is a supporting beam, and can be made an integral part of the building if desired. Both track and hangers are patented by Coburn.

Coburn Folding Partition Hardware

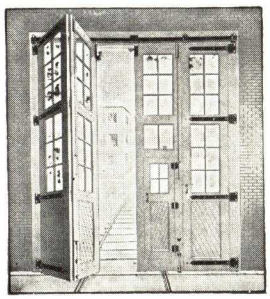


Complete hardware sets are made for folding partitions which are supported by overhead track, and for folding partitions which are carried by floor casters running on a floor track. Overhead type may have all the doors hinged together and to the jamb, or they may be hinged in pairs with each pair acting as a unit. Floor caster type has gates hinged in pairs.

Coburn Hangers for Sliding Wire Gates

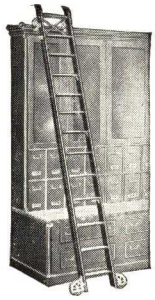
Wire gate manufacturers can find a large choice of dependable gate hangers in the large Coburn stock which is ready for immediate shipment. Illustration at left is a simple, non-adjustable type. Other gate hangers are provided with vertical adjustment and they are made in different sizes for carrying doors of different weights.

Coburn Roundhouse Door Hardware



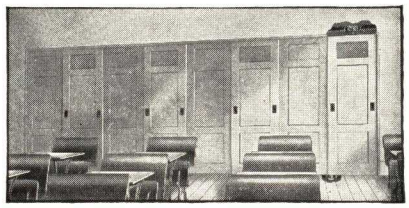
Large openings through which locomotives and freight cars must pass are usually closed by accordion doors as shown at left. Hardware is of heavy construction and includes door hangers, track, adjustable track brackets, hinges, top bolts, cane bolts, and handles. Jamb hinges are bolted through door to strap hinges which join the two sections. This type of hardware is manufactured special for each installation after receipt of full information.

Coburn Rolling Ladders



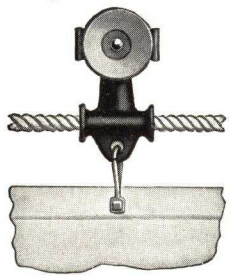
A rolling ladder for every requirement. Weight is usually carried on floor rollers with a track at the top acting as guide. Sides of ladder may be bent to pass counters or other obstructions. Other types include ladders rolling on the counter ledge and ladders operating in track attached to ceiling. Coburn rolling ladders are always made up special after receipt of full information in regard to the specific conditions. Thirteen different types are illustrated in our new 24-page catalog.

Coburn School Wardrobe Hardware



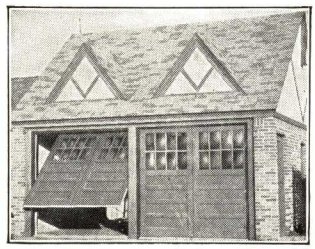
At the right is shown an inexpensive type of school wardrobe. Each alternate door is stationary while the other doors slide back and forth as one unit when any moving door is opened or closed. Sliding doors are supported by door hangers running in an overhead track and guided at bottom by an inverted steel channel which engages with guide rolls.

Coburn Theater Curtain Hangers



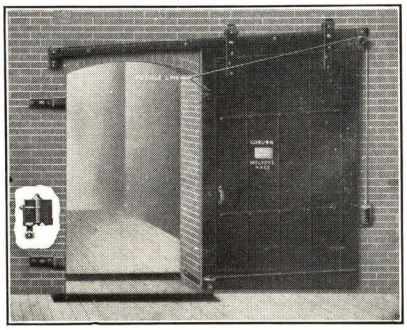
Coburn theater curtain hangers may have fibre wheels running in steel track, or steel wheels running in wood lined steel track. The curtain is attached to the hangers by spring clips spaced 12 to 18 in. apart. Control rope passes through the tubular section of each hanger and returns to the starting point making a complete circuit. With a knot in the rope at each side of the driving hanger, it is possible to open or close the curtain by pulling the control rope at any point.

Coburn Overhead Door Hardware



A one-piece overhead door has less working parts and is the most satisfactory in the long run. Coburn overhead door hardware can be used with new doors, thus permitting individuality in the design of the doors, or it may be used to transform swing-type doors into one-piece overhead doors Either weight-operated or spring-operated type is available. Send for descriptive literature.

Coburn Automatic Fire Door Hardware



Manufactured under the supervision of Underwriters' Laboratories, Inc., Coburn automatic fire door hardware complies with the insurance requirements of every locality. Complete information on the various types is contained in our 24-page catalog which will be mailed on request to those who are interested.

Since 1888 Coburn Products Have Been Dependable

P. O. MOORE, INC.

300 Fourth Avenue, NEW YORK, N. Y.

DISTRIBUTORS IN PRINCIPAL CITIES

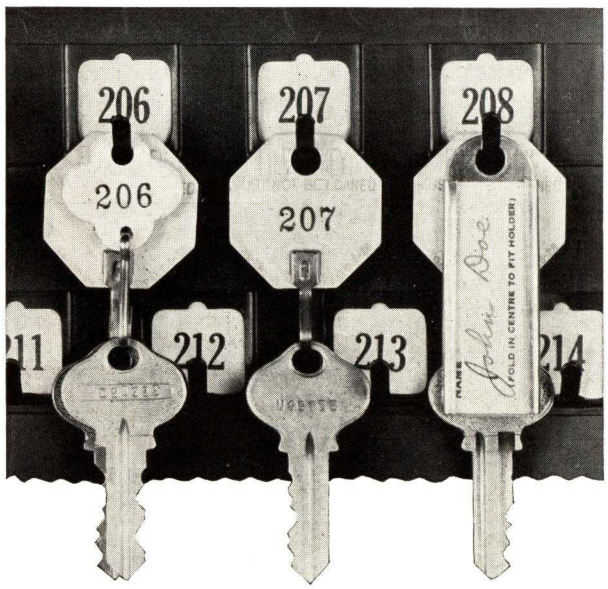
TELKEE TRADE MARK

KEY CABINETS AND KEY SYSTEM CONTROL

Many millions of dollars are spent annually for locks and keys.

In the modern office building, the hospitals for hundreds of patients, or the schools for thousands of pupils, the problem of maintaining these locks and handling and controlling the keys is a major problem *if the original value and purpose of the locks is to be preserved.*

Demands have been made for a better, a more comprehensive and systematized method of housing and control than the old "key rack"; for a simple, easily operated system that will eliminate the confusion and lack of control of older methods and reduce the rising costs of lock maintenance, variously estimated at from 50c to $1.50 per lock per year during the life of the building. TelKee is offered in response to this demand and as a solution of these problems.



Hook 206: Showing "Reserve-Pattern" Key with permanent Marker attached, and two unissued duplicate keys with temporary Marker attached.

Hook 207: Showing "Reserve-Pattern" Key. Duplicate keys have been issued with no receipt taken.

Hook 208: Showing "Reserve-Pattern" Key, together with Receipt Holder carrying folded Receipt Record for the Duplicate Keys issued.

Preserving the Value and Purpose of Locks

TelKee places the entire key control, preferably, in the General Executive Offices. Here, in cabinets, are kept (1) a reserve pattern or record key to every lock in the building or buildings; (2) all duplicate keys not issued to departments, employees or tenants; (3) signature receipts for all keys issued; (4) cross indexes for efficient handling.

It controls—from the Executive Offices—complete supervision of keys, their issuance to departments and individuals, their recovery and the ordering of necessary duplicates. This control not only includes room and entrance keys, but is easily extended to control keys to all lockers, files, desks, cabinets and similar locked equipment.

Visible Key Control

TelKee uses the age-old method of handling keys on hooks. No better method has been evolved. But a small label pocket above and behind each hook has been added to positively identify each hook with a definite lock. In it appears a printed number which identifies it with a room or locker number or a numerical cross index. It adds efficiency to visibility.

TelKee in Operation

On each hook of the TelKee System is maintained at all times a record or "Reserve-Pattern" key to each corresponding lock. It is an emergency key and also the original pattern for cutting all additional keys. It is distinguished by an octagonal red fibre marker die-stamped "File key—must not be loaned" and with die-stamped and enameled lock numbers. This marker has a special brass clasp which when locked on the key cannot be removed except by intentional destruction. The continued possession of this key eliminates 75% of the present cost of maintaining locks.

Duplicate unissued keys are furnished with Duplicate detachable key markers, clover leaf in shape and numbered to correspond to the "Reserve-Pattern" marker for that particular lock.

Printed Receipt Forms with brass Receipt Holders to hang on hooks are furnished for signature receipts of all keys issued for use.

Indexes are provided for indexing and cross indexing keys alphabetically, numerically and by Manufacturer's lock serial number.

Users and Specification

TelKee is an annual contract item of the Federal Government and is standard in many States and municipalities; it is in use in Office Buildings, Banks, Schools, Hospitals, Hotels, Apartment Houses: wherever locks are used. It fits into any desired method of keeping and controlling keys and our services are at the disposal of Architects and Contractors for survey of requirements or cost estimates.

Many architects specify TelKee for inclusion in General or Building Hardware Contract. It is recommended by the larger lock manufacturers.

Specify: Contractor shall furnish TelKee Central Key Control equipment, or approved equal, for the housing and control of keys to all locks furnished for this building, including appropriate cabinets of sufficient capacity and with "Reserve-Pattern" permanent locking type key markers, Duplicate key markers, Receipt Holders with Receipt Forms and alphabetical, numerical and lock serial Cross Indexes.

Write for complete catalog with samples of TelKee System Accessories.

THESE COMPACT CABINETS MAKE THE TELKEE SYSTEM PART OF THE EXECUTIVE OFFICE

In order that this key control system may be placed in executive offices, TelKee offers a variety of stock cabinets built in high grade furniture steel, to conform with modern office equipment and in individual capacities from 75 to 1400 sets of keys. As many as 1000 sets of keys can be maintained in a space 18x30x12 in.

Standard finish is baked enamel in olive green. Walnut or mahogany finish on order.

All cabinets are equipped with paracentric lock, numerical printed labels for insertion in the label pockets and alphabetical, numerical and lock serial number cross index.

Drawer File Cabinet

Specially built in counter height to stand in line with standard office files or to be incorporated in counter equipment. If desired, a sanitary base brings it up to four-drawer letter file height.

Panel drawers operate on roller bearing progressive slide suspensions. Unit paracentric pilaster lock controls all drawers.

Six panel drawers are equipped on the sides with a special device to hold panels firmly in a 45 degree angle position to enhance visibility but permit them to be rocked forward on the bottom edges to a vertical position for convenient handling of keys. Device allows a flexible build-up capapcity from a minimum of 5 panels per drawer to a maximum of 12. Each panel is equipped with 2 staggered rows of 10 each combination hook-and-label pockets.

Index drawer has a visible card index panel furnishing 3040 single space typewritten listings each for alphabetical, numerical and lock serial indexing.

Capacity, sets of keys	Number of panels	Number of total hooks	Outside dimensions, in.
600	30	600	18 7/8 x41x25 3/4
800	40	800	18 7/8 x41x25 3/4
1000	50	1000	18 7/8 x41x25 3/4
1200	60	1200	18 7/8 x41x25 3/4
1440	72	1440	18 7/8 x41x25 3/4

Receding Door Cabinet

Designed for active use where extreme visibility and accessibility are desired. Doors recede within the sides of the cabinet. With the opening of the doors, the key panel carriage draws forward on progressive roller slide suspension to working position. Spread of panels in full open position is 35 inches.

Each panel is equipped with 100 combination hook and label pockets (50 each), except the end ones which are blank on the outside. Flexible build-up capacity by panels from a minimum of six panels (500 capacity) to a maximum of nine 100-hook and two 50-hook panels (1000 capacity). In the panel carriage and below the panels are compartments for cards, extra markers and the cross index book.

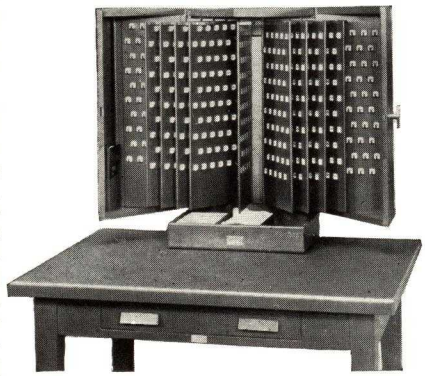
Regularly equipped with paracentric key in handle lock, blank or serially numbered hook labels and Cross Index Book.

Designed for use on counter or table.

Catalog No.	Number of panels		Number of total hooks	Outside dimensions, in.
	100 hooks	50 hooks		
PS422	4	2	500	24x33x17 1/4
PS522	5	2	600	24x33x17 1/4
PS622	6	2	700	24x33x17 1/4
PS722	7	2	800	24x33x17 1/4
PS822	8	2	900	24x33x17 1/4
PS922	9	2	1000	24x33x17 1/4
PS stand for use with above cabinet: 24 7/16 x15 7/8 x22 1/16 in.				

High Table Cabinet

Designed as a less expensive cabinet than the Receding Door model—but with all its features of extreme visibility and accessibility. Specially designed triangular shaped double doors that swing from rear hinges and include the sides of the cabinet. Doors, fully opened, spread 39 in.



Panels swing on pin and socket bearings and are equipped with 100 combination hook and label pockets. Each side of the cabinet which swings with the doors is equipped inside with 50 hook and label pockets. Flexibile build-up capacity by panels from a minimum of four 100-hook panels (500 capacity) to a maximum of nine 100-hook panels (1000 capacity).

Regularly equipped with paracentric key in handle lock, blank or serially numbered labels and cross index book.

Designed for use on counter or table but is rigidly reinforced to be *attached to wall if desired.*

Catalog No.	Number of panels		Number of total hooks	Outside dimensions, in.
	100 hooks	50 hooks		
HT224	4	2	500	18x30 1/2 x12 1/2
HT225	5	2	600	18x30 1/2 x12 1/2
HT226	6	2	700	18x30 1/2 x12 1/2
HT227	7	2	800	18x30 1/2 x12 1/2
HT228	8	2	900	18x30 1/2 x12 1/2
HT229	9	2	1000	18x30 1/2 x12 1/2
HT stand for use with above cabinets.....				20x18x14 1/2 in.

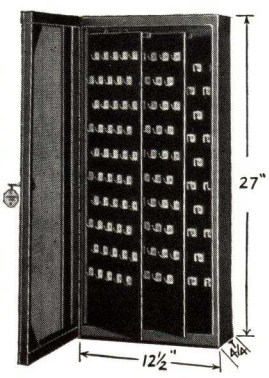
Low Table Cabinet

Exactly similar in design to the High Table Model—except in overall height. Panels have 50 hook and label pockets (25 each side). Insides of doors have each 25-hook and label pockets. Flexible build-up capacity by panels from 300 sets of keys to 500.

Catalog No.	Number of panels		Number of total hooks	Outside dimensions, in.
	50 hooks	25 hooks		
LT245	5	2	300	18x20 3/4 x12 1/2
LT246	6	2	350	18x20 3/4 x12 1/2
LT247	7	2	400	18x20 3/4 x12 1/2
LT248	8	2	450	18x20 3/4 x12 1/2
LT249	9	2	500	18x20 3/4 x12 1/2

Wall Cabinet

Fabricated in the same high grade furniture steel as larger cabinets. Fifty-hook panel in the 75-capacity and 100-hook panels in the 150 and 250 capacities. Paracentric key lock 150 and 250 capacities are furnished with a tumble card cross index attached to inside of door. The 75-capacity has an alphabetical sheet index only. Includes labels for insertion in the label pockets.

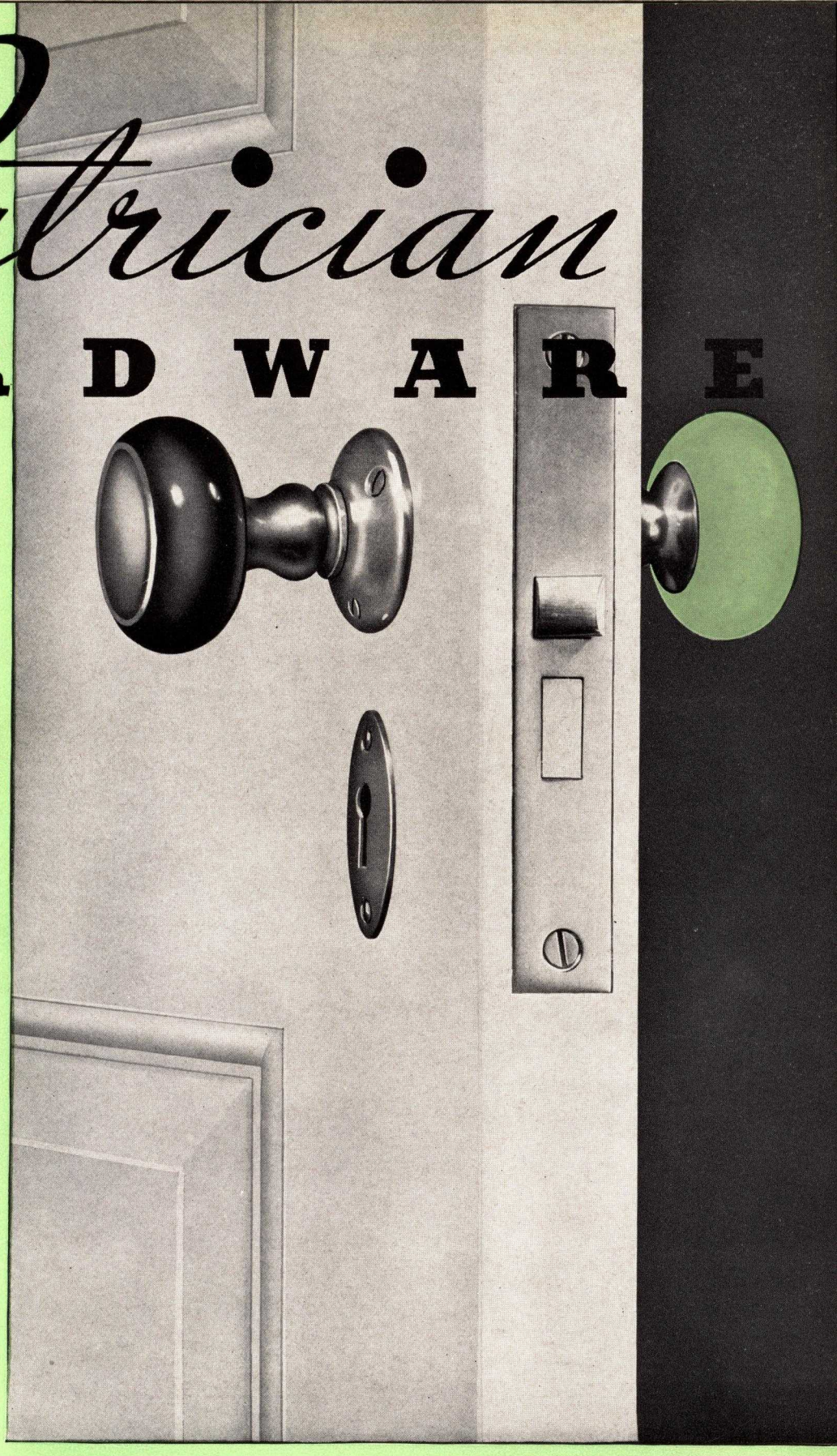


Catalog No.	Number of panels	Number of total hooks	Outside dimensions, in.
WC75	1 Swinging	75	10 x15x3
WC150	1 Swinging	150	12 1/2 x27x5
WC250	2 Swinging	250	12 1/2 x27x5

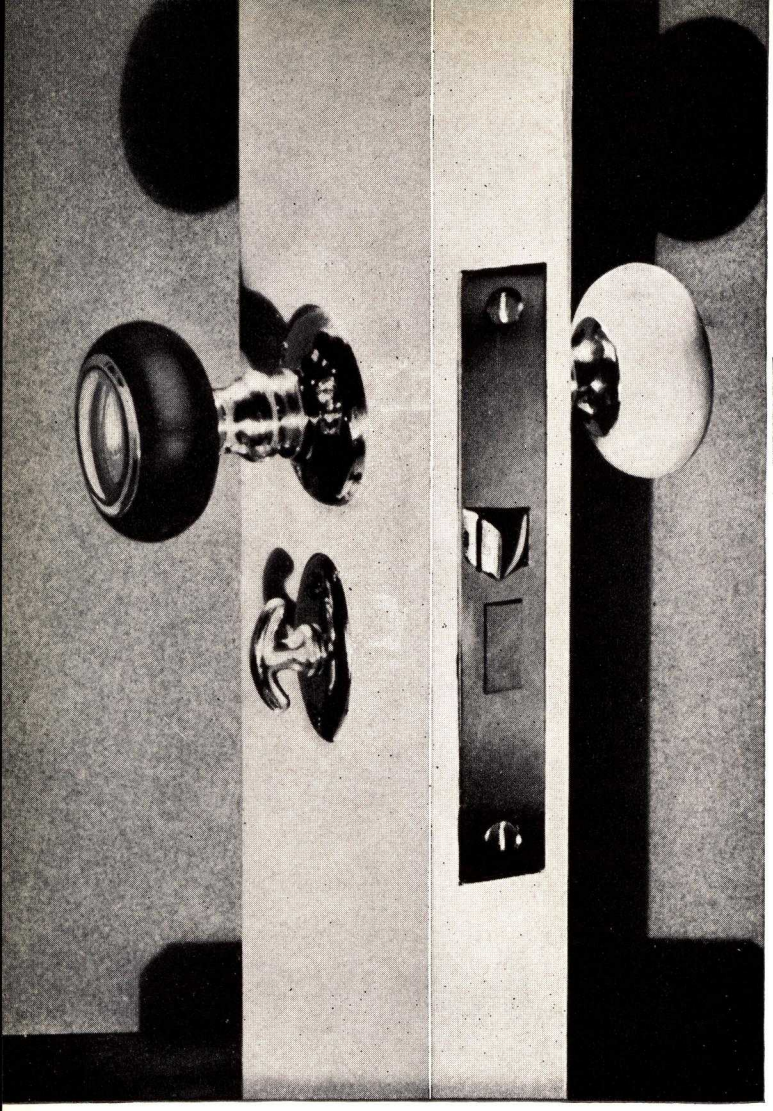
MEMORANDA

Patrician

HARDWARE



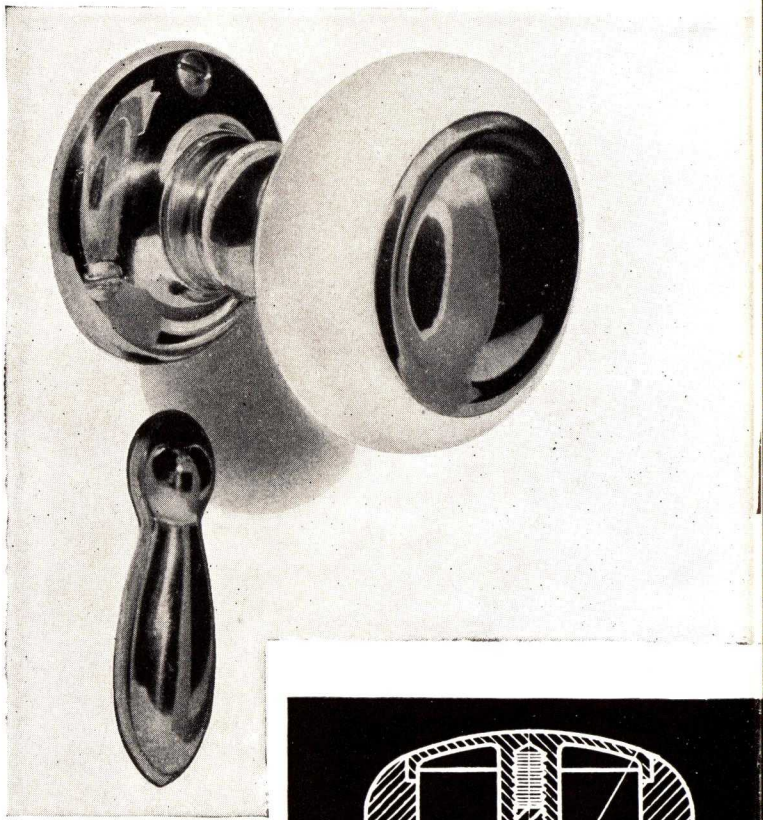
by LOCKWOOD



Patrician

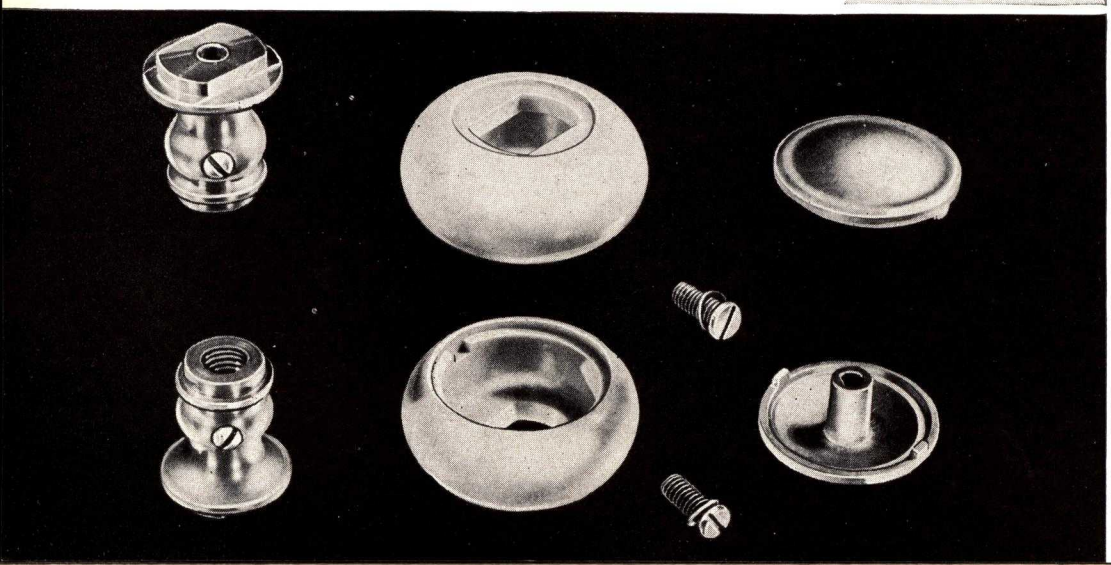
LOCKWOOD

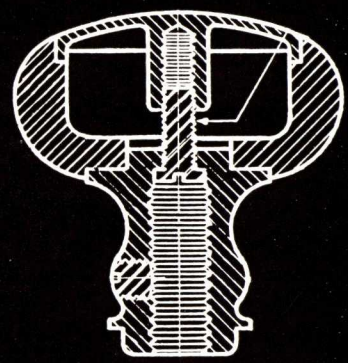
Hardware



Patrician is the answer to the need for practical application of color to builders' hardware, which can now be harmonized with the color scheme as well as with the architectural treatment of the home. Knob bodies of durable plastic materials are combined with metal inserts, and are available in black, ivory, chinese red, pastel green, orchid, delphinium blue, and yellow. These knob bodies are readily interchangeable to conform to changes in decorative schemes. They are resistant to wear and discoloration, will not fade or craze, and are easy to keep clean.

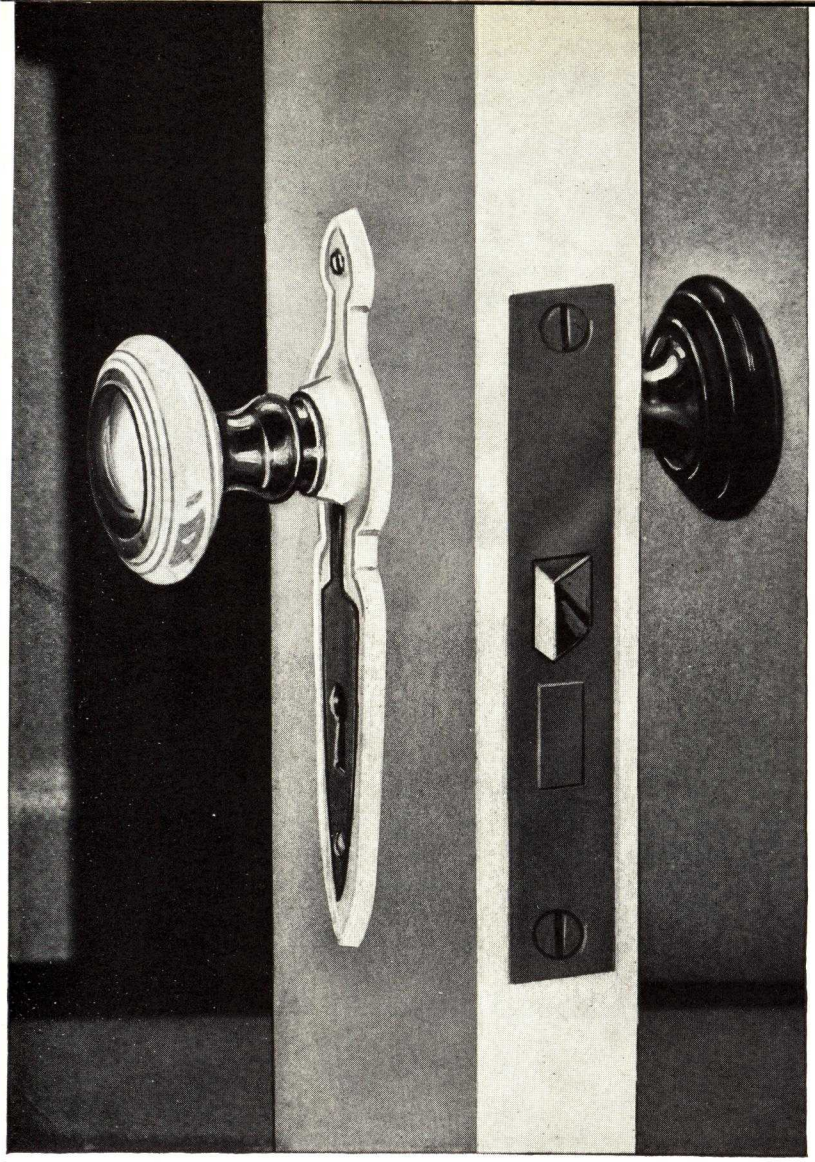
This distinctive hardware is produced in all standard finishes and in designs that harmonize with any type of architecture. Patrician lock sets vary in price according to the type and quality required. In any price range, however, they cost no more than all-metal lock sets.





KNOB CONSTRUCTION

Note that the forged bronze top is held by positioning lugs in fixed relation to the plastic body. The solid bronze shank, fitting a non-circular opening in the knob body and fastened firmly to the knob top by the assembly screw prevents any turning of the body on the shank. This is a common fault of the old fashioned glass knob.

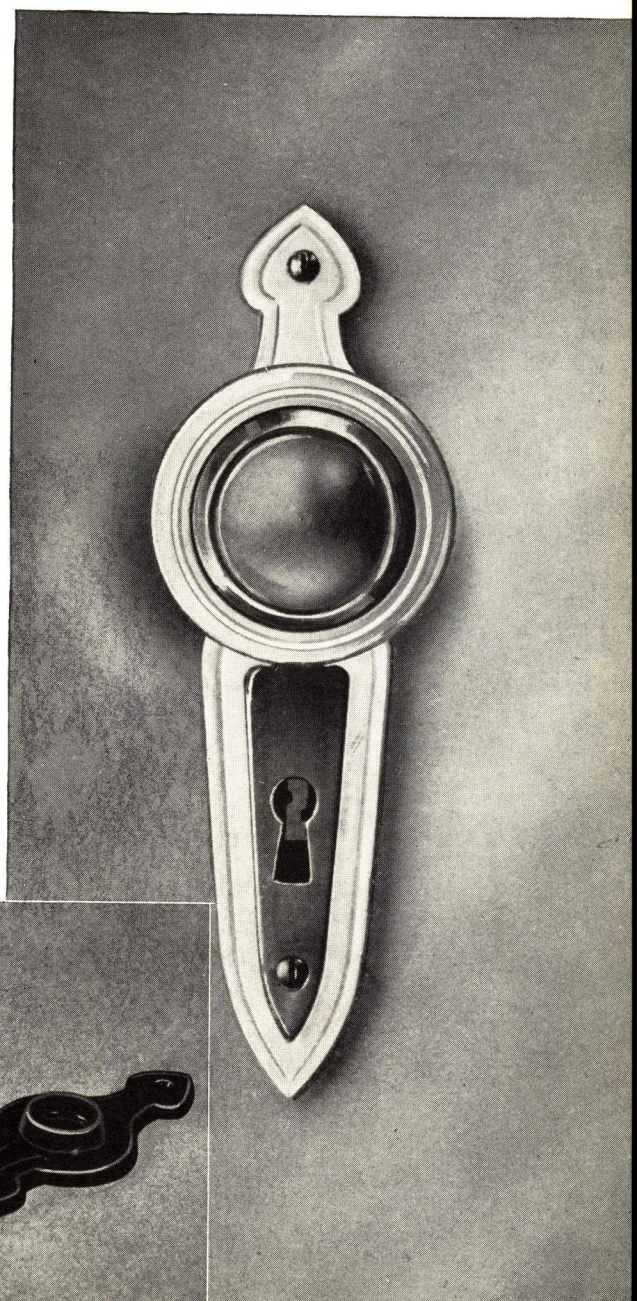


Patrician

LOCKWOOD

Plastelle

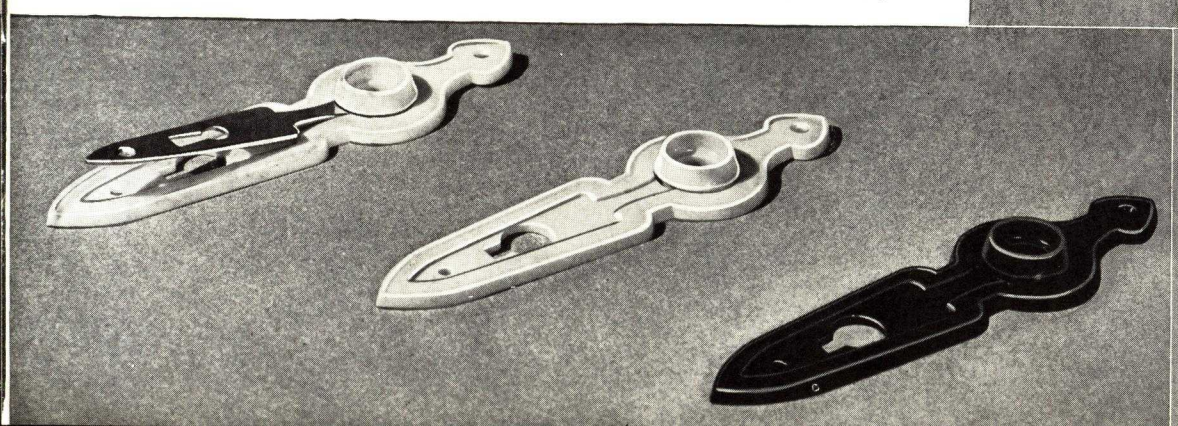
KNOBS AND ESCUTCHEONS

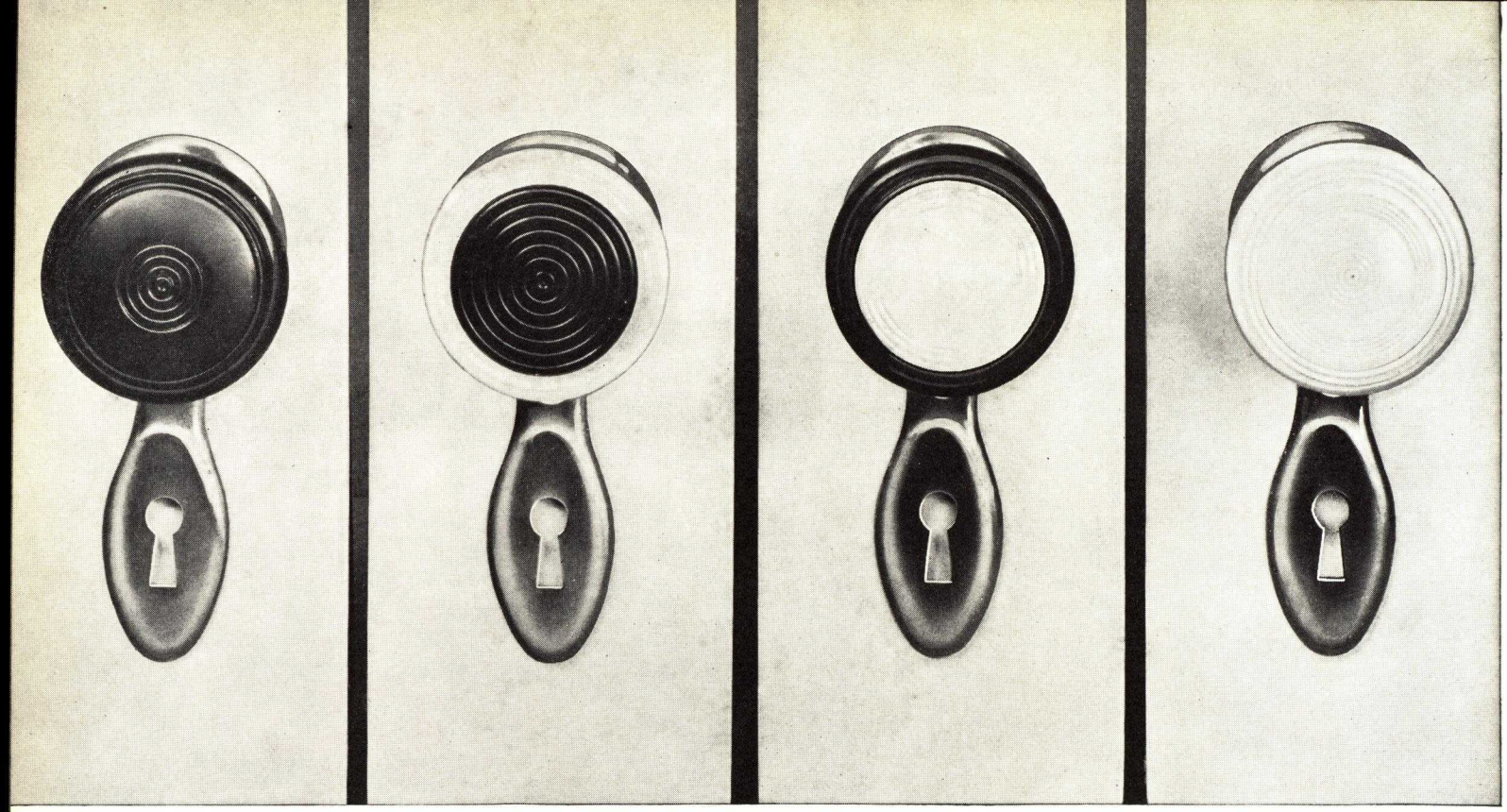


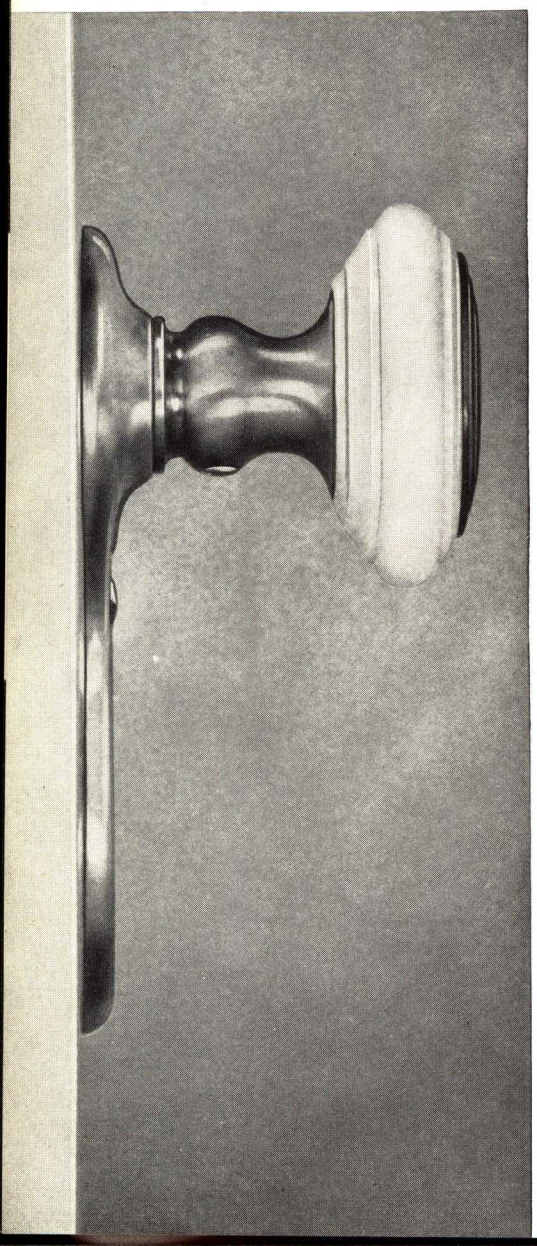
Greater flexibility in the harmonious use of builders' hardware is afforded by the new Patrician metal-and-plastic escutcheons. To blend with the color scheme of any room, they are produced in black, ivory, and five correct pastel colors. Like Patrician knobs, they are made of durable plastic material with metal inset plates.

As shown in the illustrations below, this metal inset is removable, and can be supplied in the same metal and finish as used for the shank and cap.

These highly practical escutcheons are now offered in this graceful Plastelle design, which is recommended for use with the "shallow knob" illustrated. Patrician knobs of other designs can be furnished with Plastelle.







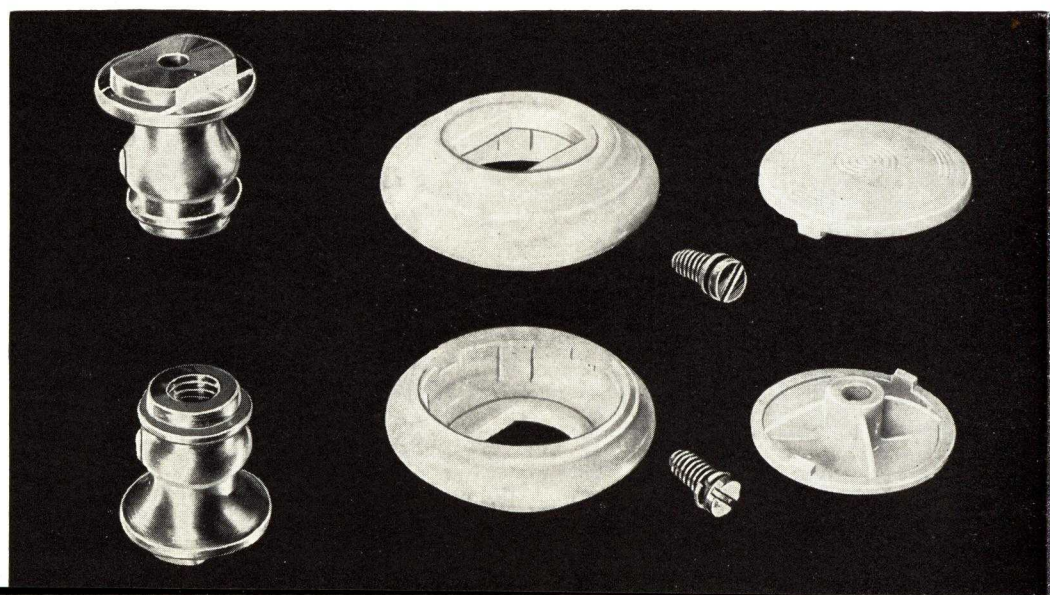
LOCKWOOD

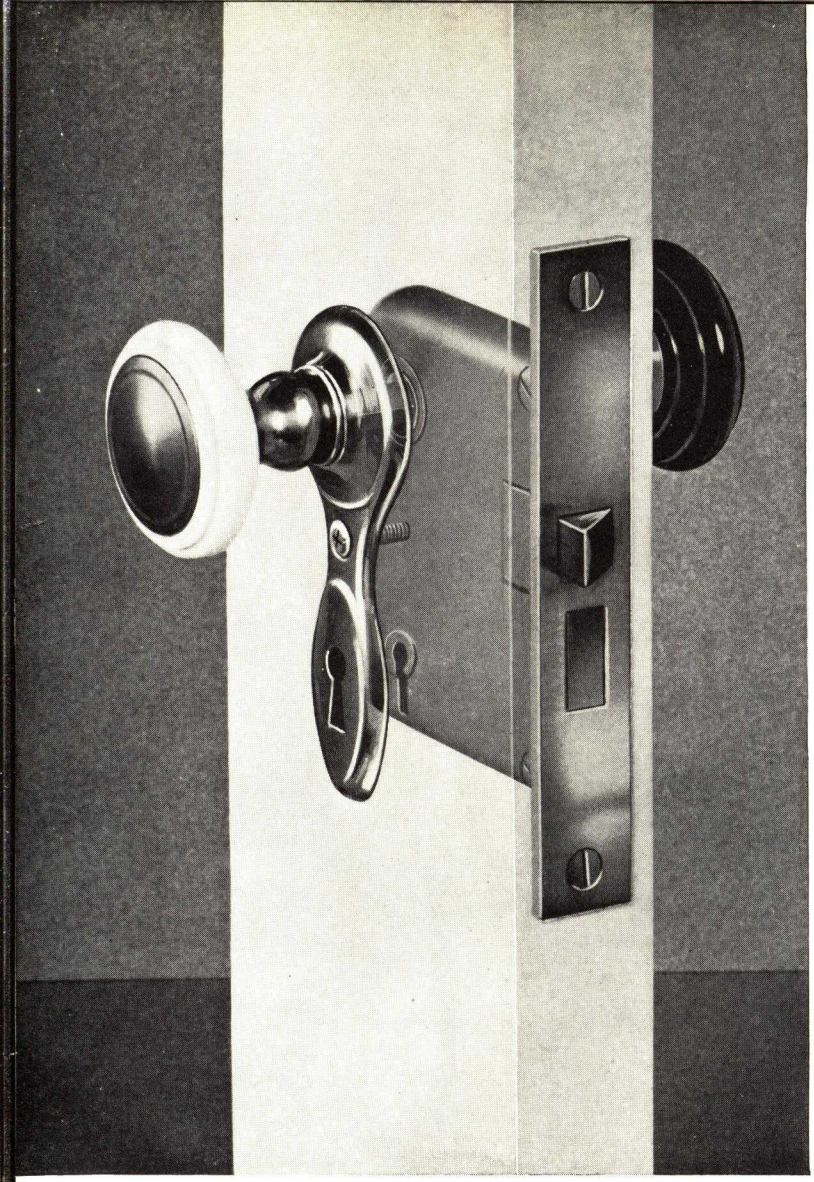
Patrician ALL-PLASTIC KNOBS

Shown with the new Unifast Escutcheons

The use of colorful plastics has been extended to shallow knobs of all-plastic construction with metal shanks in any standard hardware finish. Both knob body and top in the four designs shown are available in all Patrician color tones: ivory and black for general use, other colors as mentioned on Page 2 for kitchen, bath or game room. Since the knob body and the knob top are separate interchangeable units, a wide variety of effects can be produced.

Page 4



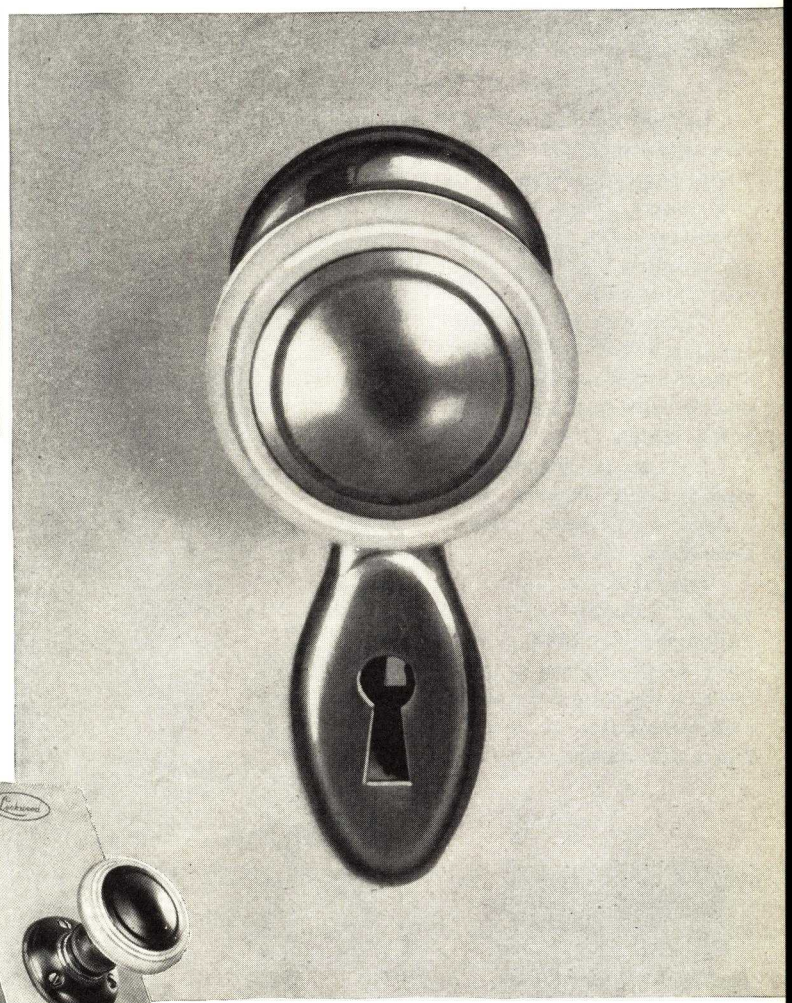


LOCKWOOD

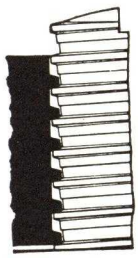
16
25

Unifast LOCK SET

The new Unifast combination rose and key plate makes the attractive sectional door trim design thoroughly practical for use on 1⅜" stock doors. Ever since the mill work industry standardized on thin doors for interiors, considerable difficulty has been experienced when applying sectional trim. The greatest of care is necessary in mortising for the ordinary type of lock, because sufficient wood must be retained to hold the very short screws required. An ingenious feature of the Unifast design, however, completely eliminates this problem.



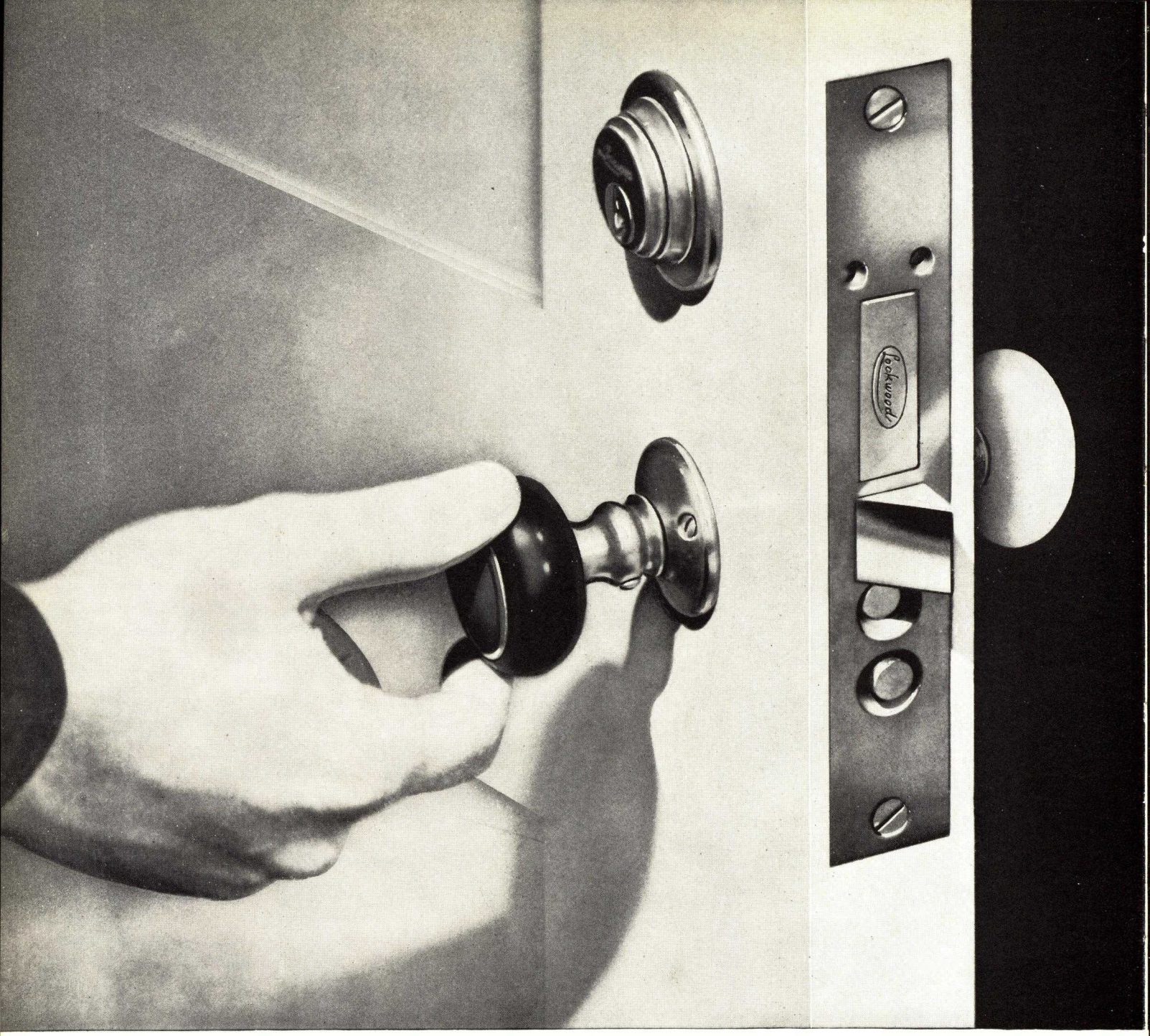
The Unifast trim is firmly secured by a machine screw with the new cross slots that look well in any position. This screw passes through the wood into a special stump in the lock itself, which is drilled and tapped to receive it. Only one screw is used to anchor each combination rose and key plate, instead of the five screws required for the old-fashioned type. This results in a very substantial saving in the cost of application. Since Unifast can be used with glass, metal and Patrician plastic-and-metal knobs, its unique advantages are making this style of trim extremely popular with architects who customarily use sectional trim.



New DARDELET SET SCREW

Lockwood has permanently overcome the annoyance of loose, rattling knobs and lost set screws. All Lockwood doorknob shanks are equipped with the Dardelet Self-locking Set Screw. The screw insures positive locking together of knob and spindle in spite of constant use, vibration and impacts. It is set like any ordinary screw with a screw-driver and can be used repeatedly without injury to itself or the abutting thread.

Illustration above shows Unifast Knob and Key plate in normal sight position. Note that it resembles sectional trim without the five wood screws formerly required.



LOCKWOOD

Equipoise Hardware

The Equipoise Apartment Entrance Lock is a recently developed jimmy-proof mortise lock with a double-throw bolt and balanced hub action. The improved hub action is "equipoised"—that is, perfectly balanced so that the knob may be turned in either direction with the same slight effort. This is the only apartment entrance lock having the balanced hub feature, a decided advantage over the extremely unbalanced action of cylinder locks of the older type.

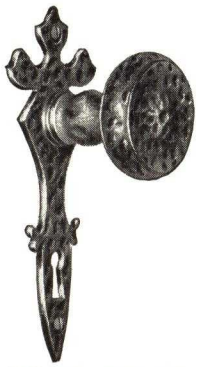
The Patrician french shank knob illustrated above is furnished with the new self-locking Dardelet knob set screw. This knob cannot become loose on the door.

Black Hammered Hardware

Below are illustrated some Lockwood Hammered Hardware in Cast White Metal or Cast Iron.

BOLTON DESIGN

BN 401 x BN 418



BN 401 x BN 434
BN 601 x BN 634

BN 401 x BN 413

BN 437

EXETER DESIGN

ER 401 x ER 418

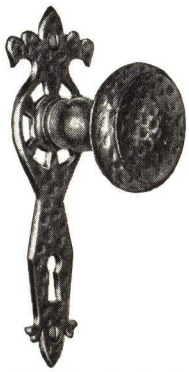
ER 401 x ER 434
ER 601 x ER 434

ER 401 x ER 413

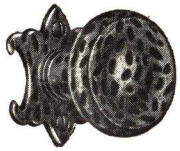
ER 437

HARDWICK DESIGN

HK 401 x HK 418



HK 401 x HK 434
HK 601 x HK 634



HK 401 x HK 413

HK 437

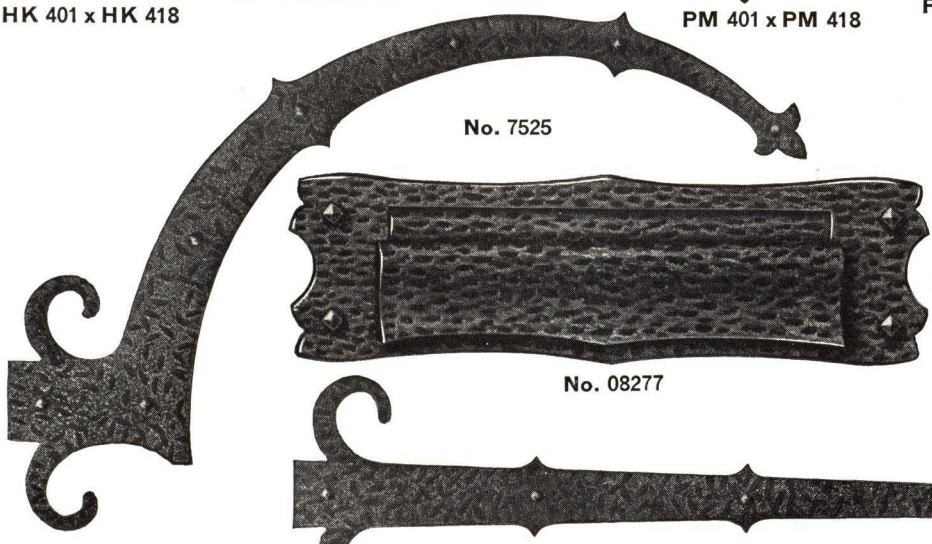
PEMBROKE DESIGN

PM 401 x PM 418

PM 401 x PM 434
PM 601 x PM 634

PM 401 x PM 413

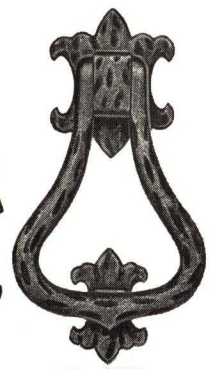
PM 437



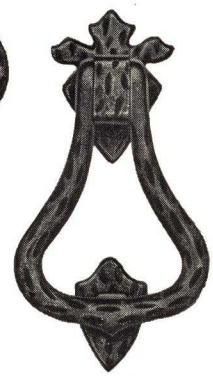
No. 7525

No. 08277

No. 7522

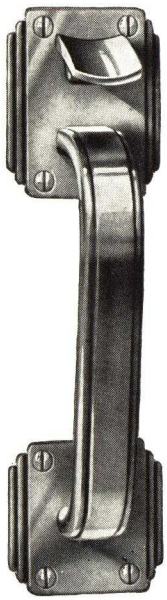


No. 8981



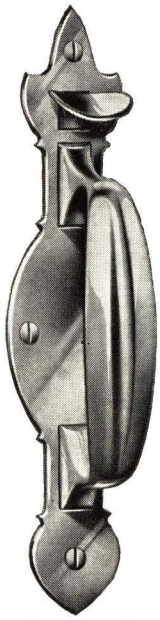
No. 8982

No. OV 282
OSTERVILLE



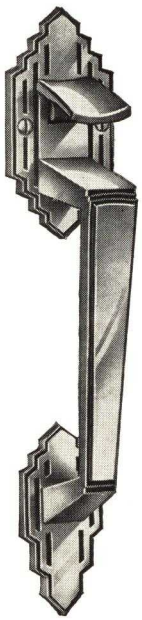
No. HD 282
HOLLYWOOD

No. WD 283
WINDSOR



No. NE 283
NEWTON

No. VD 283
VERDUN

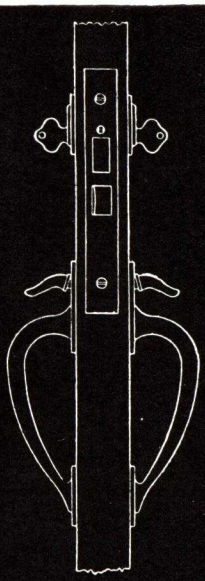


No. AZ 283
AZEX

On this page are illustrated several designs of handle sets in cast brass or bronze.

LOCKWOOD

Builders



Entrance Door Handle Set for Store Doors. Handles Both Sides.

No. VE 293
VERNON

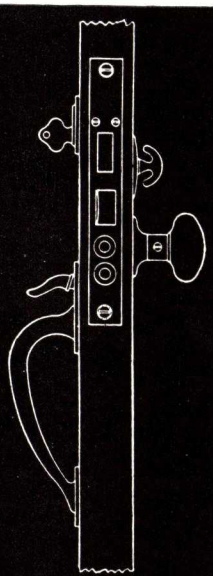
No. PM 282
PEMBROKE

No. ER 282
EXETER

No. BN 282
BOLTON

On this page are illustrated several designs of handle sets in cast white bronze. Furnished only in black or hammered iron finish.

No. HK 282
HARDWICK



Entrance Door Handle Set for Residence Front Doors. Handle Outside. Knob and Turn Knob Inside.

SECTIONAL

Hardware

LOCKWOOD

Hardware

NATIONALLY DISTRIBUTED

Manufacturers of a Complete Line of Builders' Hardware

As a result of Lockwood's product development program, many new and exclusive designs have been recently created. Together with other items of residential hardware suitable for general use, they are illustrated and described in the preceding pages. This distinctive line has won high favor among architects, prominent builders and owners throughout the country. The complete Lockwood line of standard period designs is described and illustrated in our Catalogs Nos. 20 and 20A.

Stocks and Service

Stocks of Patrician, Unifast and Polyflex, as well as Lockwood conventional hardware for use on residence and public buildings, are carried at the branches listed below. Our representatives will be pleased to bring samples to your office if you will write or telephone. Patrician, particularly, must be seen to be properly appreciated. Expert contract men are available for the preparation of specifications, covering any type of structure.

Dealer Distribution

Leading dealers throughout the country carry Lockwood Patrician, Unifast and Polyflex as well as Lockwood conventional hardware. All sales are made through the hardware trade. Just send a post-card for the name and address of our dealer nearest to you.

LOCKWOOD Conventional Hardware

In addition to the Patrician line, Lockwood manufactures conventional hardware of all types. Locks and latches with wrought or cast trim, bolts, butts, casement and window hardware, miscellaneous hardware of all kinds, door closers, night latches; in short, complete hardware trim for any type of structure. Our Nos. 20 and 20A Catalogs cover the full line.

LOCKWOOD HARDWARE MANUFACTURING CO.

Division of Independent Lock Company
FITCHBURG, MASS., U. S. A.

BRANCH OFFICES AND WAREHOUSES

LOCKWOOD HARDWARE MFG. CO.
25 Warren Street
New York, N. Y.

LOCKWOOD HARDWARE MFG. CO.
523 Commerce Street
Philadelphia, Pa.

LOCKWOOD HARDWARE MFG. CO.
207 A Street
So. Boston, Mass.

LOCKWOOD HARDWARE MFG. CO.
555 W. Randolph Street
Chicago, Ill.

LOCKWOOD HARDWARE MFG. CO,
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Baltimore, Md.

LOCKWOOD HARDWARE MFG. CO,
406 Wall Street
Los Angeles, Calif.

LOCKWOOD HARDWARE MFG. CO.

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RUSSWIN

HARDWARE SPECIALTIES

The Specialties in This Catalog

In the following pages we present eight outstanding hardware specialties—each of timely interest to the architect and building contractor. These specialties illustrate the wide scope of RUSSWIN Hardware.

RUSSWIN FIRE EXIT BOLTS

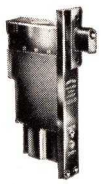
Four important grades for all types of structures . . . double or single-acting . . . top and bottom or side latching . . . incorporating many unique features, including the exclusive *Rotary Action* that insures positive operation always..... *Page 3*

RUSSWIN LIQUID DOOR CLOSER

Designed for closing all types of doors from light screen doors to heavy exterior doors . . . also for hospital, coupon booth and fire doors . . . crank shaft type construction . . . can be equipped with hold-open arm..... *Page 13*

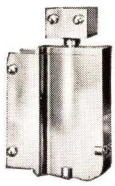
RUSSWIN "400" SEMI-CONCEALED DOOR CLOSER

For metal or wood interior and inswinging exterior doors . . . strong and extremely powerful . . . closes doors quietly, firmly . . . easily handles doors subject to severe draft conditions . . . only a comparatively small portion of mechanism extends beyond door surface..... *Page 16*



RUSSWIN-NEWTON INVISIBLE DOOR CLOSER

For single-acting interior doors . . . totally concealed and absolutely reliable . . . mortised in jamb of door . . . only *one* size case . . . no frame head necessary. *Page 18*



RUSSWIN-NEWTON CHECKING PIVOTS

For W.C. stall doors, office railing gates and similar dwarf doors . . . complete noiseless control . . . holds door all the way open or all the way closed . . . applicable to all frontal materials and all types of posts . . . only *two* moving parts. *Page 20*

RUSSWIN LAVATORY DOOR HARDWARE..... *Page 23*

RUSSWIN "EVERLOCK" CASEMENT OPERATOR..... *Page 24*

RUSSWIN SHUTTER WORKER..... *Page 25*

RUSSWIN *Complete Line of Builders' Hardware*

The complete line of RUSSWIN Hardware embraces a varied and unusually extensive selection of hardware for practically every requirement . . . locks of every description . . . trim in a wide variety of patterns . . . butts . . . garage hardware —and all other hardware necessary for a complete installation.

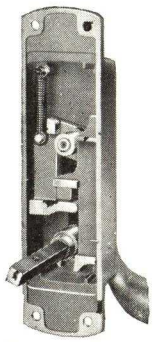
RUSSELL & ERWIN MANUFACTURING COMPANY

THE AMERICAN HARDWARE CORPORATION, SUCCESSOR

NEW BRITAIN • CONNECTICUT

RUSSWIN "PANIC PROOF"

FIRE EXIT BOLTS • WITH "ROTARY ACTION"



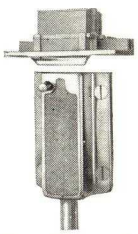
Showing Rotary Action of Spindle

RUSSWIN Fire Exit Bolts are designed for use on exterior and interior doors in auditoriums, dormitories, halls, schools, theaters and any building where a *safe* and *sure exit* is desired at any time.

They are automatic in action. The slightest pressure, on the bar or lever on the inside of the door automatically and instantly releases the lock and the bolts at all times. RUSSWIN Bolts comply with all state and city ordinances.

PERTINENT FEATURES

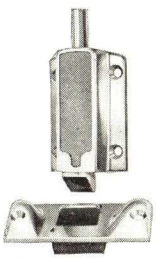
POSITIVE ROTARY ACTION: A superior feature of the RUSSWIN Fire Exit Bolt is its Rotary Action. This action is similar to that of a knob and eliminates any possibility of binding. Free and easy action is guaranteed. The slightest pressure on the cross bar is at once transferred to the locking mechanism of the bolt and immediate action is assured. There is not the possibility of binding as there is when the action used is similar to that of the thumb-piece action of an entrance door lock. *Rotary Action is an exclusive feature found only in* RUSSWIN *Fire Exit Bolts.*



Top Case of 40 Bolt

EXTRUDED METAL USED: Another important feature that insures accuracy of operation is a noteworthy improvement in lock parts. For, wherever possible, RUSSWIN lock parts are made from *extruded metal* which compares favorably with drop forgings.

OTHER IMPORTANT FEATURES: In addition, RUSSWIN Bolts offer several advantages in their operation. They are self-latching: they automatically lock the door as soon as it is closed and thereby make locking inspection unnecessary. When the doors are opened the top and bottom bolts are held in a retracted position until the door is closed—consequently make possible the use of standard strikes and eliminates detailing of sills and head jambs. Their locking device is so made that the latches, bolts and bars can be held in a retracted position when doors are not required to be locked. This eliminates any possibility of tampering and reduces wear on the parts. In addition there is a compensating spring latch on the bottom rod. Should the bottom strike become obstructed, this spring latch, working independent of the rod, does not hinder the operation of the top latch which locks at all times.



Bottom Case of 40 Bolt

FOUR IMPORTANT TYPES

HEAVY DUTY RIM TYPE • SIDE LATCHING: This is the newest type RUSSWIN Bolt and is proving exceedingly popular for both single doors and double doors with removable pipe mullions. It fulfills all safety requirements and gives the positive action characteristic of RUSSWIN top and bottom latching bolts. Because of a reduced number of parts, this bolt is sold at an attractive price. With but a single point of contact, it offers less chance of trouble due to shrinkage of doors or jambs..... *Page 4*

Bottom Rod of 25 Bolt

HEAVY DUTY • TOP AND BOTTOM LATCHING: This is our highest quality line. On this type, the top and bottom latch bolts are fully enclosed. This gives a most pleasing appearance highly favored by many architects. The Bolts are constructed of solid brass or bronze and have the characteristic RUSSWIN rotary action..... *Page 6*

STANDARD WEIGHT • TOP AND BOTTOM LATCHING: This group has the same quality of construction and the same operating mechanism as our Heavy Duty line—but its top and bottom latch bolts are not fully enclosed and the operation of the strike is slightly modified. It is consequently sold at a lower cost..... *Page 8*

INEXPENSIVE • TOP AND BOTTOM LATCHING: This group is recommended for installations where low cost combined with sturdy construction is important..... *Page 11*

6 REASONS WHY RUSSWIN RIM FIRE EXIT BOLTS ARE SPECIFIED

UNIT PRINCIPLE

The RUSSWIN Rim Fire Exit Bolt is of unit type construction; all working parts are enclosed within the active case on the inside of the door. It is the building up of one part upon another to form a complete unit, each part in its proper relation to the other, forming a perfect piece of mechanism. When applied to the door there is no possibility of binding. The smoothness of action is assured.

CONSTRUCTION

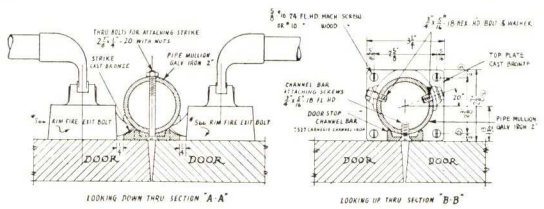
All interior working parts are of special hard bronze. Due to the few working members within the cases all parts are extra large and heavy, assuring long life and trouble-free service.

APPLICATION

Being one complete unit the rim bolt is applied entirely on the surface of the door, no mortising being necessary.

USES

RUSSWIN rim bolts are for use on Single or Pairs of Entrance and Exit Doors. On Pairs of doors either a stationary mullion is required or a removable mullion, as shown below can be furnished with the panic bolt for use with regular pairs of doors. The use of a mullion affords a more satisfactory method of locking than is possible on regular pairs of doors, as each door is securely locked into the mullion.



LOOKING DOWN THRU SECTION "A-A"

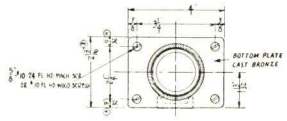
LOOKING UP THRU SECTION "B-B"

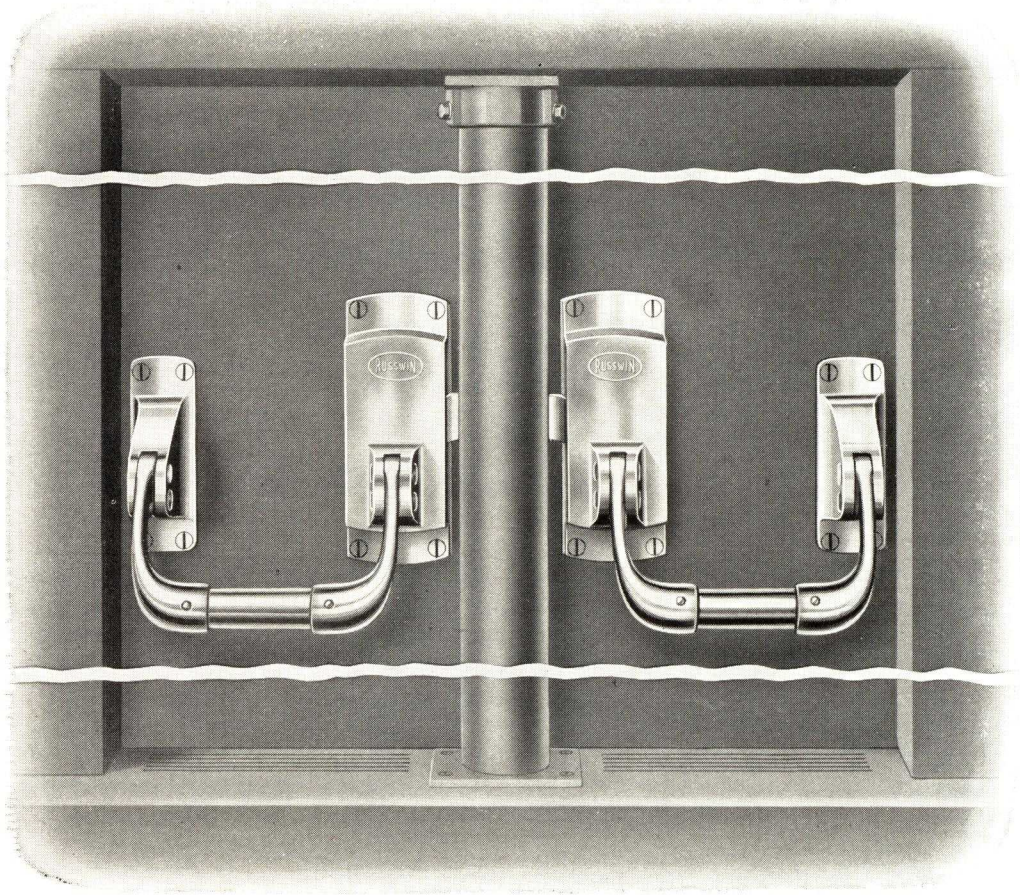
APPEARANCE

RUSSWIN rim fire exit bolts are much more pleasing in appearance than the standard type of bolt as they eliminate the use of top and bottom rods.

SAFETY

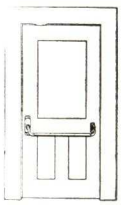
The slightest touch on the crossbar at any point instantly releases the bolt and assures immediate exit at all times.

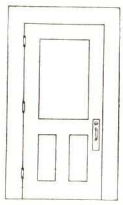




FOR SINGLE DOORS AND DOUBLE DOORS WITH REMOVABLE MULLION EXIT AND ENTRANCE

No. 566 • Rim Type • With Endfield Door Pull and Escutcheon


Inside


Outside

Endfield Door Pull

A slight push on the bar instantly retracts latch bolt and releases door from the inside. The bar can be held in depressed position (by a locking device with removable key in case at each end of bar) retracting latch bolt to allow operation of door without the necessity of operating the Exit Bolt. Key through the outside cylinder withdraws latch bolt. Latch bolt, however, can be held retracted ONLY when horizontal bar is held in depressed position. The Easy Closing Swinging Latch Bolt has a ¾-inch throw and is protected to prevent insertion of instrument between latch bolt and strike. The lip of the strike extends ¼ inch beyond thickness of door, unless otherwise specified.

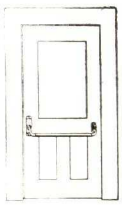
Master Keying: Can be master-keyed, grand master-keyed in sets, or keyed alike with other RUSSWIN Cylinder Locks.

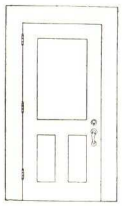
BRASS OR BRONZE METAL: Furnished in Any Finish.

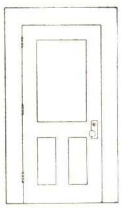
Number	Bar, in.	Active Case, in.	Supporting Case, in.	Outside Trim	Weight, lbs.
566	1	7¼ x 2¾	4½ x 1 13/16	Endfield Door Pull	13½

FOR SINGLE DOORS AND DOUBLE DOORS WITH REMOVABLE MULLION EXIT AND ENTRANCE

No. 564 and No. 564½ • Rim Type • With Sectional Trim
No. 567 and No. 567½ • Rim Type • With Knob and Escutcheon


Inside


Outside No. 564


Outside No. 567

A slight push on the bar instantly retracts latch bolt and releases door from the inside. The bar can be held in depressed position (by a locking device with removable key in case at each end of bar) retracting latch bolt to allow operation of door without the necessity of operating the Exit Bolt.

On No. 564 and No. 567, key, through the outside cylinder, locks and unlocks thumb-piece or knob on the outside. The thumb-piece or knob, however, is automatically deadlocked when latch is withdrawn by key —and is unlocked by a reverse throw of the key. No. 564½ and No. 567½ have cylinders on *both* sides. Key through inside cylinder locks outside thumb-piece. Entrance from outside by key through outside cylinder.

The Easy Closing Swinging Latch Bolt has a ¾-inch throw. The lip of strike extends ¼ inch beyond thickness of door, unless otherwise specified.

Master Keying: Can be master-keyed, grand master-keyed in sets, or keyed alike with other RUSSWIN Cylinder Locks.

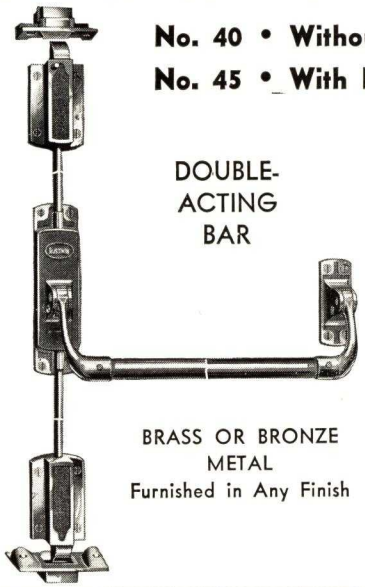
BRASS OR BRONZE METAL: Furnished in Any Finish.

Number	Bar, in.	Active Case, in.	Supporting Case, in.	Outside Trim	Weight, lbs.
564, 564½	1	8¼ x 3	4½ x 1 13/16	Sectional Handle	15½
567, 567½	1	8¼ x 3	4½ x 1 13/16	Knob and Escutcheon	16

RUSSWIN

HEAVY DUTY FIRE EXIT BOLTS • TOP AND BOTTOM LATCHING • Shown below and on the opposite page. These bolts are preferred by many architects as their top and bottom latch bolts are fully enclosed and thereby give a neat appearance.

FOR SINGLE DOORS • EXIT ONLY • EXIT AND ENTRANCE

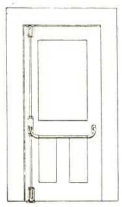


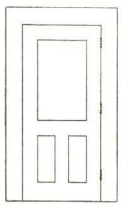
No. 40 • Without Exterior Trim • Exit Only

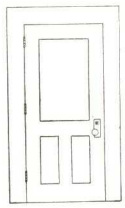
No. 45 • With Knob and Escutcheon • Exit and Entrance

A slight push or pull on the bar at any time instantly retracts the top and bottom latches and releases the door from the inside. The horizontal bar can be held in depressed position (by a locking device with removable key in case at each end of bar) to allow use of door without the necessity of operating the Exit Bolt. When door is open, top and bottom latches are automatically held retracted until door is closed—eliminating the need of special lip strikes; bolts are thrown when trip on top case contacts with strike. Compensating spring latch on the bottom rod works independent of the rod.

No. 45 can be used on single doors with narrow stiles. Its outside knob is locked and unlocked by a key through the Russwin ball-bearing outside cylinder.

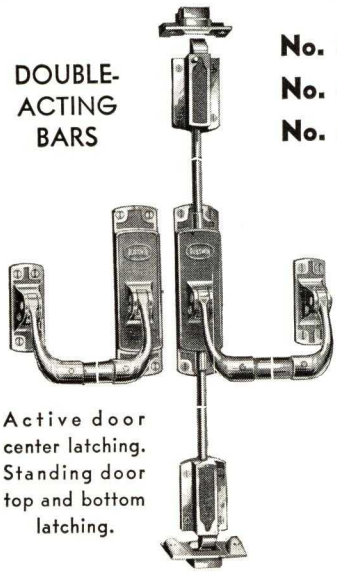

Inside


Outside No. 40


Outside No. 45

Number	Rod, in.	Bar, in.	Active Case, in.	Supporting Case, in.	End Case, in.	Outside Trim	Weight, lbs.
40	1/2	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	3 11/16 x 2 1/2	none	17 1/2
45	1/2	1	8 5/8 x 2 1/8	4 3/16 x 1 5/8	3 11/16 x 2 1/2	escutcheon	17 1/2

FOR DOUBLE DOORS • EXIT AND ENTRANCE



BRASS OR BRONZE METAL
Furnished in Any Finish.

No. 40 x 66 • With Handle and Thumb-Piece

No. 40 x 67 • With Knob and Escutcheon

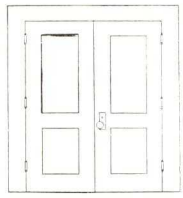
No. 40 x 68 • With Knob and Escutcheon • Bitted Key

A slight push or pull on either bar at any time instantly retracts latches and releases the doors from the inside. The bars can be held in depressed position (by a locking device with removable key in case at each end of bar) to allow use of doors without the necessity of operating the Exit Bolts. Key through outside cylinder locks and unlocks outside thumb-piece or knob. Key can also hold latch bolt retracted (on No. 68 *only* when horizontal bar is held in depressed position). When standing door is open, its top and bottom latches are automatically held retracted until door is closed. Compensating spring latch on bottom rod works independent of rod. Auxiliary latch dead-locks latch bolt.

Inside

Outside No. 40 x 66

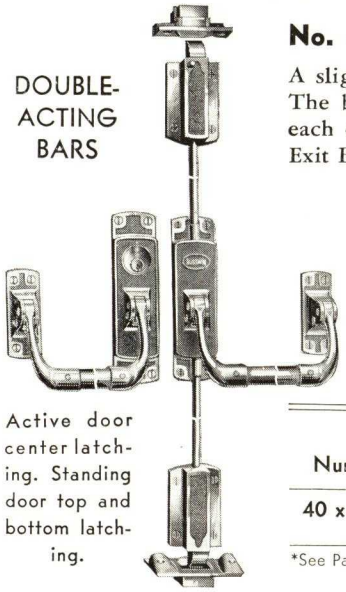
Outside No. 40 x 67


Outside No. 40 x 68

Number	Rod, in.	Bar, in.	Active Case, in.	Supporting Case, in.	End Case, in.	Lock	Outside Trim	Weight, lbs.
40 x 66	1/2	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	3 11/16 x 2 1/2	9452*	sectional	27
40 x 67	1/2	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	3 11/16 x 2 1/2	9458*	escutcheon	26
40 x 68	1/2	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	3 11/16 x 2 1/2	0444 3/4*	escutcheon	25 1/2

*See page 12.

FOR DOUBLE DOORS • INSIDE AND OUTSIDE LOCKING



Active door center latching. Standing door top and bottom latching.

No. 40 x 66½ • Thumb-Piece Locked with Key through Inside Cylinder

A slight push or pull on either bar instantly retracts latches and releases the door from the inside. The bars can be held in depressed position (by a locking device with removable key in case at each end of each bar) retracting latches to allow use of doors without the necessity of operating Exit Bolt. Key through inside cylinder (on No. 66½) locks and unlocks outside thumb-piece—also can hold latch bolt retracted. Entrance is gained with key through outside cylinder. When standing door is open, its top and bottom latches are automatically held retracted until door is closed. Compensating spring latch on the bottom rod works independent of the rod. Auxiliary latch deadlocks latch bolt.

Inside

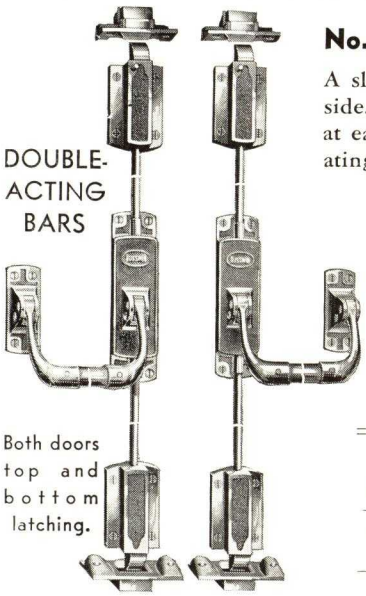
Outside

BRASS OR BRONZE METAL: Furnished in Any Finish.

Number	Rods in.	Bar in.	Active Case, in.	Supporting Case, in.	End Case, in.	Lock No.	Outside Trim	Weight lbs.
40 x 66½	½	1	8 1/16 x 2⅛	4 3/16 x 1⅝	3 11/16 x 2½	9452½*	sectional	27¼

*See Page 12.

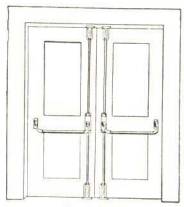
FOR DOUBLE DOORS • EXIT AND ENTRANCE

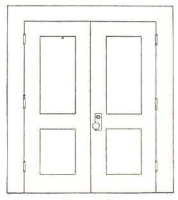


Both doors top and bottom latching.

No. 43 x 45 • For Knob Locked from Outside through Outside Cylinder

A slight push or pull on either bar instantly retracts latches and releases the door from the inside. Bars can be held in depressed position (by a locking device with removable key in case at each end of each bar) retracting latches to allow use of doors without the necessity of operating Exit Bolts. Key through the outside cylinder (on No. 45) locks and unlocks the outside knob. When either doors are open, its top and bottom latches are automatically held retracted until door is closed—thereby eliminating the use of special lip strikes. Compensating spring latch on the bottom rod works independent of the rod.

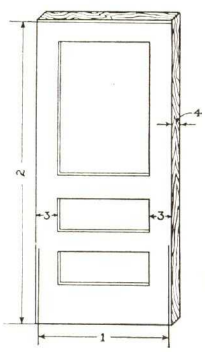

Inside


Outside

BRASS OR BRONZE METAL: Furnished in Any Finish.

Number	Rods in.	Bar in.	Active Case in.	Supporting Case, in.	End Case in.	Cylinder No.	Outside Trim	Weight lbs.
43 x 45	½	1	8⅝ x 2⅛	4 3/16 x 1⅝	3 11/16 x 2½	1290	knob and escutcheon	29

Recommendations for Specifying RUSSWIN Fire Exit Bolts

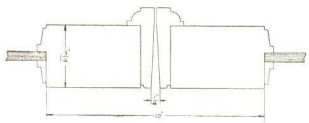


The diagram at right gives a typical installation detail.

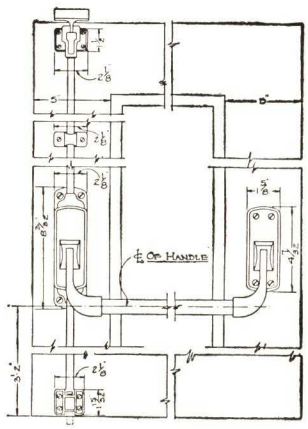
The split astragal for double doors shown below is recommended with all RUSSWIN Fire Exit Bolts.

Necessary details and measurements ofdoors (from inside):

(1) Width (each individual door) allowing for stop.
(2) Height of door between threshold and stop.
(3) Width of stile.
(4) Thickness.
(5) Give detail of astragal.
(6) Specify if for right hand reverse bevel or left hand reverse bevel door —taken from outside.



(7) If pairs of doors are used specify hand of door on which the lock is applied.
(8) Distance from floor to center of cross-bar should be 38 inches.
(9) When sill is not flat show section through it with relation to door.



No.60 PANIC BOLT APPLIED

R U S S W I N

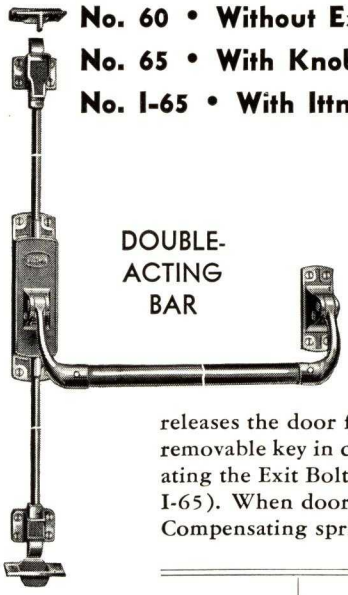
STANDARD TYPE FIRE EXIT BOLTS • TOP AND BOTTOM LATCHING • Shown below and on pages 9 and 10. This style is the same as the Heavy Duty type (pages 6 and 7) except the top and bottom latch bolts are not fully enclosed and operate slightly differently. Consequently, this group is lower in price — but of the same high quality as the Heavy Duty type.

FOR SINGLE DOORS • EXIT ONLY • EXIT AND ENTRANCE

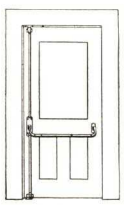
No. 60 • Without Exterior Trim • Exit Only

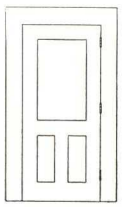
No. 65 • With Knob and Escutcheon • Exit and Entrance

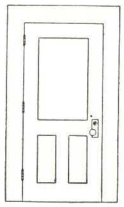
No. I-65 • With Ittner Outside Trim • Exit and Entrance

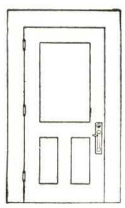


BRASS OR BRONZE METAL: Furnished in Any Finish.


Inside


Outside No. 60


Outside No. 65


Outside No. I-65

Ittner Outside Trim

A slight push or pull on the bar instantly retracts top and bottom latches and releases the door from the inside. The bar can be held in depressed position (by a locking device with removable key in case at each end of bar) retracting latches to allow use of door without necessity of operating the Exit Bolt. Key, through outside cylinder, locks and unlocks knob (on No. 65) or lever (on No. I-65). When door is open, top and bottom latches are automatically held retracted until door is closed. Compensating spring latch on bottom rod works independent of rod.

Number	Rod, in.	Bar, in.	Active Case, in.	Supporting Case, in.	Outside Trim	Weight, Lbs.
60	½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	none	16
65	½	1	8 5/8 x 2 1/8	4 3/16 x 1 5/8	Knob and Escutcheon	17
I-65	½	1	8 5/8 x 2 1/8	4 3/16 x 1 5/8	Ittner Trim	16

FOR DOUBLE DOORS • EXIT AND ENTRANCE

No. 60 x 66 • With Handle and Thumb-piece

No. 60 x 67 • With Knob and Escutcheon

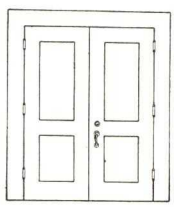
No. 60 x 68 • With Knob and Escutcheon—Bitted Key

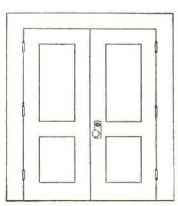
BRASS OR BRONZE METAL: Furnished in Any Finish.

Active Door center latching. Standing door top and bottom latching.

A slight push or pull on either bar instantly retracts latches and releases the doors from the inside. The bars can be held in depressed position (by a locking device with removable key in case at each end of bar) retracting latches to allow use of doors without the necessity of operating the Exit Bolts. Key through outside cylinder locks or bitted key unlocks outside thumbpiece or knob. Key can also hold latch bolt retracted (on No. 68 *only* when horizontal bar is held in depressed position). When standing door is open, its top and bottom latches are automatically held retracted until door is closed. Compensating spring latch on bottom rod works independent of rod. Auxiliary latch deadlocks latch bolt.

Inside


Outside No. 60 x 66

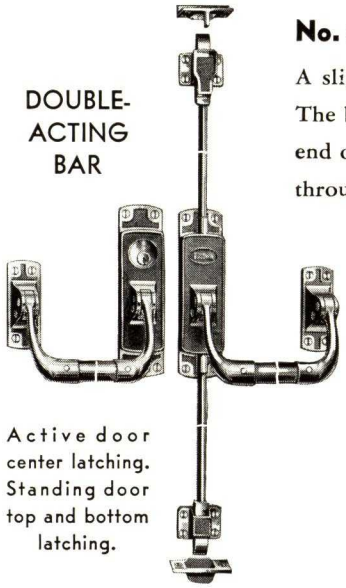

Outside No. 60 x 67

Outside No. 60 x 68

Number	Rods, in.	Bar, in.	Active Case in.	Supporting Case in.	Lock No.	Outside Trim	Weight, lbs.
60 x 66	½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9452*	sectional	31
60 x 67	½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9458*	Knob and Escutcheon	31 ½
60 x 68	½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	0444 3/4*	Knob and Escutcheon	25 ½

*See page 12.

FOR DOUBLE DOORS • INSIDE AND OUTSIDE LOCKING



Active door center latching. Standing door top and bottom latching.

No. 60 x 66½ • Handle and Thumb-piece Locked by Key through Inside Cylinder

A slight push or pull on either bar instantly retracts latches and releases the door from the inside. The bars can be held in depressed position (by a locking device with a removable key in case at each end of bar) retracting latches to allow use of doors without the necessity of operating Exit Bolt. Key through inside cylinder (on No. 66½) locks and unlocks outside thumb-piece—also can hold latch bolt retracted. Entrance is gained with key through outside cylinder. When standing door is open, its top and bottom latches are automatically held retracted until door is closed. Compensating spring latch on the bottom rod works independent of the rod. Auxiliary latch deadlocks latch bolt.

Inside

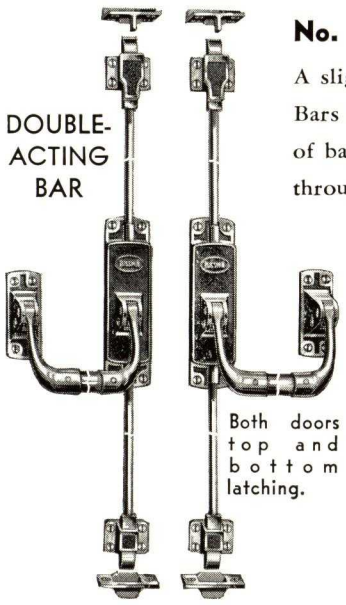
Outside

BRASS OR BRONZE METAL
Furnished in Any Finish

Number	Rods, in.	Bar, in.	Active Case, in.	Supporting Case in.	Lock No.	Outside Trim	Weight, lbs.
60 x 66½	½	1	8 1/16 x 2⅛	4 3/16 x 1⅝	9452½*	sectional	31

*See Page 12.

FOR DOUBLE DOORS • EXIT AND ENTRANCE

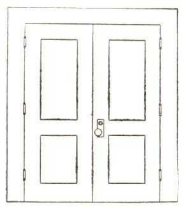


Both doors top and bottom latching.

No. 63 x 65 • Knob and Escutcheon Locked from Outside

A slight push or pull on either bar instantly retracts latches and releases the door from the inside. Bars can be held in depressed position (by a locking device with removable key in case at each end of bar) retracting latches to allow use of doors without the necessity of operating Exit Bolts. Key through the outside cylinder (on No. 65) locks and unlocks the outside knob. When either door is open, its top and bottom latches are automatically held retracted until door is closed—thereby eliminating the use of special lip strikes. Compensating spring latch on the bottom rod works independent of the rod.

Inside


Outside

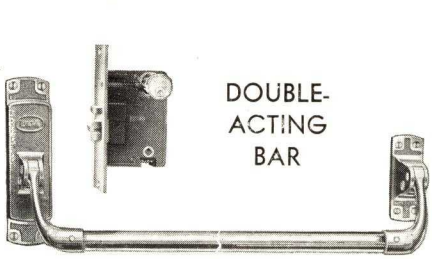
BRASS OR BRONZE METAL
Furnished in Any Finish

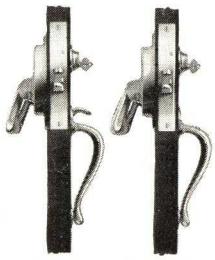
Number	Rods, in.	Bar, in.	Active Case, in.	Supporting Case, in.	Cylinder	Outside Trim	Weight, lbs.
63 x 65	½	1	8⅝ x 2⅛	4 3/16 x 1⅝	1290	Knob and Escutcheon	32

RUSSWIN

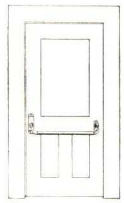
FOR SINGLE DOORS • EXIT AND ENTRANCE

No. 66 • With Handle and Thumb-piece • One Cylinder Operated from Outside
No. 66½ • With Handle and Thumb-piece • Two Cylinders Operated from Both Sides
No. NT66 • With Handle • One Cylinder Operated from Outside
No. NT66½ • With Handle • Two Cylinders Operated from Both Sides
No. 67 • With Knob and Escutcheon • One Cylinder Operated from Outside
No. 67½ • With Knob and Escutcheon • Two Cylinders Operated from Both Sides

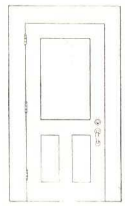




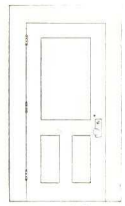
No. 66 No. NT66



Inside



Outside
No. 66, 66½, NT66, NT66½



Outside
No. 67, 67½

A slight push or pull on bar instantly releases door from inside. Bar can be held in depressed position (by a locking device with removable key in end cases). On No. 66 and 67, key through *outside* cylinder locks and unlocks outside thumb-piece or knob—which are automatically deadlocked when latch is withdrawn by key and are released by reverse throw of key. On No. 66½ and 67½, key through *inside* cylinder locks and unlocks outside thumb-piece or knob. Key through *outside* cylinder retracts latch bolt. On No. NT66 and NT66½, key through *outside* cylinder withdraws latch bolt. Auxiliary latch deadlocks latch bolt. BRASS OR BRONZE METAL; furnished in any finish.

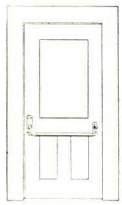
Number	Bar, in.	Active Case, in.	Supporting Case, in.	Lock No.	No. of Cylinder	Outside Trim	Weight, lbs.
66	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9452*	1	thumb-piece	15
NT66	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9452*	1	handle	15
66½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9452½*	2	thumb-piece	15
NT66½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9452½*	2	handle	15
67	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9458*	1	knob and escutcheon	15½
67½	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	9458½*	2	knob and escutcheon	15½

*See Page 12.

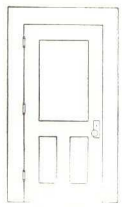
FOR SINGLE DOORS • EXIT AND ENTRANCE

No. 68 • Locked from Outside by Bitted Key

BRASS OR BRONZE METAL: Furnished in Any Finish.



Inside



Outside

A slight push or pull on the bar instantly releases door from the inside. Bar can be held in depressed position (by a locking device with removable key in end cases). Key, from the outside, locks and unlocks the knob. When door is unlocked, auxiliary latch is held in retracted position. Auxiliary latch automatically deadlocks latch bolt. Latch bolt can only be held retracted when bar is held in depressed position.

Number	Bar, in.	Active Case, in.	Supporting Case, in.	Lock No.	Outside Trim	Weight, lbs.
68	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	0444 3/4*	knob and escutcheon	13½

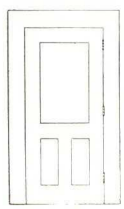
*See Page 12.

FOR SINGLE DOORS • EXIT ONLY

No. 69 • With Mortise Latch Only
No. 69A • With Mortise Latch and Auxiliary Deadlock

BRASS OR BRONZE METAL: Furnished in Any Finish.

Inside



Outside

A slight push or pull on the bar instantly releases door from the inside. Bar can be held in depressed position (by a locking device with removable key in end cases). Latch bolt can be held retracted only when bar is held in depressed position. To prevent retraction of latch bolt from outside, latch on No. 69A automatically deadlocks latch bolt.

Number	Bar, in.	Active Case, in.	Supporting Case, in.	Latch No.	Outside Trim	Weight, lbs.
69	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	0440*	None	12
69A	1	8 1/16 x 2 1/8	4 3/16 x 1 5/8	0441*	None	12

*See Page 12.

FIRE EXIT BOLTS · *Inexpensive*

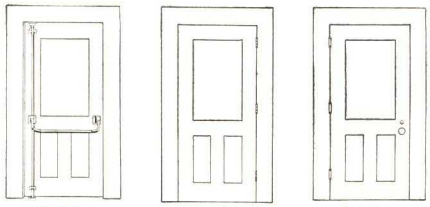
WITH "ROTARY ACTION"

FOR SINGLE DOORS • EXIT ONLY • EXIT AND ENTRANCE

No. 25 • Columbia Gravity Locking • Without Exterior Trim • Exit Only
No. 465 • Columbia Gravity Locking • With Knob and Escutcheon • Exit and Entrance

SINGLE-ACTING BAR

DEAD BLACK OR BRONZE PLATE FINISH.



Inside — Outside No. 25 — Outside No. 465

A slight pressure on the horizontal bar instantly releases door from the inside. The bolt is automatically held in unlocked position until the door is closed. Then bolt is thrown when lever on top case contacts with strike. Compensating end on bottom rod work independent of rod.

On No. 465, key through outside cylinder locks and unlocks outside knob.

No. 38, same as No. 25 except all brass or bronze metal.

Number	Rods, in.	B .r, in.	Supporting Case, in.	Operating Case, in.	Weight, lbs.
25	1/2	3/4	1 7/8 x 2 5/16	1 7/8 x 2 5/16	10
38	1/2	3/4	1 7/8 x 2 5/16	1 7/8 x 2 5/16	10
465	1/2	3/4	1 7/8 x 2 5/16	7 5/16 x 2 1/8	12

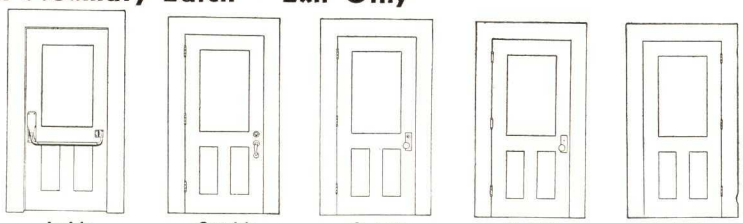
FOR SINGLE DOORS • EXIT ONLY • EXIT AND ENTRANCE

No. 326 • With Thumb-piece and Handle • Exit and Entrance
No. 327 • With Knob and Escutcheon • Exit and Entrance
No. 328 • With Bitted Key • Exit and Entrance
No. 329 • With Mortise Latch • No Trim • Exit Only
No. 329A • With Mortise Latch with Auxiliary Latch • Exit Only

SINGLE-ACTING BAR

Slight pressure on bar instantly releases door from inside. Key from outside locks and unlocks thumb-piece or knob on outside. Latch bolt on No. 326 and 327 may be held in retracted position by holding latch bolt retracted with thumb-piece and turning key toward back of lock. When knob on No. 328 is unlocked, auxiliary latch is held in retracted position. No. 329 and 329A operate ONLY by bar from inside. No outside trim.

DEAD BLACK FINISH



Inside — Outside No. 326 — Outside No. 327 — Outside No. 328 — Outside No. 329, 329A

Number	Bar, in.	Supporting Case, in.	Lock No.	Outside Trim	Weight, lbs.
326	3/4	1 7/8 x 2 5/16	9452*	Handle	11
327	3/4	1 7/8 x 2 5/16	9458*	Knob and Escutcheon	11
328	3/4	1 7/8 x 2 5/16	0444 3/4*	Knob and Escutcheon	9 1/2
329	3/4	1 7/8 x 2 5/16	0440*	None	8
329A	3/4	1 7/8 x 2 5/16	0441*	None	8

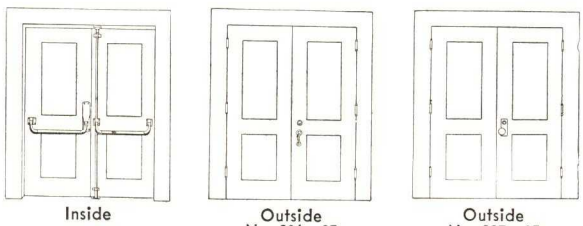
*See Page 12.

FOR DOUBLE DOORS • EXIT AND ENTRANCE

No. 326 x 25 • With Handle
No. 327 x 25 • With Knob and Escutcheon

SINGLE-ACTING BAR

Active door side latching. Standing door top and bottom latching.



Inside — Outside No. 326 x 25 — Outside No. 327 x 25

A slight pressure on either bar at any time instantly releases doors from the inside. The top and bottom bolts on the standing door are automatically held retracted until door is closed. Key, through outside cylinder, locks and unlocks thumb-piece or knob on the outside. Latch bolt may be held in a retracted position by holding latch bolt retracted with thumb-piece and turning key toward back of lock.

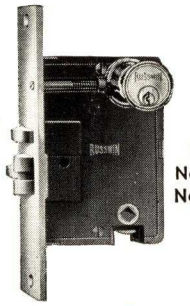
DEAD BLACK FINISH

Number	Rods, in.	Bar, in.	Active Case, in.	Supporting Case in.	Lock No.	Outside Trim	Weight, lbs.
326 x 25	1/2	3/4	8 x 2 1/4	1 7/8 x 2 5/16	9452*	Handle	21
327 x 25	1/2	3/4	8 x 2 1/4	1 7/8 x 2 5/16	9458*	Knob and Escutcheon	21

*See Page 12.

MORTISE LOCKS • USED ON RUSSWIN FIRE EXIT BOLTS

These mortise locks are especially designed for use on RUSSWIN fire exit bolts, described on the preceding pages. The fire bolts operate the latch bolts with a *rotary action,* insuring instant and certain action. Cylinder Lock Nos. 9452 and 9458 are for entrance doors and can be master keyed in any RUSSWIN cylinder lock system. The latch bolts on these locks can be held retracted by means of a key. No. 0444¾ is for entrance doors and can be master-keyed in RUSSWIN bitted key system.



Lock
No. 9452
No. 9452½

No. 9452 • For Use with Bolts No. 66 and NT66 (page 10)

With one cylinder, changes practically unlimited.

Latch bolt can be operated from inside at all times by the slightest pressure on bar or lever pad, and by thumb-piece from outside, except when it is deadlocked by key. The thumb-piece is automatically deadlocked when latch bolt is withdrawn by key and when thus locked remains so until unlocked by a reverse throw of key. When thumb-piece is locked, latch bolt may be held in a retracted position by holding latch bolt retracted with thumb-piece and turning key toward back of lock.

Auxiliary latch automatically deadlocks and safeguards latch bolt, preventing it from being retracted by any instrument inserted between face of lock and strike.

Lock
No. 9458
No. 9458½

No. 9452½ • For Use with Bolts No. 66½ and NT66½ (page 10)

Same as No. 9452, except has two cylinders. The inside cylinder locks and unlocks the thumb-piece and operates to hold the latch in a retracted position. The outside cylinder only retracts the latch.

No. 9458 • For Use with Bolt No. 67 (page 10)

Same as No. 9452, except operations by thumb-piece as noted are performed by knob from outside.

No. 9458½ • For Use with Bolt No. 67½ (page 10)

Same as No. 9458, except has two cylinders. The inside cylinder locks and unlocks the knob and operates to hold the latch in a retracted position. The outside cylinder only retracts the latch.

General Construction and Dimensions of Above Locks

Case: cast iron, japanned; 5¼ x 3 13/16 x ⅞ in.
Front: cast brass or bronze; 8 x 1¼ in.
Bolts: cast bronze.
Strike: cast brass or bronze; 1¼ in. lip to center
Backset: 2¾ in.
Hub: brass; for ⅜-in. spindle.
Hand: not reversible; specify hand.

Lock
No. 0444¾

No. 0444¾ • For Use with Bolt No. 68 (page 10)

Latch bolt can be operated from inside at all times by the slightest pressure on bar, and by knob from outside, except when it is deadlocked by key. When knob is unlocked, the auxiliary latch is held in a retracted position. When knob is locked, the auxiliary latch is released, and it automatically deadlocks and safeguards the latch bolt, preventing it from being retracted by any instrument inserted between face of lock and strike.

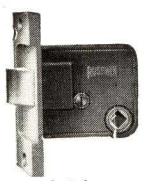
Case: cast iron, japanned; 5½ x 3¾ x ¾ in.
Front: cast brass or bronze; 7⅜ x 1⅛ in.
Bolts: cast bronze.
Strike: wrought brass or bronze; 1¼ in. lip to center.
Backset: 2¾ in.
Spacing: 2⅝-in.
Hand: reversible.

MORTISE LATCHES • USED ON RUSSWIN FIRE EXIT BOLTS

Latch bolt can be operated from inside at all times by the slightest pressure on bar. If outside trim is used, latch bolt can be operated from outside at all times by knob.

No. 0440 • For Use with Bolt No. 69 (page 10)

Case: cast iron, japanned; 2⅝ x 3⅜ x 11/16 in.
Front: recessed; cast brass or bronze; 4 7/16 x 1 5/16 in.
Strike: cast brass or bronze; 1¼ in. lip to center.
Backset: 2 11/16 in.
Knob Hub: brass; for ⅜-in. spindle.
Hand: not reversible; specify hand.

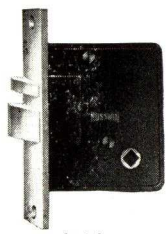


Latch
No. 0440

No. 0441 • For Use with Bolt No. 69A (page 10)

Auxiliary latch automatically deadlocks and safeguards latch bolt, preventing it from being retracted by any instrument inserted between face of lock and strike.

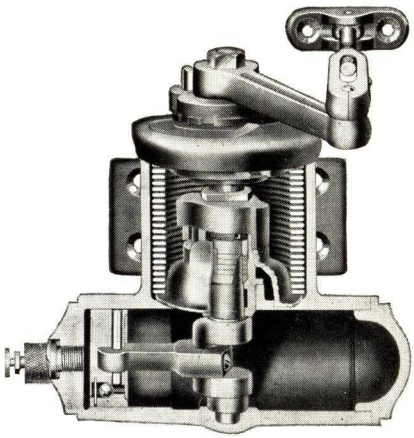
Case: cast iron, japanned; 4⅛ x 3¾ x ⅞ in.
Front: flat, cast brass or bronze; 6 x 1 3/16 in.
Strike: wrought brass or bronze; 1¼ in. lip to center.
Backset: 2¾ in.
Knob Hub: brass; for ⅜-in. spindle.
Hand: reversible.



Latch
No. 0441

RUSSWIN

LIQUID DOOR CLOSER



FOR INTERIOR AND EXTERIOR DOORS

THE RUSSWIN Liquid Door Closer is designed for closing all types of doors from light screen doors to heavy exterior doors, also hospital, coupon booth and fire doors. It incorporates many unusual features using a crank shaft type construction.

The crank shaft, in fact, is made of drop forged steel in one piece and is sufficiently large to sustain any severe shock to which it may be subjected. It is carefully and accurately machined to a smoothness that eliminates friction and assures long life.

FOUR POINT BEARING

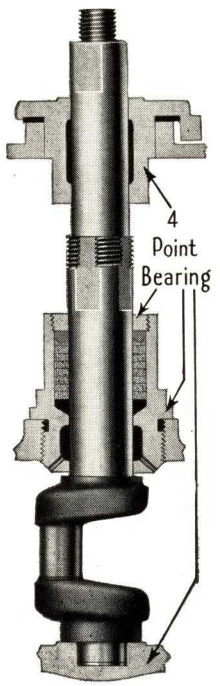
The top cap or cover of the Closer forms the top bearing which sustains the direct thrust from the Closer arm. It has a generous area and is far enough from the gland packing to release it from any strain which might cause leakage.

The packing nuts in the gland form the two main bearings and they maintain the alignment of the shaft and take the thrust from the connecting rod and piston.

The bottom of the Closer furnishes the lower bearing and supports the bottom end of the shaft, which prevents lateral motion. This bearing shares the thrust of the piston with the main bearing, thus eliminating any deflection which would cause leakage through the gland.

POSITIVE, QUIET OPERATION

The RUSSWIN Door Closer is reversible and operates a right or left hand door without reversing either the arm or the spring. The closing power is obtained from the coil spring. The checking power is controlled by a piston moving in a cylinder filled with a special non-freezing liquid. As the door is opened, the piston is drawn toward the shaft and the liquid passes freely through the ball valve located at the bottom of the piston. As the door closes, the liquid confined by the piston can escape only through the part controlled by two regulating valves—a speed valve, controlling the door from its open position to within 6 inches of the jamb; and a quiet closing valve, controlling the door from within 6 inches of the jamb to its closed position. The liquid used is especially prepared to withstand wide ranges of temperature without change in density. This results in a uniform closing speed in winter and summer.



GUARANTEE

The RUSSWIN Door Closer is guaranteed against defects in material and workmanship. Every size Closer is thoroughly tested and ready to apply.

STANDARD MODEL LIQUID DOOR CLOSER

For Right or Left Hand Doors without Reversing Arm or Spring

The standard RUSSWIN Liquid Door Closer is furnished in six capacities with cast iron cases. The specifications below apply to doors under normal conditions. If the door is unusually heavy or is subject to very strong draughts, use one size larger than is specified.

TYPE OF DOOR	Designation in Cast Iron, Unpolished
For screen and light inside doors.	A
For inside doors not exceeding 3 feet in width.	B
For outside and vestibule doors, etc., not exceeding 2½ feet in width.	C
For outside doors not exceeding 3 feet in width.	D
For heavy outside doors exceeding 3 feet in width and large doors operated against strong draughts.	E
For extra heavy outside doors.	F

WITH FUSIBLE LINK • FOR FIRE DOORS

This Closer is equipped with the RUSSWIN Friction Hold-Open Arm designed for use on fire doors of warehouses, schools, office buildings, etc., where in the event of fire, the door can be quickly closed. To accomplish this, the Hold-Open device is constructed with a fusible link which, when subjected to 165° F., melts and releases the Hold-Open device. The Closer will then shut the door, temporarily preventing the spread of fire.

This type Closer is tested and approved by the National Board of Fire Underwriters Laboratories.

FOR HOSPITAL ROOM DOORS

This type Closer is arranged with a hold-open device to hold the door open at any one of three positions: 15°, 45°, or 90°. These angles may be varied—by loosening the set screw in the holding ring and turning it to the left or right.

The construction of this holding device is the plunger and pawl type, using a compression spring as a means of resistance.

WITH 100° OR 180° FRICTION HOLD-OPEN ARM

For Right or Left Hand Doors Without Reversing Arm or Spring

This type Closer is designed for doors opening to 100° or 180°. Its Hold-Open Arm eliminates the need of unsightly floor holders, hooks and similar devices—and their nuisance and damage to door and floor. The device, located in the elbow of the arms, can be adjusted to hold the door in any position. It does not interfere in any way with the regular movement of the door under control of the Closer. It is inoperative until the door is intentionally opened to the hold-open point.

To release the Hold-Open device, it is only necessary to push or pull the door past the holding point. The Closer then assumes its natural function and closes the door in the usual way.

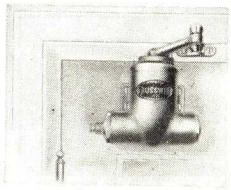
WITH PARALLEL ARMS

Not Reversible; Hand of Door Must be Specified

This Closer is designed with parallel arms for use on doors where there is not sufficient space between two doors for Closer to operate in its normal position—or where the headroom will not permit the use of a bracket.

BRACKETS FOR LIQUID DOOR CLOSERS

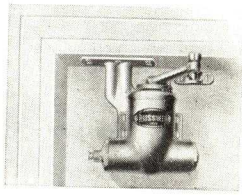
BLOCKING BRACKET • No. 33



The RUSSWIN Door Closer Bracket, as regularly furnished, is applied to the inner or hinge side of door (as shown at left). If, however, door is recessed 7/8 in. or more beyond the casing surface, Bracket No. 33 should be used. This Bracket is furnished regular for doors recessed 3/4 to 1 7/8 in. (if greater recess, specify) and allows Closer to occupy the same normal position and insures its satisfactory operation.

Size	A	B	C	D	E	F
Bracket, No.	33A	33B	33C	33D	33E	33F

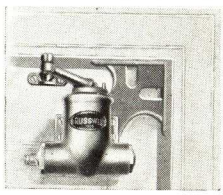
SOFFIT BRACKET • No. 127



Used where door opens outward, or where conditions do not permit the Closer to be applied to the hinge side of door. Minimum space required for attaching as follows:

Size	A	B	C	D	E	F
Space, In.	1 3/8	1 1/2	1 5/8	1 5/8	1 5/8	1 5/8
Bracket, No.	127A	127B	127C	127D	127E	127F

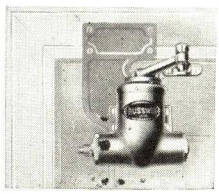
CORNER BRACKET • No. 128



Used under same conditions as No. 127—but does not require as much space. Fastened at *both* the top and side, each angle securely braced to give greater solidity to Closer. Minimum space required for attaching as follows:

Size	A	B	C	D	E	F
Space, In.	7/8	1	1 1/4	1 1/4	1 1/2	1 1/2
Bracket, No.	128A	128B	128C	128D	128E	128F

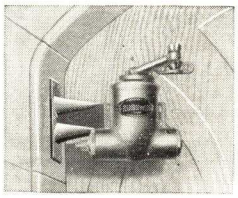
FLUSH BRACKET • No. 129



Used where soffit is not wide enough to furnish suitable footing for Bracket No. 127 or 128.

Size	A	B	C	D	E	F
Bracket, No.	129A	129B	129C	129D	129E	129F

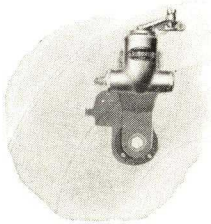
STRAIGHT JAMB BRACKET • No. 30



Used on segment, circle or Gothic head doors—where intermediate rails permit or where panel is sufficiently thick to withstand strain. The Closer must be applied below point of radius. If sufficient headroom, use Bracket No. 31 or 32.

Size	A	B	C	D	E	F
Bracket, No.	30A	30B	30C	30D	30E	30F

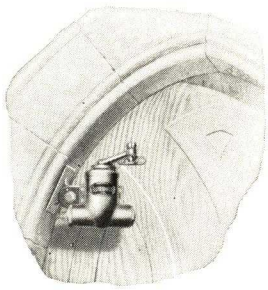
HALF CIRCLE BRACKET • No. 31



Suitable for use only on segment, circle or Gothic head doors—when door is flush with or not recessed more than 1 1/4 in. beyond casing and when Closer is used on the hinge side of door. Bracket is attached to door.

Size	A	B	C	D	E	F
Bracket, No.	31A	31B	31C	31D	31E	31F

CURVED JAMB BRACKET • No. 32



For use on segment, circle and Gothic head doors opening out—or where conditions do not permit Closer to be applied on hinge side of door.

Size	A	B	C	D	E	F
Bracket, No.	32A	32B	32C	32D	32E	32F

Finishes of RUSSWIN Door Closers and Brackets

Unless otherwise specified, all Closers and Brackets are furnished with Maroon Bronze finish (symbol MB). At the same price, the following finishes can be supplied:

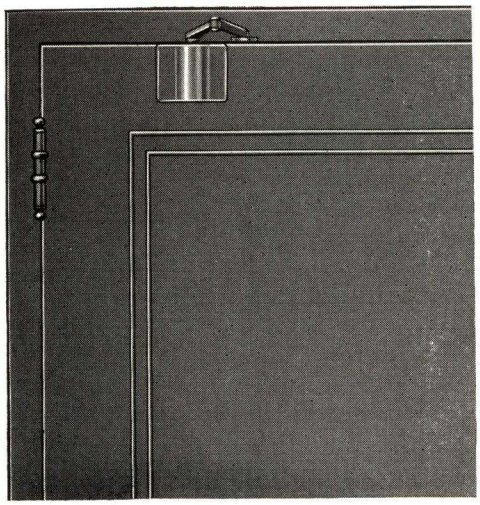
Silver Bronze (symbol SB)
Dead Black (symbol DB)
Olive Green (symbol OG)
Mahogany (symbol M)

RUSSWIN

RUSSWIN

"400" *Semi-Concealed* DOOR CLOSER

Rack and Pinion Construction—with "Silence Adjustment"



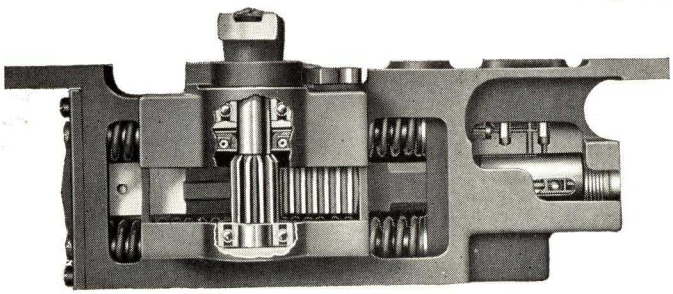
FOR INTERIOR DOORS AND IN-SWINGING EXTERIOR WOOD OR METAL DOORS

THIS recently developed Semi-Concealed Closer is the result of RUSSWIN'S twenty odd years of experience in manufacturing Invisible Door Closers. It combines perfect performance under difficult conditions with a trim, unobjectionable appearance.

The "400" Semi-Concealed Closer is strong in its structure and extremely powerful. Not only does it handle all interior and in-swinging exterior doors (within the range usually served by surface-applied closers)—closing them firmly, quietly, with practically no attention—but it easily handles doors subject to severe draught conditions. For efficiency, performance, strength and durability, the "400" is unequalled.

Years of experience have demonstrated that a door closer required to handle doors subjected to severe draughts cannot be dimensioned sufficiently small as to be totally enclosed within the top rail of the door. It was therefore necessary in the RUSSWIN "400" to permit a comparatively small portion of the mechanism to extend beyond the surface of the door and to see that the Semi-Concealed Closer utilize the type of arm that insures the most satisfactory Door Closer operation—the "broken" arm.

However, the visible portion of the Closer is so small and the modern design of its arm so unobstrusive, that it seems almost impossible to obtain such efficiency, strength and dependable performance from so small and compact a mechanism.

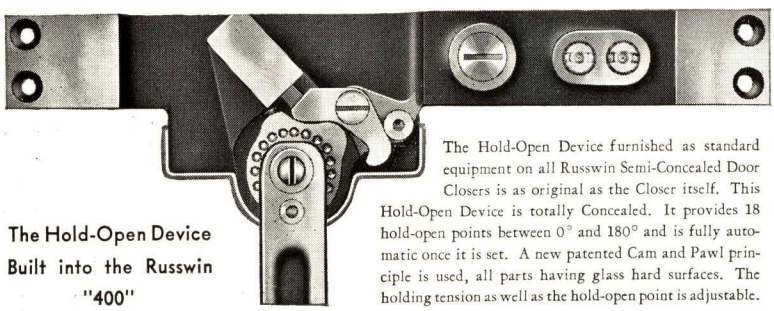


DURABLE CONSTRUCTION

The Case is nickel cast iron, precision machined. The Springs are helical automobile valve type, high carbon steel, oil tempered after winding. Piston is 1¾ inches long to give long bearing surface. The Piston is chrome-vanadium steel accurately cut (from a single piece of steel) and heat treated. The Rack is a nickel steel drop forging with accurately cut teeth and is heat treated.

THE DUAL CONTROL VALVES

The RUSSWIN "400" is controlled by dual valves (patented) with "SILENCE ADJUSTMENT." The wide range of valve movement eliminates fussy, hair-line adjustments. With the RUSSWIN "400" Semi-Concealed Door Closer, any desired manner of closing may be obtained. One valve controls the door up to approximately ten degrees of the latch, and the second valve controls the latching speed. The door may be closed in less than three seconds from 90° so quietly that there is no audible contact between the door and the stop. This is accomplished with the SILENCE ADJUSTMENT. The Latch Control Valve may be so adjusted that the speed of the door is hastened sufficiently to pull the stiffest latch beyond the lip of the strike and then the movement of the door may be so slowed down as to give noiseless complete closing, by means of the SILENCE ADJUSTMENT. If exceptionally strong draughts are encountered or if door or frame is warped the Closer may be so adjusted as to bring the door forcibly against the stop — insuring positive complete latching.



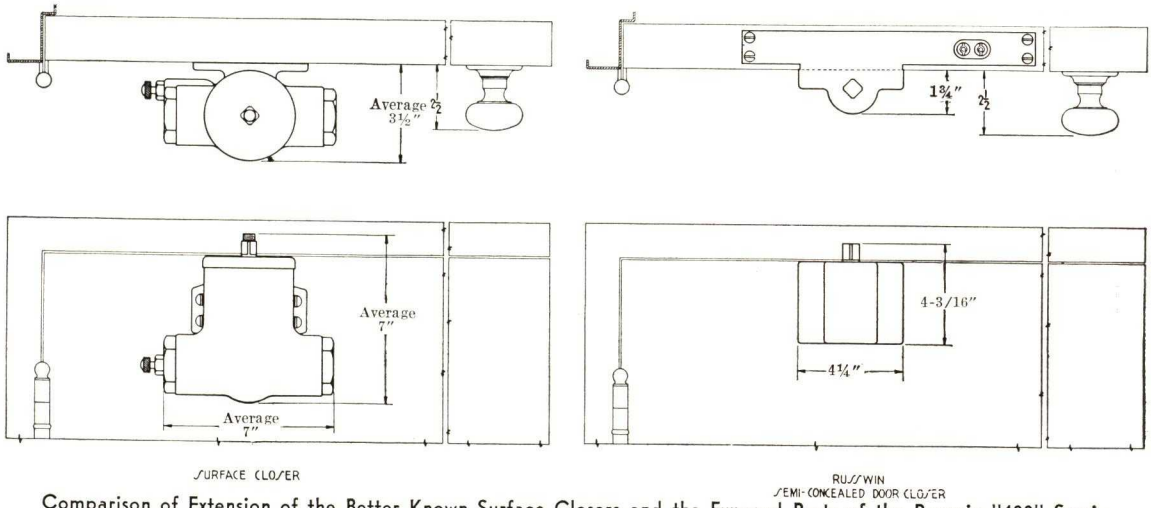
The Hold-Open Device Built into the Russwin "400"

The Hold-Open Device furnished as standard equipment on all Russwin Semi-Concealed Door Closers is as original as the Closer itself. This Hold-Open Device is totally Concealed. It provides 18 hold-open points between 0° and 180° and is fully automatic once it is set. A new patented Cam and Pawl principle is used, all parts having glass hard surfaces. The holding tension as well as the hold-open point is adjustable.

LEAK-PROOF CONSTRUCTION

We firmly believe that the RUSSWIN "400" Semi-Concealed Door Closer is as leak proof as it is possible to make any door closer. The Cylinder Plug is provided with an exceptionally long thread and has a copper gasket under the flange. No cement or other compound is used. The packings throughout the Closer are of copper, oil proof fibre, chrome tanned leather, and cork.

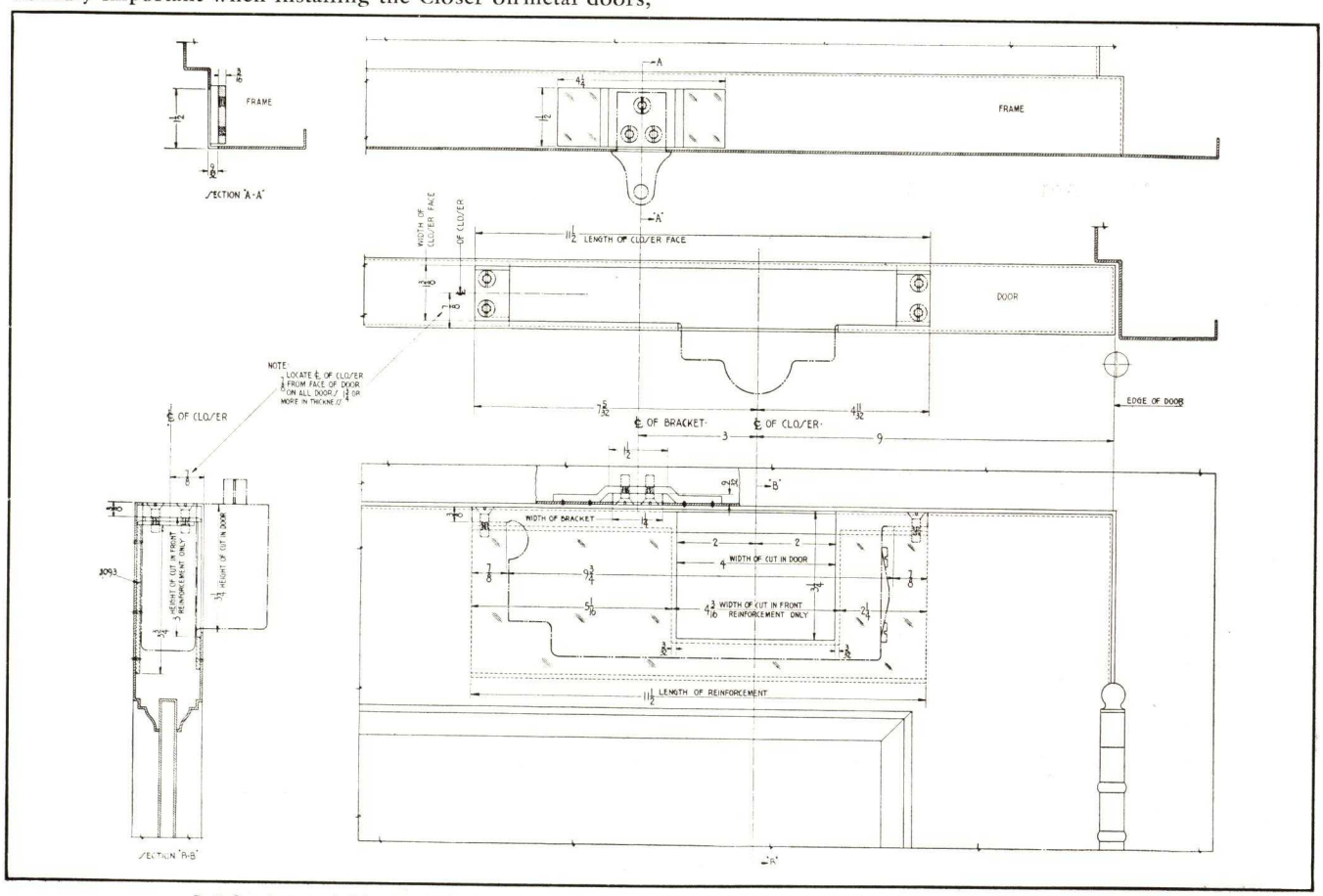
The liquid used is a mineral oil compounded to our own formula. It flows at extremely low temperatures and possesses a high lubrication value. The nickel cast iron used in the Case of the RUSSWIN "400" makes possible the use of this oil.



Comparison of Extension of the Better Known Surface Closers and the Exposed Parts of the Russwin "400" Semi-Concealed Door Closer. ***Note that the Russwin "400" Closer does not extend as far as the average door knob.***

ONE SIZE OF MORTISE

There is but one size of case with five sizes of springs. Consequently there is but one size of mortise. Closers of all capacities being interchangeable in the same mortise. This is particularly important when installing the Closer on metal doors, regardless of the different heights, widths and weights of the door. The mortising, reinforcing and templating, at once become standard.

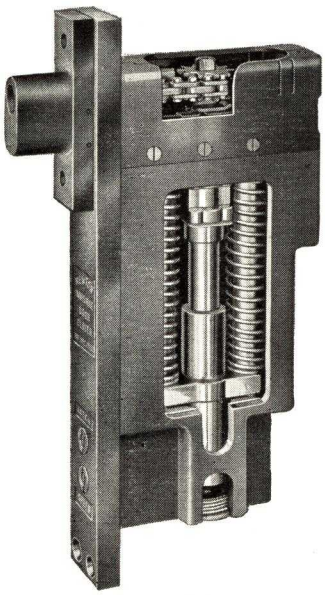


Reinforcing and Mortising Detail for LEFT HAND "400" Semi-Concealed Door Closer, with Doors 1¾ inches or over. Complete details for application to wood and metal doors of practically any thickness furnished on request.

RUSSWIN-NEWTON

Invisible DOOR CLOSER

FOR SINGLE-ACTING INTERIOR DOORS



"Mortised Like a Lock

THIS compact device—thoroughly modern in every respect—was developed to meet the wide demand for a door closer both totally concealed and absolutely reliable. Being totally out of sight, the RUSSWIN-NEWTON Invisible Door Closer cannot in any way mar the appearance of the door. It is therefore widely used in residences, churches, hotels, hospitals, office and public buildings—in fact wherever a visible door closer would materially detract from the beauty of the door and detract from the architectural treatment and decorative effect.

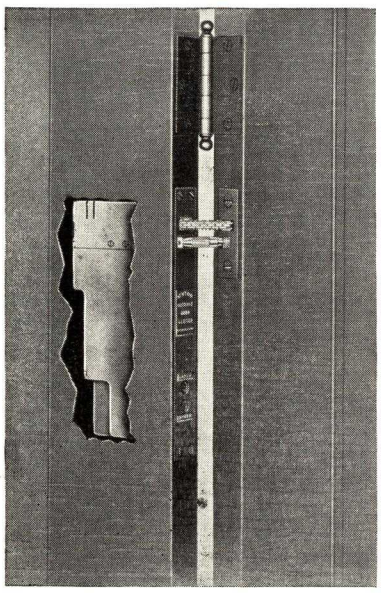
The RUSSWIN-NEWTON Invisible Door Closer however, is not designed to be concealed within the top rail of the door—a necessarily weak and far from practical construction. Instead it uses an entirely original, yet absolutely reliable principle of operation: *it is mortised into the jamb of the door.* Since 1932, this Invisible Door Closer has proved itself of sturdy construction and highly efficient for use with all types of interior single-swing doors and gates of wood, hollow metal, kalamein or tubular construction.

The entire operating mechanism is contained in one compact Case, making for simple installation. The depth of the Case is such that it can be accommodated within the usual standard 5-inch stile of metal doors, and no portion of the Closer extends into the rail of the door. The RUSSWIN-NEWTON Invisible Door Closer may be installed in either the frame or stile of wood doors.

IMPORTANT FEATURES

Although invisibility is the principal advantage of this Closer, other unique features have been developed. There is but one size of case—with several sizes of springs. Consequently there is but one size of mortise—Closers of all capacities being interchangeable in the same mortise. This is particularly important when installing the Closer on metal doors; regardless of the different heights, widths and weights of the door, the mortising, reinforcing and templating at once becomes standard.

Another feature of the RUSSWIN-NEWTON Invisible Door Closer is that it is entirely independent of the floor and requires no frame head. Because of its independence of the floor, details of floor construction need not be taken into consideration when specifying this Door Closer. No frame head being necessary, the RUSSWIN-NEWTON Invisible Door Closer may be used wherever there is a hinge jamb. The position of the RUSSWIN-NEWTON Invisible Door Closer and the fact that it pulls the door shut instead of pushing it, tends to prevent door sag and wear on the hinge knuckles.



When the door is open, only the chain and checking shaft of the RUSSWIN-NEWTON Invisible Door Closer is visible.

SIMPLIFIED OPERATION

The Closer operates by means of a 5-thread, 30-degree lead, 2-way worm which passes through a nut. This nut acts as a piston and reciprocates vertically as the door is opened. Springs are of the compression automobile valve type; made of high carbon steel and oil tempered after winding.

THREE STANDARD SIZES

For Single Acting Interior Doors Only.

Size No. 1—For interior doors measuring 2 ft., 4 in. x 7 ft. x 1¾ in. Also for cage gates, railing gates, etc.

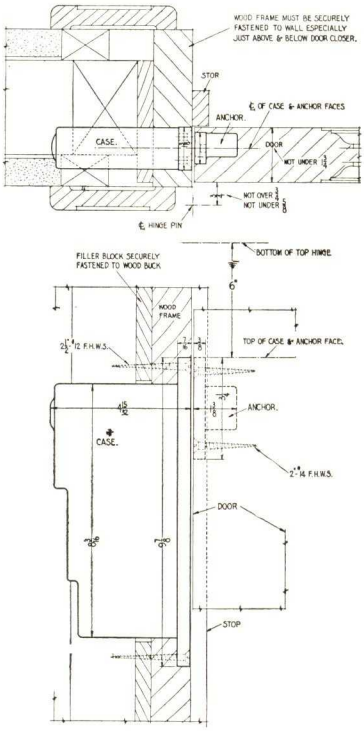
Size No. 2—For interior doors measuring not less than 2 ft., 6 in. x 7 ft. x 1¾ or 2 in.; or more than 3 ft. x 7 ft. x 1¾ or 2 in.

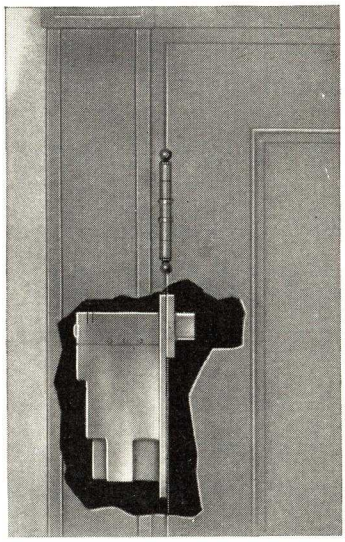
Size No. 4—For interior doors measuring not over 3 ft., 4 in. x 7 ft. x 1¾, 2 or 2½ in.

Minimum thickness for metal doors: 1½ in.
Minimum thickness for wood doors: 1¾ in.

EASILY APPLIED TO *Wood* DOORS AND FRAMES

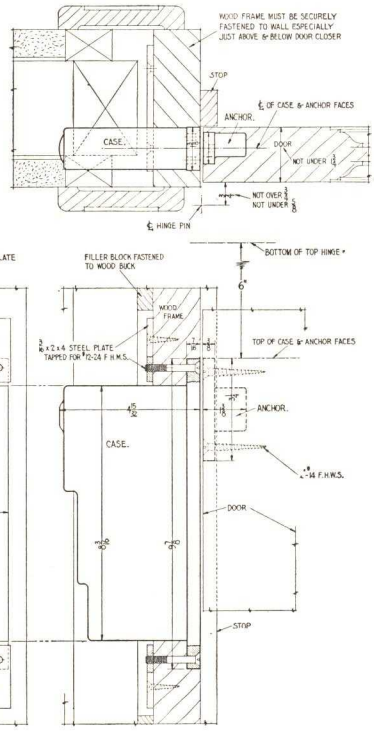
ON EXISTING WORK





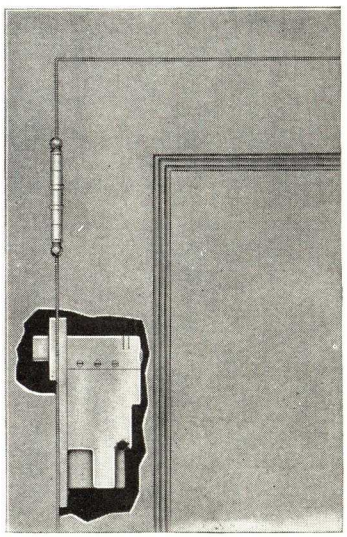
At left: Installation detail of Invisible Door Closer installed on Existing Work. *At right:* On New Work; note steel plate. In both cases we recommend the use of ball-bearing butts. The proper hinge clearance is obtainable with 4½ x 4½-in. butts.

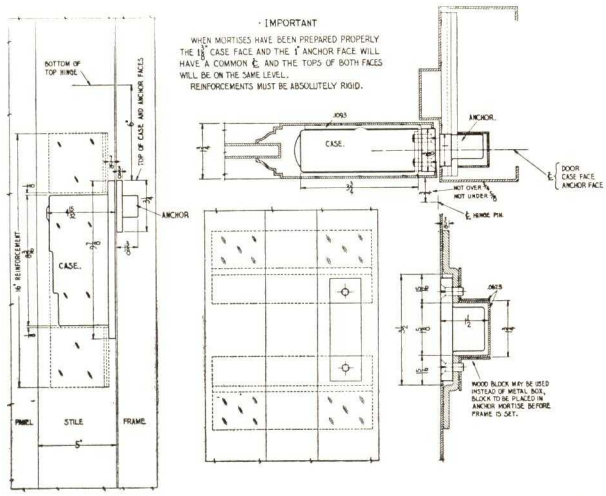
ON NEW WORK



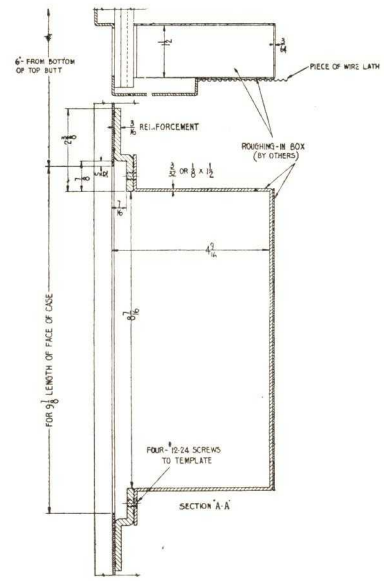
EASILY APPLIED TO *Metal or Kalamein* DOORS

FOR METAL DOORS AND FRAMES





FOR WOOD OR KALAMEIN DOOR AND METAL FRAME



When the Invisible Door Closer is applied to metal frames and metal doors, it is set in the door stile—as shown above. When used with metal frames and wood or kalamein doors, however, it is set in the door frame; note (at right) the method of preparing the steel buck for case of Closer.

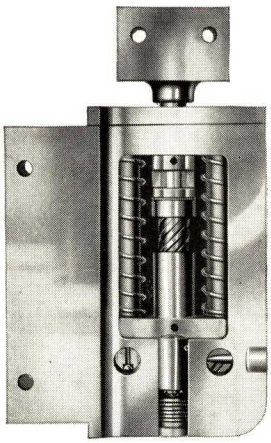
In both cases we recommend the use of ball-bearing butts. The proper hinge clearance is obtainable with 4½ x 4½-in. butts.

R U S S W I N

RUSSWIN-NEWTON

CHECKING PIVOTS • FOR W. C. STALL DOORS,

OFFICE RAILING GATES, DWARF DOORS, Etc.

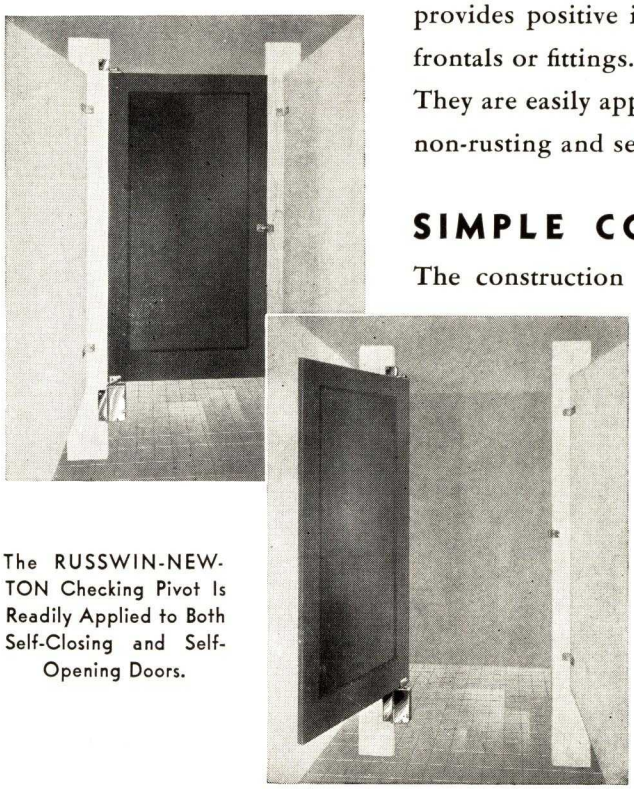


The Simple Construction of the RUSSWIN-NEWTON Checking Pivot.

THE RUSSWIN-NEWTON Checking Pivot was originally designed to check the only door in the building that had been left to slam—the toilet stall door. The performance of this Pivot, however, was so satisfactory that its use spread rapidly to dwarf doors, railing gates, coupon booth doors—in fact to many unanticipated uses. The device is specifically designed for the purpose for which it is recommended. The RUSSWIN-NEWTON Checking Pivot will hold the door all the way closed—or hold it all the way open. It provides complete noiseless control of the door from start to stop.

WIDE SCOPE OF USES

With particular reference to toilet stall doors, the RUSSWIN-NEWTON Checking Pivot is applicable to all frontal materials—Marble, Slate—Carrara glass, Vitrolite, and to all types of posts. When Marble, Slate, Carrara Glass or Vitrolite are used the Pivot —because it operates gently and quietly and eliminates the slamming of doors—provides positive insurance against cracking or loosening of the partitions, frontals or fittings. With metal stalls, it eliminates the objectionable "clang." They are easily applied to wood, metal or composition doors and are sagless, non-rusting and self-lubricating.



The RUSSWIN-NEWTON Checking Pivot Is Readily Applied to Both Self-Closing and Self-Opening Doors.

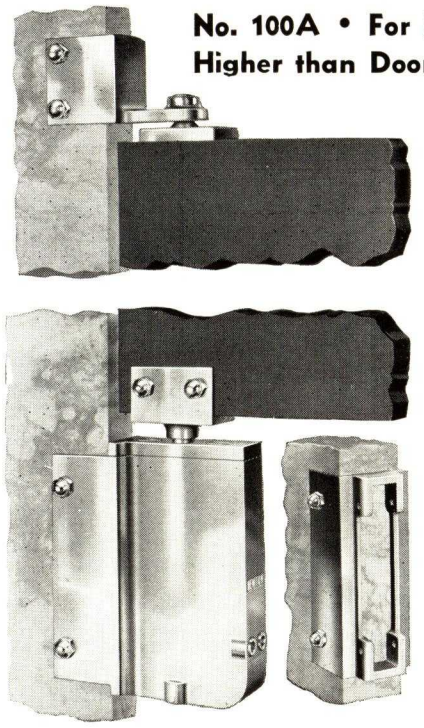
SIMPLE CONSTRUCTION

The construction of the RUSSWIN-NEWTON Checking Pivot is amazingly simple—only *two* moving parts. These parts operate in the checking fluid which also acts as a lubricant.

Springs are of the compression automobile valve type and are made of high carbon steel, oil tempered after winding.

Although the Pivot is available for frontals and doors of all thicknesses, its standard size is designed for frontals 1⅛ or 1¼ inch thick and for doors 1⅛ and 1¼ inch thick. As doors equipped with this Pivot are always under complete control, thicker frontals and doors are not necessary.

FOR FRONTALS OF ANY THICKNESS

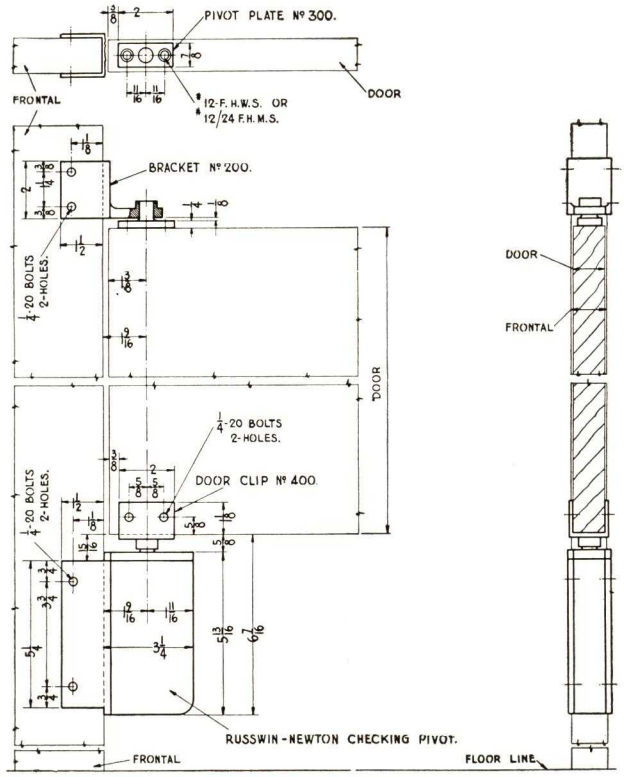


No. 100A • For Partitions Higher than Door

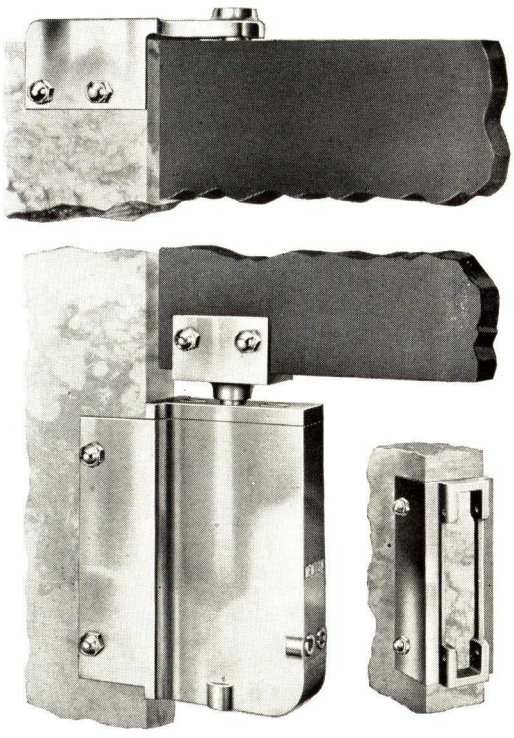
Diagram at right gives complete detail for installing the RUSSWIN-NEWTON Checking Pivot on partitions higher than the door itself and *not* over 1¼ inch thick. Should, however, the frontal be more than 1¼ inch thick, Adapter No. 500 (shown at left) is used. (In this case specify whether center hung or offset.)

Specify: Thickness of frontal; hand and thickness of door; open in or out.

POLISHED CHROME FINISH



No. 100B • For Partitions Same Height as Door

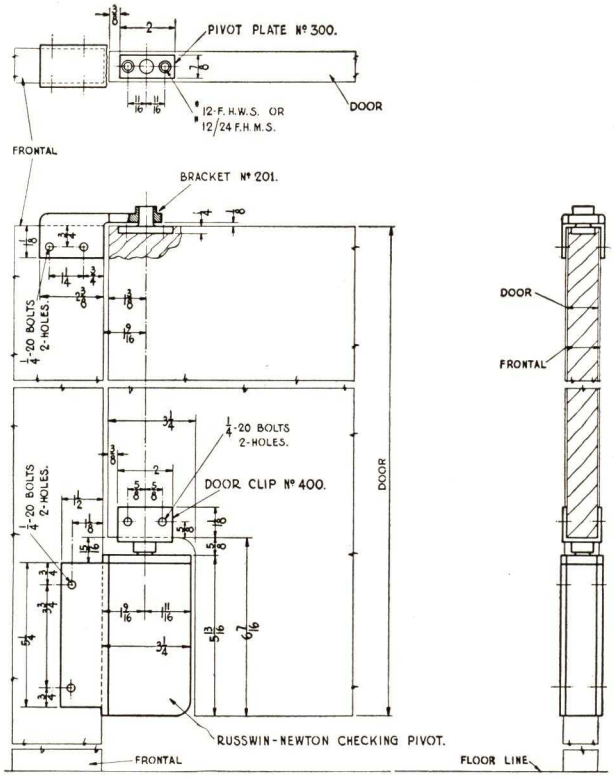


Also for application to face of jamb of wood partition or office rail.

Diagram at right gives complete detail for installing the RUSSWIN-NEWTON Checking Pivot on partitions same height as door and *not* over 1¼ inch thick. Should however, the frontal be more than 1¼ inch thick, Adapter No. 500 (shown at left) is used. (In this case specify whether center hung or offset.)

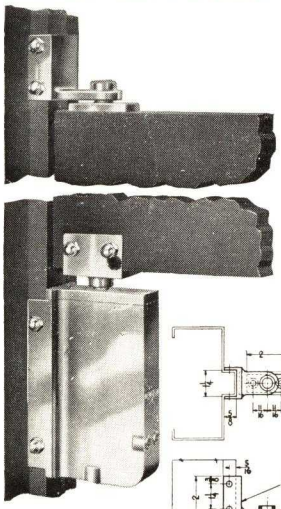
Specify: Thickness of frontal; hand and thickness of door; open in or out.

POLISHED CHROME FINISH



RUSSWIN

FOR METAL POSTS OF ANY TYPE



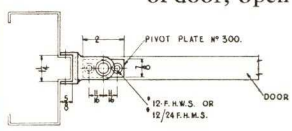
POLISHED CHROME FINISH

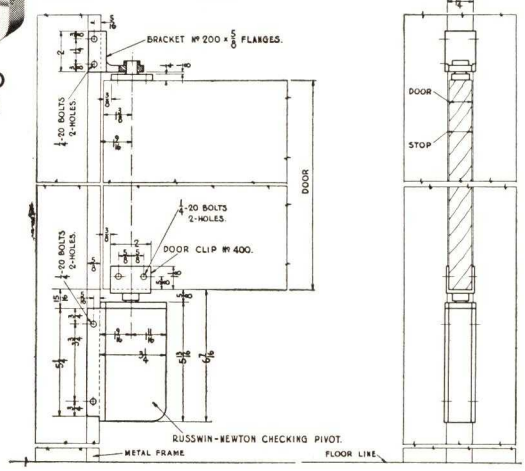
No. 100SF • FOR PARTITIONS HIGHER THAN DOOR

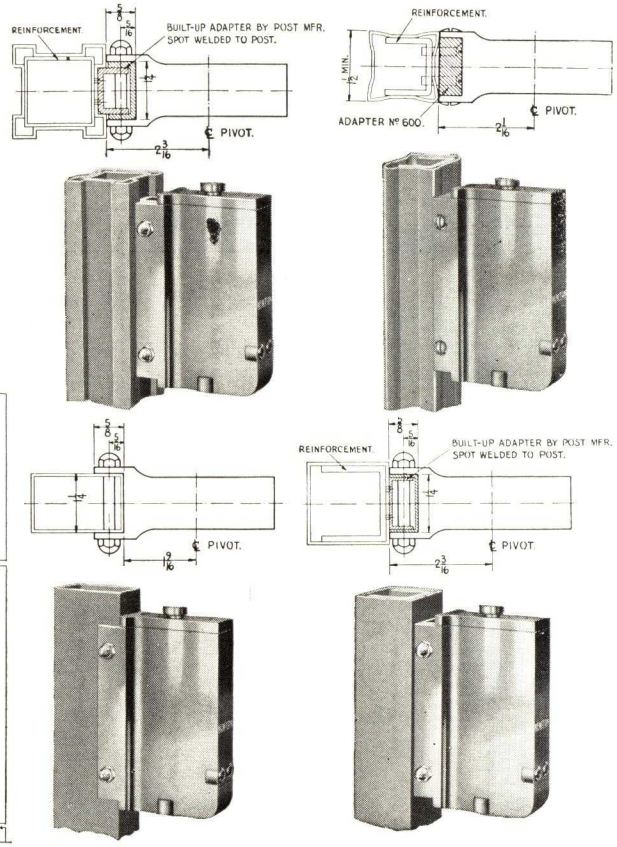
Diagram below gives complete detail of installing the RUSSWIN-NEWTON Checking Pivot on hanging stile 5/8 x 1 1/4 inch.

At right are illustrated methods of attaching the Pivot to other types of metal posts.

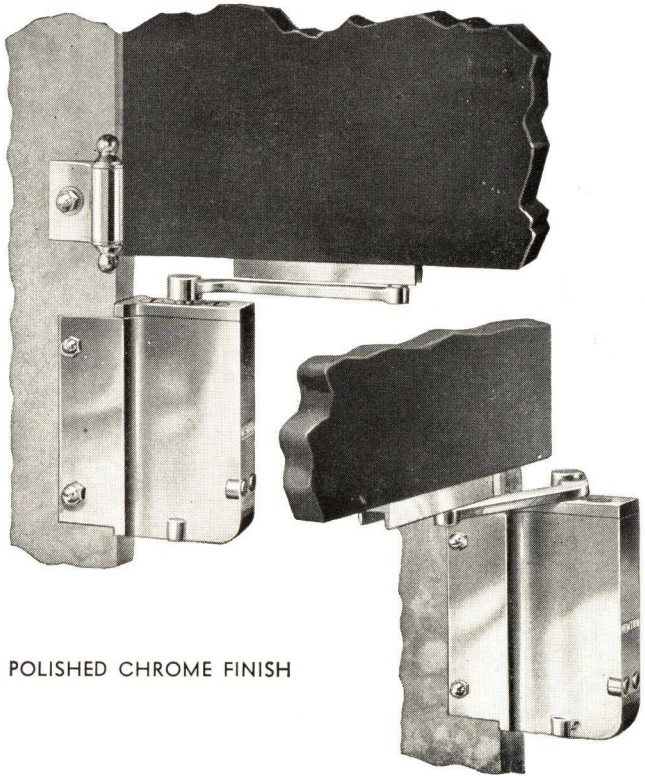
Specify: Hand and thickness of door; open in or out.







FOR USE WITH EXISTING HINGES



POLISHED CHROME FINISH

No. 100AA

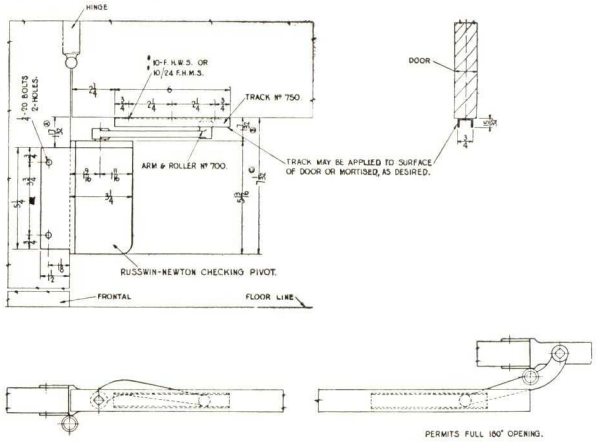


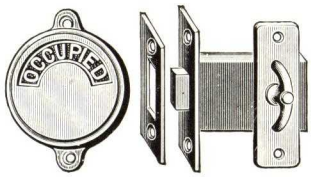
Diagram shows application of Pivot as an auxiliary in conjunction with hinges already installed.

Specify: Thickness of frontal; hand of door; center hung or offset; open in or out.

RUSSWIN

LAVATORY DOOR HARDWARE

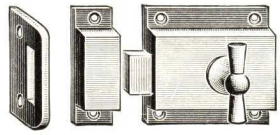
LAVATORY BOLTS • Cast Brass



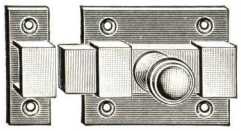
Left: Mortise Bolt with Turn Knob and Indicator No. 0166.

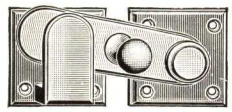
Right: Rim Bolt with Turn Knob and Indicator, No. 0156; without Indicator, No. 0256.

Rim Strike



Right: Slide Bolt No. 0158





Left: Latching Bolt No. 0172

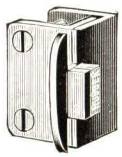
Number	Case, in.	Front, in.	Backset, in.	Strike	Indicator	Doors Open	Weight, lbs. per doz.
0166 (Mortise)	1½ x 2½ x ½	3⅛ x ⅞	1⅞	Mortise	With	In or Out	11
0156 (Rim)	2½ x 2⅝		1⅝	Mortise	With	Out	13
0156½ (Rim)	2½ x 2⅝		1⅝	Rim	With	Out	12½
0256 (Rim)	2½ x 2⅝		1⅝	Mortise	Without	In or Out	9
0256½ (Rim)	2½ x 2⅝		1⅝	Rim	Without	In or Out	8

Turn knob plate on No. 0166 is 3 x 1 inch and has rubber tip

LAVATORY STRIKES OR BUMPERS • Cast Brass

These strikes are suitable for marble or slate partitions 1⅛, 1¼, 1½ and 2 inches thick. They are adjustable ⅛ inch under or ⅛ inch over given size of marble or slate.

Strike No. 21

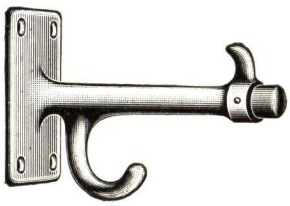


Strike No. 22

Strike No. 22½

Strike No. 24

Number	For Doors Opening	Marble and Door Flush	For Bolts
21	In	On Inside	No. 0156
22	Out	On Inside	No. 0172
22½	In	On Inside	No. 0172
24	In	On Inside	No. 0166
	Out	On Outside	No. 0256



LAVATORY DOOR COAT HOOK AND BUMPER

This combination coat hook and bumper is made in either cast brass or bronze.

Number	Projection, in.	Base, in.	Weight, lbs. per doz.
206	4⅛	3 x 2	5

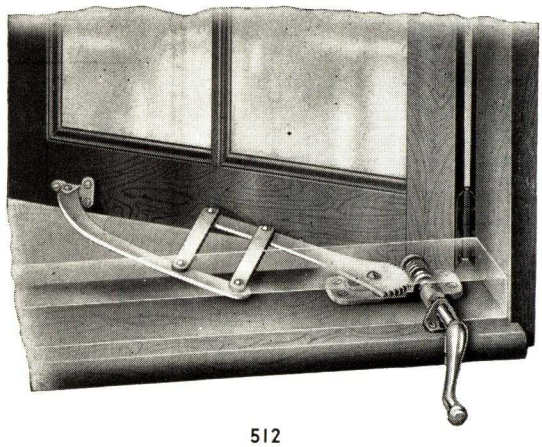
RUSSWIN

"EVERLOCK" CASEMENT SASH ADJUSTER

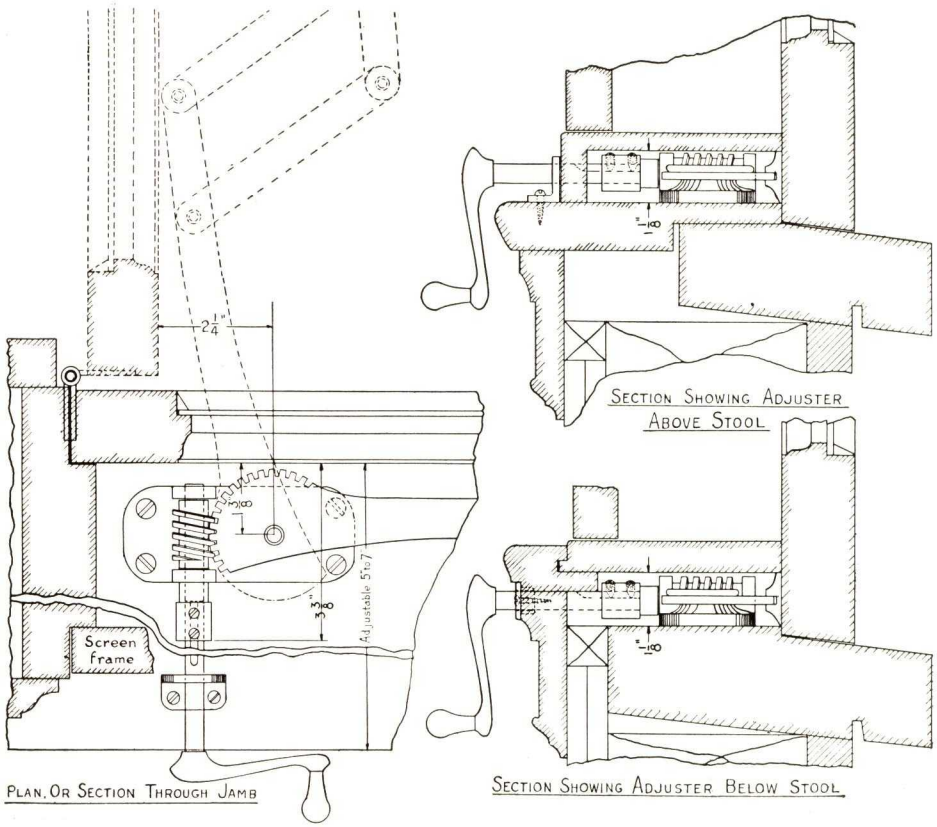
THIS thoroughly modern Adjuster for casement sash opening out is operated from the inside without disturbing screen. It opens to any degree up to a right angle and is securely locked at any angle. It can be installed either below the window stool or on top of the stool under a wood cover. In either case, the entire mechanism—except handle—is totally concealed.

Made in two sizes: 12-inch for sash 24-inch and under; 15-inch for sash 24-inch and over. Not reversible; specify hand.

Number	Length in.	Handle	Operating Parts	Weight, Dozen, lbs.
512	12	Type A Brass	Solid Brass, Dipped and Lacquered	28½
515	15	Type A Brass	Solid Brass, Dipped and Lacquered	31½
612	12	Type B Brass	Solid Brass, Dipped and Lacquered	28½
615	15	Type B Brass	Solid Brass, Dipped and Lacquered	31½
7512	12	Type A Brass	Galvanized Steel	28½
7515	15	Type A Brass	Galvanized Steel	31½
7612	12	Type B Brass	Galvanized Steel	28½
7615	15	Type B Brass	Galvanized Steel	31½



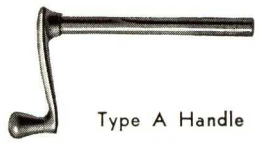
512
Type of 515 to 7615



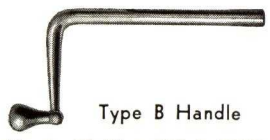
PLAN, OR SECTION THROUGH JAMB

SECTION SHOWING ADJUSTER ABOVE STOOL

SECTION SHOWING ADJUSTER BELOW STOOL



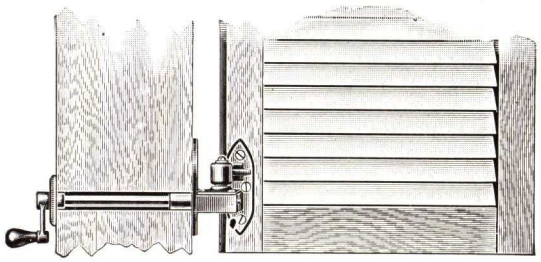
Type A Handle
Used with Nos. 512 to 7515



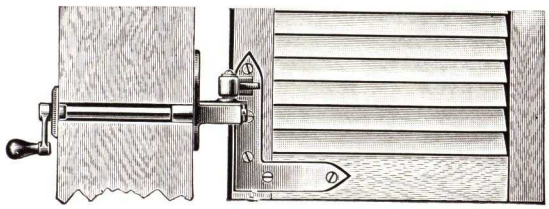
Type B Handle
Used with Nos. 612 to 7615

RUSSWIN

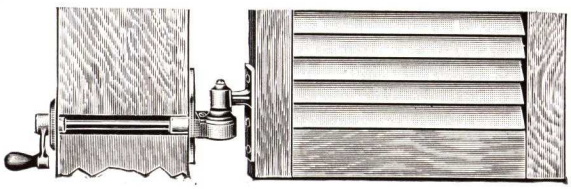
BLIND OR SHUTTER WORKER



702½ to 708 and 7002½ to 7008



712½ to 715½ and 7012½ to 7015½



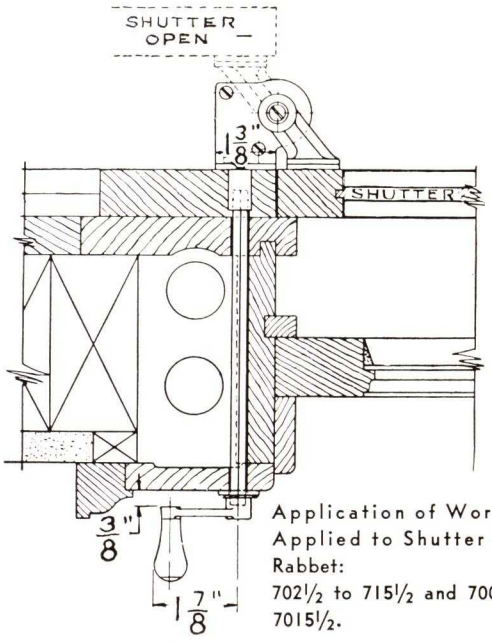
753¾ to 7053¾

Three Types of Brackets on Russwin Shutter Worker

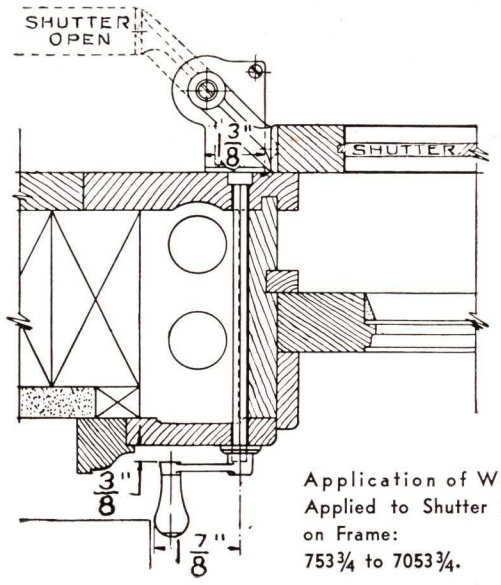
THIS strongly constructed worm gear device automatically locks shutter at any position, open, at any angle, or closed. Set consists of two top hinges and two Workers with handles and plates. The gear operation is made with cut bronze gears to assure long life and ease of operation. Arms and case are regularly furnished in unfinished malleable iron (except handle) and with 10⅛-inch rods; longer rods, however, are available. If necessary, handles with 2 or 2½-inch offset can be supplied. Handles and rose on inside can be furnished in any finish.

This RUSSWIN Shutter Worker can be furnished to detail for practically any condition in stone, brick or frame construction.

Number With Bronze Handle and Plate	Number With Plated Handle and Plate	Hinge No.	Throw, in.
702½	7002½	02½	2½
703¾	7003¾	03¾	3¾
704½	7004½	04½	4½
705½	7005½	05½	5½
708	7008	08	8
712½	7012½	12½	2½
713¾	7013¾	13¾	3¾
714½	7014½	14½	4½
715½	7015½	15½	5½
753¾	7053¾	53¾	3¾



Application of Worker as Applied to Shutter Set in Rabbet:
702½ to 715½ and 7002½ to 7015½.



Application of Worker as Applied to Shutter Set Flush on Frame:
753¾ to 7053¾.

Russwin

SPECIFICATION SERVICE

The Russell & Erwin Mfg. Company's main office and factory is located in New Britain, Connecticut. Branch offices and sample rooms are maintained in New York City at 285 Madison Avenue and in Chicago at 435 Michigan Avenue.

Each of the above offices maintains a staff of Hardware engineers to assist you in all details relating to builders' Hardware.

In every principal city the same expert service and assistance is available through the authorized RUSSWIN dealer. Every authorized dealer maintains a sample room for your convenience, where you may view and select Hardware from actual samples. You will find their assistance to be invaluable in the writing of specifications and the selection of the proper functioning locks for the various door openings. This service is, of course, without obligation.

Do not hesitate to call on any of the above offices or the local RUSSWIN dealer in your city . . . and make use of this service.

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RUSSELL & ERWIN MFG. CO.

The American Hardware Corp. Successor

NEW BRITAIN, CONN.

Branch Offices

NEW YORK **CHICAGO** **LONDON, ENG.**

SOSS MANUFACTURING COMPANY, INC.

Manufacturers of Invisible Hinges

ROSELLE, N. J.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

SOSS INVISIBLE HINGES

TRADE-MARK

The Outstanding Advantages of the Improved Soss Invisible Hinge

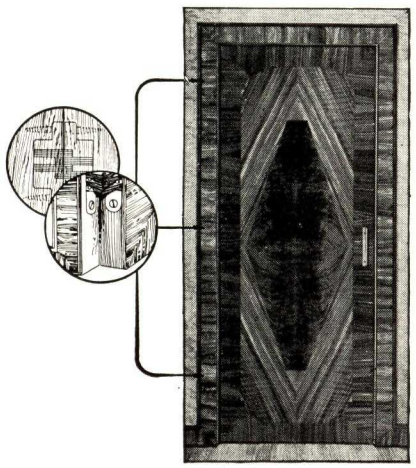
The new construction and design of the Soss Invisible Hinge eliminates *any and all possible sag* to the door — no matter how heavy or large the door may be, or the service it receives.

It can be used on all types of doors, used in buildings, folding partitions, secret panels, cupboards, closets, cabinets; furniture—such as sewing machines, cabinet radios, cabinets, concealed bars, Welsh dressers, secretaries, clocks, desks, tables, smoking humidors, bookcases, chests, pianos and benches, etc., or wherever a butt or hinge can be used.

No portion of the hinge is visible when a door is closed—leaving the entire outer surfaces of door and frame free from any projections and for any desired treatment or decoration.

Sagging of doors eliminated if the proper size hinge is used.

As Soss Hinges fit snugly in mortise cut into the door and frame the greater portion of the weight or pull is removed from the screws, thereby preventing any possibility of wear and looseness. It is the new idea in hinge installation.



Actuated with the ease of roller bearings, with no sag, makes them ideal for casement windows—of the single, double, or multiple sash type, and there is no looseness in the hinge to permit the windows to rattle.

No projecting parts to collect dust or to accidentally injure anyone who might fall against or even carelessly strike while dusting.

When the door or window is locked, it is impossible to locate, much less get at, any part of the Soss Invisible Hinge, and consequently it affords that security and safety which everyone seeks in a door or window and which is not always found with doors equipped with ordinary butts.

Easily and quickly installed—no top—no bottom—no right—no left—and each size interchangeable with one another. Nothing to wear, due to scientific design.

Doors can be set to show only a hairline between door and frame, if desired.

Types are supplied to take care of offsetting door where heavy mouldings or trim is used.

How to Select the Proper Hinge

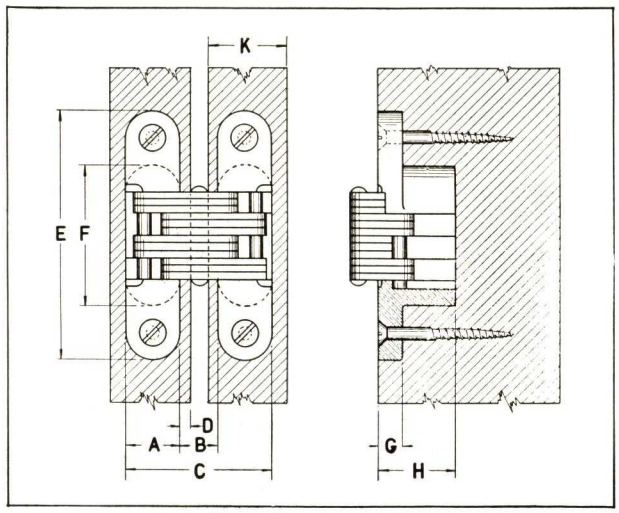
In order that you may have a fairly accurate rulestick to guide in the selection of the size and style hinge to order for every standard condition, we list below our recommendations for doors marked "K".

Finish

The standard finish for all hinges listed below is *dull brass.* Hinges can be supplied, however, in any desired finish at a slight additional cost.

Pat. No. 1984092

No. 204 (Actual Size)



DIMENSIONS OF SOSS INVISIBLE HINGES

Hinge No.	A	B	C	D	E	F	G	H	K	Size of screw, in.
203	1/2	23/64	1 23/64	1/8	1 3/4	3/4	3/16	23/32	3/4	No. 6x1
204	1/2	23/64	1 23/64	1/8	2 3/8	1 1/4	3/16	23/32	3/4	No. 7x1 1/4
208	5/8	29/64	1 45/64	5/32	2 3/4	1 11/32	9/32	29/32	1	No. 8x1 1/4
212	3/4	17/32	2 1/32	3/16	3 3/4	2 1/16	3/8	1 5/64	1 1/8	No. 10x1 1/4
216	1	23/32	2 23/32	1/4	4 5/8	2 19/32	15/32	1 7/16	1 1/2	No. 14x1 1/2
218	1 1/8	7/8	3 1/8	5/16	4 5/8	2 7/16	13/32	1 19/32	1 3/4	No. 10x1 1/2
220	1 3/8	1 1/16	3 13/16	3/8	5 1/2	2 15/16	15/32	1 15/16	2	No. 12x1 1/2

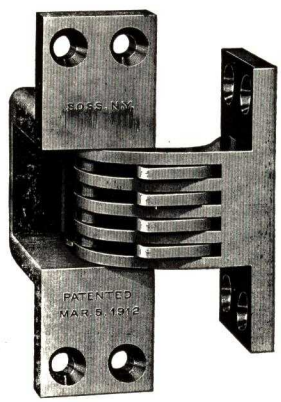
Dimension "D" is maximum thickness.
Dimension "K" is average thickness of door.

For Special Conditions

Send us sketch showing details of door and jamb with complete dimensions and we will gladly recommend the proper size Soss Hinge for the job.

Catalog

Send for latest catalog showing complete line and blueprint templet.



No. 117 (Half Size)

For House Doors and Secret Panels with projecting mouldings

McKINNEY MANUFACTURING COMPANY

Manufacturers of Forged Iron Hardware and All Types of Butt Hinges

MAIN OFFICE AND FACTORY

PITTSBURGH, PA.

SALES OFFICES

NEW YORK, N. Y., McKinney Manufacturing Co., 11 Warren St.
BOSTON, MASS., McKinney Manufacturing Co., 207 A St.
CHICAGO, ILL., McKinney Manufacturing Co., 318 W. Randolph St.
SAN FRANCISCO, CAL., McKinney Manufacturing Co., 163 Second St.
MONTREAL, QUE., Adcock & Co., Ltd., Coristine Building

WAREHOUSES: CHICAGO, ILL., NEW YORK, N. Y. and BOSTON, MASS.

McKINNEY FORGED IRON HARDWARE

Drop Ring Door Pull
Nos. 12686AA and 12687AA

Warwick Design Hinge Strap
Nos. 12543WK, 12544WK and 12545WK

Escutcheon Knob
No. 12593AA—12530

H. & L. Hinges
Nos. 12717, 12719 and 12671-12721

Entrance Handle
No. 12569WK

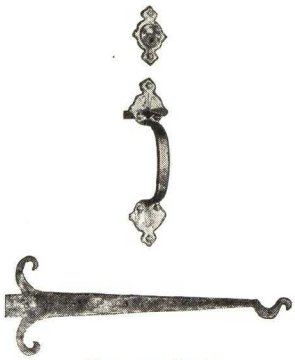
Warwick Design

Alhambra Design

Heart Design

Tulip Design

Curley Lock Design



Etruscan Design

Bedford Design

Dorchester Design

McKINNEY MANUFACTURING COMPANY — Pioneer Manufacturer of Hinges for Every Purpose

McKINNEY WROUGHT BRASS, BRONZE AND STEEL BUTT HINGES

FORGED IRON HARDWARE

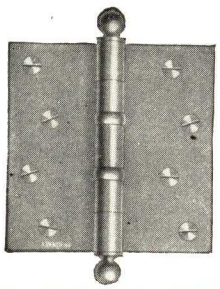
Back in the ancient days a blacksmith put into his work the same feeling and spirit, as did the master silversmith, Benvenuto Cellini. McKinney has not only caught the beauty and the spirit of these ancient artists but adds the accuracy necessary to modern application. It is no longer necessary to have Forged Iron made-to-order or pay the price which such work necessitates. All designs are easily available from Builders' Hardware Merchants and well within the price range of even the most modest home owner. The designs illustrated on the preceding page are representative of a complete line which, for lack of space, we cannot completely illustrate here. For complete specifying data write for our catalog.

McKINNEY MANUFACTURING COMPANY manufactures hinges for every purpose in three grades of quality:

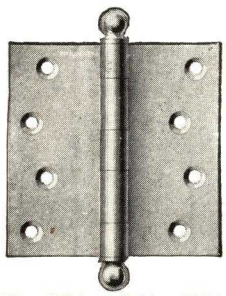
(1) Extra Fine Butt Hinges in brass, bronze and steel, beveled to form a perfect joint, outer edges are milled square and true. Ball tips of pins are perfect spheres with square collars.

(2) Fine Butt Hinges in brass, bronze and steel.

(3) Planished Steel Butt Hinges have none of the refinements above. Steel is smooth, not polished. They are used for ordinary work where cost is the deciding factor.



No. A3714 and No. A2714 Oilite Bearing Butt Hinge



No. 2714 and No. 3714 Plain Bearing Butt Hinge Planished or Polished

Types of Bearings

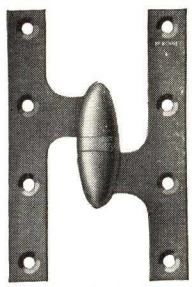
(1) **McKinney Oilite Bearings**—An outstanding improvement. The same high efficiency oil impregnated bearing metal that is used in the vital working parts of many leading automobiles, refrigerators, etc. Developed in the laboratory of one of the world's largest automobile manufacturers but adapted to hinges by McKinney.

This unique bearing is a combination of pure metals, solid in appearance yet one-third of its volume is free lubricant. Doors equipped with this Oilite Bearing will ride free and squeakless on a slick, smooth film of lubricant automatically provided by the bearing itself. Used with either steel, bronze or brass butt hinges. It is also rust and weather proof. Guaranteed equal to ball bearing in wearing qualities, specified by prefixing "A" to number.

(2) **Ball Bearings**—Have hardened balls and races enclosed in metal jackets. Specified by prefixing "B" to number.

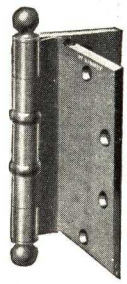
Note: *Both types of bearings are fastened to hinges to prevent loss when hinges are dissembled.*

Ball Bearing Washer
The bearings and runways in the ball bearing washers are snugly enclosed in jackets.



Wrought Brass Bronze and Steel Paumelles
Nos. B3383, A3783, B3783

Oilite Bearing
A new solid type of bearing, self-lubricating and guaranteed equal to ball bearings. This bearing is not affected by weather conditions.

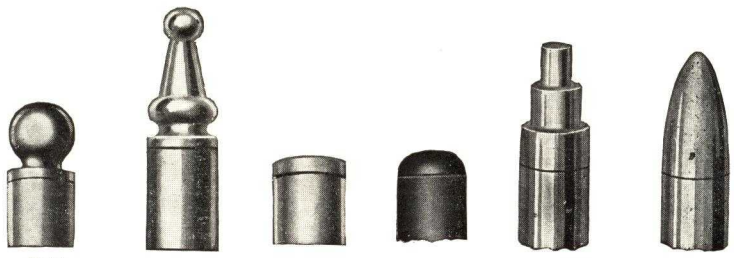


No. TB3772 Ball Bearing Half Surface Butt Hinge for Kalemein Doors

The illustrations are of types. The line comprises every size and finish needed. McKinney catalog will help you make the proper selection.

Style of Tips Furnished with McKinney Butt Hinges

Butts may be had in any of the six styles of pin types as illustrated. Most ball tip butt hinges may also be had in either button, steeple, modern or bullet tips.



Ball | **Steeple** ½" | **Button** ½" | **Dome** ¾" | **Modern** ⅝" | **Bullet** ⅞"

Template Butts

All McKinney Template Butt Hinges are made in size and gauge and with screwholes located to conform with U. S. Government standard.

MEMORANDA

BOMMER SPRING HINGE COMPANY

TELEPHONE
Prospect 9-7600

ESTABLISHED 1876
251-271 Classon Avenue, BROOKLYN, N. Y.
WESTERN SALES OFFICE, 180 North Wacker Drive, CHICAGO, ILL.
PACIFIC COAST SALES REPRESENTATIVE: John T. Rowntree, Inc., LOS ANGELES, CALIF.
BOSTON REPRESENTATIVE: Walter H. Cutler, 37 Pearl Street, BOSTON, MASS.

Products

SPRING BUTT HINGES, CHECKING FLOOR HINGES, GATE PIVOT HINGES and PIVOTS for all kinds of doors. LAVATORY HARDWARE: Strikes, Bolts, Latches and Fittings for office buildings, hospitals, theaters, public buildings, etc.

The Quality and Prices of Bommer Products

Standard for over 60 years, and kept up-to-date. The superiority of Bommer Spring Hinges is officially attested by consensus of expert opinion the world over through numerous inter-nation awards of competent juries over all competitors.

TRADE MARK
BOMMER
Reg. U. S. Pat. Office

Countless fine buildings throughout the world are equipped with Bommer Spring Hinges.

Prices are guaranteed to be no higher than those for goods of corresponding type.

Specifications

Architects, in specifying these products, should use the word "Bommer" and in addition thereto, specify the size and finish required.

Hardware dealers and lock manufacturers can include them in their contracts.

Templet drawings and general catalog on request.

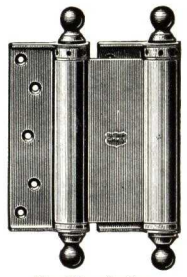
BOMMER SPRING BUTT HINGES

Bommer Standard spring butt hinges require a hanging strip for fastening hinges to the door jamb. They permit the door to be opened 180° if suitably hung. Bommer Ever Ready do not require a hanging strip and are fastened to surface of door jamb.

They are made of wrought steel, bronze and brass in all finishes. Spring barrels and their connecting plate integral and exceptionally strong and of uniform thickness. Springs are of large diameter and unusual length, made of best oil tempered steel, have great resilience and power and never go lame. The pintle and flange are interlocked, preventing the ball tips from working loose.

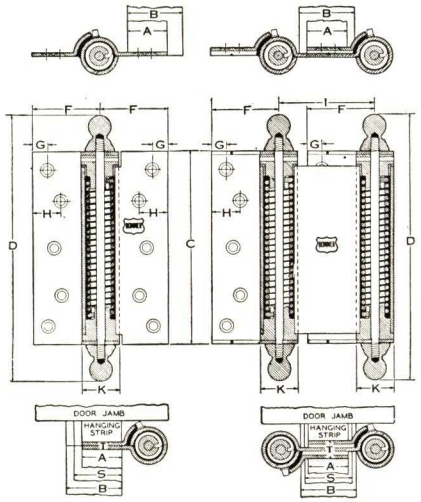
Note: Always use the largest size hinge the thickness of the door will permit. Any special finish to match other hardware can be furnished promptly.

Standard Spring Butt Hinges



Double Action
Type 29

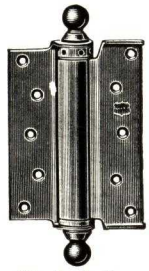
Single Action
Type 0



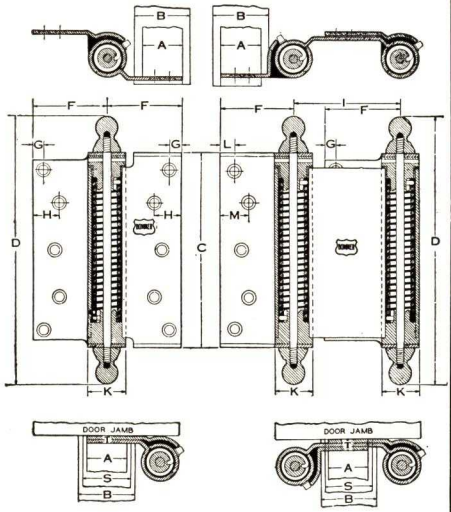
Standard Type

Ever Ready Spring Butt Hinges

Double Action
Type 3029



Single Action
Type 3000



Ever Ready Type

DIMENSIONS OF STANDARD SPRING BUTT HINGES

Size of hinge, C	Width of door	Weight of door	Depth of hanging strip*	Double Action A	B	D	F	G	H	I	K	S	T	Single Action A	B	D	F	G	H	K	S	T
3″	2′-2″	30 lbs.	½″	¾″	1″	4 3/8″	1 3/8″	5/16″	1/2″	2″	29/32″	7/8″	7/16″	¾″	1″	4 3/4″	1 3/8″	5/16″	17/32″	29/32″	7/8″	11/64″
4″	2′-4″	42 lbs.	5/8″	7/8″	1 1/4″	5 1/2″	1 5/8″	5/16″	5/8″	2 3/8″	15/16″	1 1/8″	7/16″	7/8″	1 1/4″	5 1/2″	1 1/2″	5/16″	21/32″	15/16″	1 1/8″	11/64″
5″	2′-6″	56 lbs.	5/8″	1 1/8″	1 1/2″	6 11/16″	1 29/32″	11/32″	13/16″	2 23/32″	1 1/16″	1 3/8″	7/16″	1 1/8″	1 1/2″	6 11/16″	1 7/8″	5/16″	13/16″	1 1/16″	1 3/8″	3/16″
6″	2′-8″	72 lbs.	¾″	1 1/4″	1 3/4″	8″	2 3/32″	3/8″	15/16″	3″	1 3/16″	1 5/8″	9/16″	1 3/8″	2″	8″	2 1/16″	3/8″	15/16″	1 3/16″	1 5/8″	7/32″
7″	2′-9″	90 lbs.	⅞″	1 3/4″	2″	9 5/16″	2 3/8″	3/8″	1 1/32″	3 3/8″	1 5/16″	1 7/8″	9/16″	1 3/8″	2″	9 5/16″	2 1/4″	3/8″	1 1/32″	1 5/16″	1 7/8″	15/64″
8″	2′-10″	110 lbs.	1″	1 1/2″	2 1/4″	10 5/8″	2 11/16″	3/8″	1 3/16″	3 13/16″	1 7/16″	2″	¾″	1 3/8″	2 1/2″	10 5/8″	2 1/2″	3/8″	1 5/32″	1 7/16″	2″	17/64″
10″	3′-0″	150 lbs.	1 1/8″	1 3/4″	2 1/2″	12 13/16″	2 25/32″	17/32″	1 1/4″	4″	1 1/2″	2 1/8″	¾″	1 3/4″	3″	12 13/16″	3″	½″	1 1/4″	1 1/2″	2 1/8″	1/2″
12″	3′-2″	190 lbs.	1 1/4″	2 1/4″	3″	15″	3 13/32″	½″	1 23/32″	4 11/16″	1 3/4″	2 5/8″	¾″	2 1/4″	3″	15″	3 13/32″	½″	1 11/16″	1 3/4″	2 5/8″	17/32″

*Hanging Strip to be used for Double Acting Hinges.

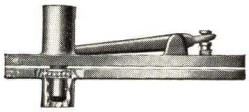
DIMENSIONS OF EVER READY SPRING BUTT HINGES

Size of hinge, C	Width of door	Weight of door	Double Action A	B	D	F	G	H	I	K	L	M	S	T	Size of hinge, C	Width of door	Weight of door	Single Action A	B	D	F	G	H	K	S	T
3″	2′-2″	30 lbs.	¾″	1″	4 3/8″	1 1/2″	9/32″	15/32″	27/32″	29/32″	9/32″	15/32″	7/8″	15/16″	3″	2′-2″	30 lbs.	¾″	1″	4 3/8″	1 1/2″	9/32″	15/32″	29/32″	7/8″	11/64″
4″	2′-4″	42 lbs.	7/8″	1 1/4″	5 1/2″	1 11/16″	11/32″	5/8″	29/32″	15/16″	11/32″	5/8″	1 1/8″	1/4″	4″	2′-4″	42 lbs.	7/8″	1 1/4″	5 1/2″	1 11/16″	11/32″	5/8″	15/16″	1 1/8″	11/64″
5″	2′-6″	56 lbs.	1 1/8″	1 1/2″	6 11/16″	2 1/16″	5/16″	3/4″	27/8″	1 1/16″	5/16″	3/4″	1 3/8″	9/32″	5″	2′-6″	56 lbs.	1 1/8″	1 1/2″	6 11/16″	2 1/16″	5/16″	3/4″	1 1/16″	1 3/8″	3/16″
6″	2′-8″	72 lbs.	1 1/4″	1 3/4″	8″	2 1/4″	3/8″	15/16″	3 5/16″	1 3/16″	3/8″	15/16″	1 1/2″	5/16″	6″	2′-8″	72 lbs.	1 1/4″	1 3/4″	8″	2 1/4″	3/8″	15/16″	1 3/16″	1 5/8″	7/32″
7″	2′-9″	90 lbs.	1 3/8″	2″	9 15/16″	2 9/16″	7/16″	15/16″	3 11/16″	1 5/16″	7/16″	15/16″	1 3/4″	3/8″	7″	2′-9″	90 lbs.	1 3/8″	2″	9 15/16″	2 9/16″	7/16″	15/16″	1 5/16″	1 3/4″	15/64″
8″	2′-10″	110 lbs.	1 1/2″	2 1/4″	10 5/8″	2 3/4″	7/16″	1 3/32″	4 1/8″	1 7/16″	7/16″	1 3/32″	2″	13/32″	8″	2′-10″	110 lbs.	1 1/2″	2 1/4″	10 5/8″	2 3/4″	7/16″	1 3/32″	1 7/16″	2″	17/64″

BOMMER SPRING HINGE COMPANY

BOMMER CHECKING FLOOR HINGES

Single and Double Action

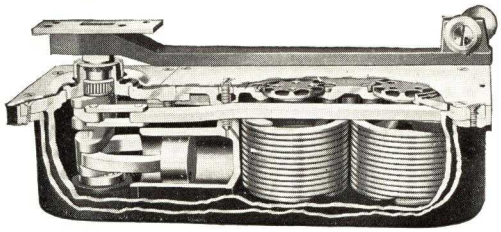


Type No. P1

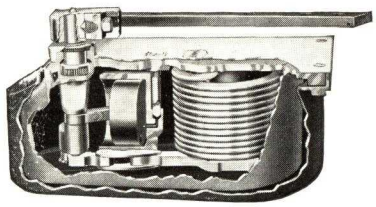
Type No. P3

Type No. P2

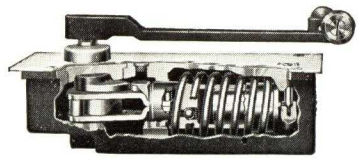
Type No. P4
Side Pivot



Torsion Spring Type 86
Double Action



Torsion Spring Type 88
Single Action



Compression Spring Type 71
Double Action

For entrance vestibule and interior doors, respectively, in office buildings, theatres, department stores, hospitals, churches, schools, apartments, etc. Also for residence, pantry and dining room doors.

These hinges embody every improvement with the highest degree of precision not usually employed in mechanism of this kind, and most reliable and strong.

The checking mechanism is of valve and piston type and holds door under control, operates smoothly and closes the door without noise. The spring tension is adjustable. The closing speed of the door is regulated by a *needle valve,* accessible through the floor plate.

The *Bommer Nos. 86 and 87 Double Action Hinges,* have two springs and two checks. The spring can be adjusted to resist unequal wind pressure on either side and speed of door can be equalized by regulating the *needle valve.* The *arm* has a rectangular hole that fits securely onto the square tapered spindle and prevents door dragging.

The *Bommer Single Action Checking Hinges,* Nos. 88, 88½ and 89, have an adjustable arm that permits raising or lowering the door on the spindle and when setscrew is firmly tightened will positively prevent door slipping and dragging on the threshold.

The opening resistance of the door is made as low as possible consistent with the closing force required.

The mechanism is immersed and operates in a non-freezing, lubricating and checking liquid.

The hinge case is constructed of impermeable iron, preventing seepage of checking liquid.

The weight of the door is carried on hardened steel ball bearings.

The best materials obtainable are used. Parts subject to wear are made of drop-forged or stamped steel, case-hardened. The spring is made of oil-tempered steel.

Conform to U. S. Government Specification FF-H-121.

Complete catalog and Templet Drawings supplied upon request.

DIRECTIONS FOR ORDERING CHECKING FLOOR HINGES

Note: Specify Number and Finish

For Wood, Kalamein or Metal Doors

Double Action

Light Interior Doors 2′8″ ..... No. H70 holds door open at 90° No. 70 non-holdopen
Interior Doors 2′10″x7′0″ ..... No. H71 holds door open at 90° No. 71 non-holdopen
Interior Doors 3′0″x7′6″ ..... No. H72 holds door open at 90° No. 72 non-holdopen
Gate, light, narrow, wood ..... No. GH70 holds gate open at 90° No. G70 non-holdopen
Gate, wood ..... No. GH71 holds gate open at 90° No. G71 non-holdopen
Gate, metal ..... No. GH72 holds gate open at 90° No. G72 non-holdopen
Above hinges having automatic holder, when door or Gate is opened to 90 degrees will be held there until released by a slight push.
Heavy Interior and Entrance Doors 2′10″x7′6″ non-holdopen ..... No. 86
Heavy Entrance Doors 3′6″x7′6″ non-holdopen ..... No. 87

Single Action

Light Interior Doors 3′0″x7′6″ right hand ..... No. R88 right hand door No. L88 left hand door
Heavy Interior and Medium Entrance Doors 2′8″x7′0″ ..... No. R88½ right hand door No. L88½ left hand door
Heavy Entrance Doors 3′6″x7′0″ right hand ..... No. R89 right hand door No. L89 left hand door
Center Hung for light interior doors 3′0″x7′6″ ..... No. RC88 right hand door No. LC88 left hand door
Center Hung for heavy interior and medium entrance doors 2′8″x7′0″ .. No. RC88½ right hand door No. LC88½ left hand door
Center Hung for heavy entrance doors 3′6″x7′0″ ..... No. RC89 right hand door No. LC89 left hand door
Offset Arm Tapered Spindle for metal doors 2′8″x7′6″ ..... No. RT88½ right hand door No. LT88½ left hand door
Offset Arm Tapered Spindle for metal doors 3′6″x7′6″ ..... No. RT89 right hand door No. LT89 left hand door

All checking floor hinges are furnished with durable top pivots.

For Gothic or segment top doors use side jamb pivot type P4.

The prefix letters indicate C center hung, G gate, H holdopen, L left hand, R right hand, T tapered spindle.

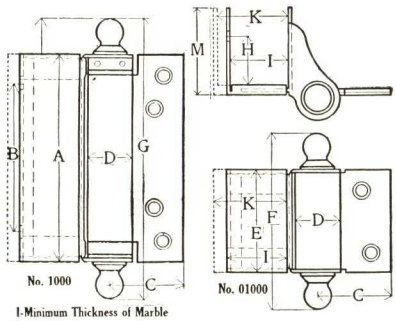
BOMMER CLAMP FLANGE SPRING HINGES

For Lavatory Doors on Marble, Glass, or Slate Partitions Having Hanging Stiles

All Lavatory Hardware is made in Brass, Bronze and White Bronze and in all finishes. Specify finish wanted
Conform to U. S. Government Specifications FF-H-136, October 29th, 1936

No. 1000

No. 01000



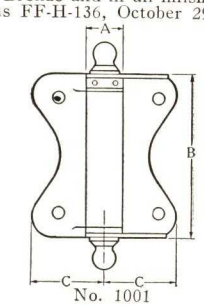
No. 1000

No. 01000

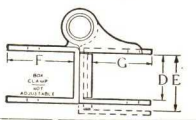
I-Minimum Thickness of Marble
K-Maximum Thickness of Marble

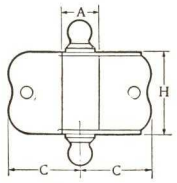
Details Single Action Spring Hinge No. 1000 and Blank No. 01000

These hinges illustrated have clamp flanges adjustable ⅛ in. under and over following partition thickness, 1, 1¼, 1½, 1¾ and 2 in.



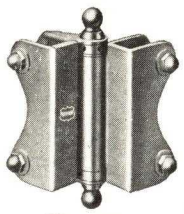
No. 1001



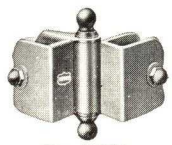


No. 01001

Details Double Clamp Hinge No. 1001 and Blank No. 01001



No. 1001



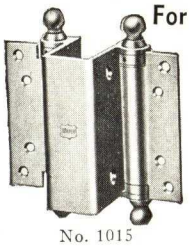
No. 01001

A	B	C	D	E	F	G	H	I	K	M
4	2⅞	1½	⅜	2	3½	5½	1	1⅛	1⅜	1¾

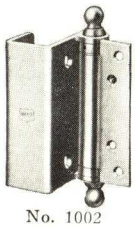
A	B	C	D	E	F	G	H
⅞	4	1⅞	1⅛	1⅜	1⅝	1½	2

For Lavatory Doors on Marble or Slate Partitions Without Hanging Stiles

No. X1002



No. 1015



No. 1002

1015 and 1016 are for hanging two single-acting doors right and left to the same partition on one-clamp flange.

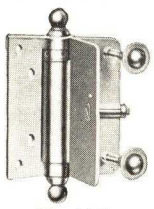
1002 and 1015 are for doors opening in and can be made to hold the doors open or closed as may be specified.

1016 and 1003 are for doors opening out; made only to hold the doors closed.

Flanges of the spring hinges are 4 in. in length; of the blank hinges without springs are 2 in. in length.

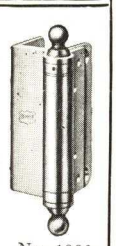
The clamp-flange of these hinges is not adjustable; the exact thickness of marble and door must be specified.

For very light or narrow single action doors, a spring hinge at the top and springless hinge at the bottom may be used.



No. 1212

No. 1016



No. 1003

No. X01002

No. 01015

No. 01002

No. 01012

No. 01016

No. 01003

BOMMER STRIKES AND KEEPERS FOR LAVATORY DOORS

Adjustable for Marble, Glass or Slate Partitions, 1, 1¼, 1½, 1¾ and 2 Inches Thick

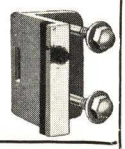
1051 For mortise bolt

1053 For throw latch

1055 For rim bolt

1056 For throw latch

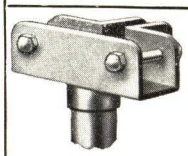
1057 For rim bolt



1062 For Rim bolt

BOMMER LAVATORY STALL STANDARDS AND FITTINGS

For Marble, Glass or Slate Partitions



No. 1152

No. 1160

No. 1150

No. 1161

No. 1151

No. 1155

No. 1137
1¾x1¾x1¼

Tubing for Top Rail

No. 1112

No. 1130
Left hand top
Right hand bottom

No. 1131
Partition supports center

No. 1132
Right hand top
Left hand bottom

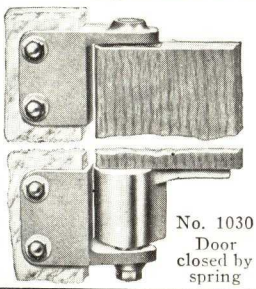
Size, 1, 1⅛ or 1¼ in. O.D. Tubing for Stall Standards cut to length threaded both ends

No. 1143
Extra heavy Floor flange

No. 1142
Wall flange

No. 1103B

BOMMER LAVATORY DOOR PIVOT-HINGES

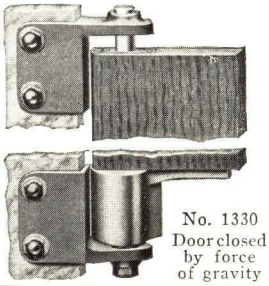


No. 1030
Door closed by spring

Can be used either single or double action, right or left hand.

Clamps are adjustable for variation in thickness of partition.

Adjustable alignment to hold door open at any point desired.



No. 1330
Door closed by force of gravity

BOMMER GATE SPRING PIVOTS

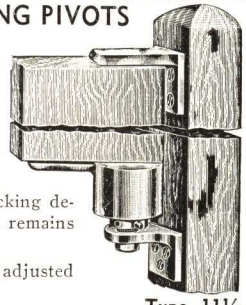
Single or double action.

Adopted to either wood or metal gate or dwarf doors.

The weight is carried on ball-bearings in a hardened steel race at top of hinge pintle.

The adjustable pintle with locking device permits aligning gate and remains at rest in any desired position.

The spring tension easily adjusted after hinge has been applied.



Type 11½

ORGANIZED 1871 — INCORPORATED 1885

CHICAGO SPRING HINGE COMPANY

Spring Hinges and Pivots

GENERAL OFFICES AND WORKS
1500-1502 Carroll Avenue
CHICAGO, ILL.
TELEPHONE, Monroe 6868, 6869

EASTERN OFFICE AND WAREHOUSE
109 Lafayette Street
NEW YORK, N. Y.
TELEPHONE, CAnal 6-2676

Products

Manufacturers of a Complete Line of Spring Hinges; Lavatory Door Bolts; Latches and Stops; Door Springs; Screen, Cabinet and Refrigerator Door Spring Hinges.

TRADE CHICAGO MARK
SPRING HINGES
(Registered U. S. Pat. Office)

Specifications

When specifying designate by name "Chicago", also type number, size and finish. Hinges are made of steel, brass or bronze metal, in standard sizes and finishes.

Any special finish to match other hardware can be furnished promptly.

Quality and Prices

The quality has been recognized for many years and considered standard, as indicated by the many monumental public and commercial buildings equipped with these products. Prices are comparative with those for articles of similar type and quality.

Specially Constructed Products

We solicit details of conditions which require special construction of our products.

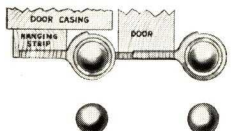
"Triplex" Spring Butt-hinges—Double Acting, Type 2001; Single Acting, Type 2002

(Hanging Strip Required)

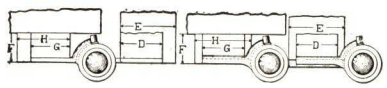
Chicago "Triplex" Spring Butt-hinge requires a hanging strip for applying it to door casing. One flange is mortised into the hanging strip and the other into the door, which gives it a uniform appearance and secure application.

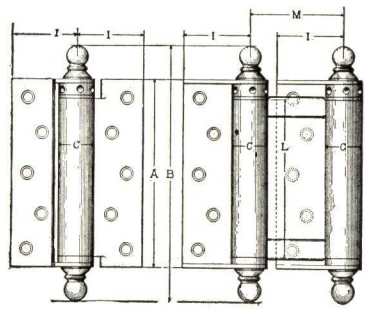
The body is made from one piece of metal formed with multiple thickness in the web and there is no joint where the barrel continues as the web. This gives maximum of strength and rigidity and avoids exposing springs to moisture which would cause rust and breakage.

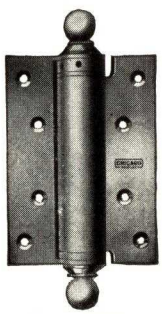
The broad steel bearings, hardened lug bushing and disassemblement features are characteristic of this product. Springs are made of best tempered steel wire in ample proportions for the most excessive requirements.



Type 2001
"Triplex" Double Acting







Type 2002
"Triplex" Single Acting

DIMENSIONS (IN INCHES)

Double Acting Type 2001

A	B	C	D	E	F	G	H	I	L	M
3	4 1/2	55/64	3/4	1	5/8	3/4	1	1 9/32	2 5/16	1 7/8
4	5 1/2	57/64	7/8	1 1/4	5/8	7/8	1 1/4	1 3/8	3 21/64	2 1/8
5	6 3/4	63/64	1 1/8	1 1/2	3/4	1 1/8	1 1/2	1 25/32	4 13/64	2 1/2
6	8 1/8	1 3/32	1 1/4	1 3/4	7/8	1 1/4	1 3/4	1 7/8	5 9/64	2 13/16
7	9 1/4	1 3/32	1 3/8	2	1	1 3/8	2	2 5/16	5 61/64	3
8	10 5/8	1 3/8	1 1/2	2 1/4	1 1/8	1 1/2	2 1/4	2 9/16	6 23/32	3 1/16
10	13 1/8	1 57/64	1 3/4	2 1/2	1 1/4	1 3/4	2 1/2	2 23/32	8 5/8	3 5/16
12	15 1/4	1 3/4	2 1/4	3	1 3/8	2 1/4	3	3 3/8	10 13/16	4 1/16

Single Acting Type 2002

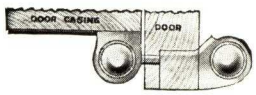
A	B	C	D	E	F	G	H	I
3	4 1/2	55/64	3/4	1	5/8	3/4	1	1 9/32
4	5 1/2	57/64	7/8	1 1/4	5/8	7/8	1 1/4	1 3/8
5	6 3/4	63/64	1 1/8	1 1/2	3/4	1 1/8	1 1/2	1 25/32
6	8 1/8	1 3/32	1 1/4	1 3/4	7/8	1 1/4	1 3/4	1 7/8
7	9 1/4	1 3/32	1 3/8	2	1	1 3/8	2	2 5/16
8	10 5/8	1 3/8	1 1/2	2 1/4	1 1/8	1 1/2	2 1/4	2 9/16
10	13 1/8	1 57/64	1 3/4	2 3/4	1 1/4	1 3/4	2 3/4	2 23/32
12	15 1/4	1 3/4	2 1/4	3	1 3/8	2 1/4	3	3 3/8

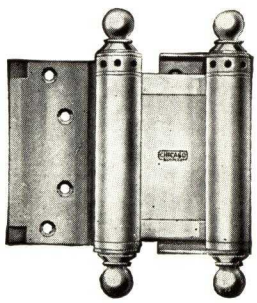
"Simplex" Spring Butt-hinges—Double Acting, Type 9001; Single Acting, Type 9002

(No Hanging Strip Required)

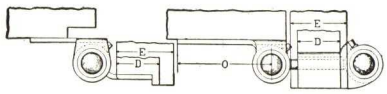
Chicago "Simplex" Spring Butt-hinge is applied to the surface of door casing without a hanging strip, the entire thickness of the hinge being mortised into the door. This method of application is simple and economical.

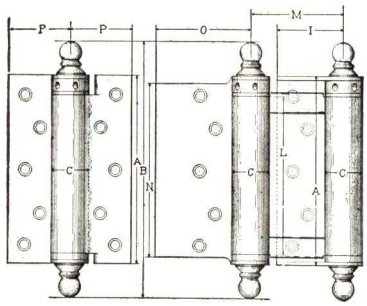
A feature of great importance is that all the standards of the "Triplex" Spring Hinge, which have been recognized for many years, have been maintained in the "Simplex" Spring Hinge. The body is made from one piece of metal formed with multiple thickness in the web, and no joint where the barrel continues as the web. Distance of axial centers, location of screw holes, length of mortise cut, size of springs and barrels, straight web, etc., are all identical with the "Triplex."





Type 9001
"Simplex" Double Acting





Type 9002
"Simplex" Single Acting

DIMENSIONS (IN INCHES)

Double Acting Type 9001

A	B	C	D	E	I	L	M	N	O
3	4 1/2	55/64	3/4	1	1 9/32	2 5/16	1 7/8	2 3/8	1 23/32
4	5 1/2	57/64	7/8	1 1/4	1 3/8	3 21/64	2 1/8	3 19/32	2 9/32
5	6 3/4	63/64	1 1/8	1 1/2	1 25/32	4 13/64	2 1/2	4 17/32	2 17/32
6	8 1/8	1 3/32	1 1/4	1 3/4	1 7/8	5 9/64	2 13/16	5 1/2	3 5/16
7	9 1/4	1 3/32	1 3/8	1 7/8	2 5/16	5 61/64	3	6 1/2	3 1/8
8	10 5/8	1 3/8	1 1/2	2	2 9/16	6 23/32	3 5/32	7 7/16	3 5/8
10	13 1/8	1 57/64	1 3/4	2 1/4	2 23/32	8 5/8	3 5/16	9 1/4	4 1/8

***Single Acting Type 9002**

A	B	C	D	E	P
3	4 1/2	55/64	3/4	1	1 13/64
4	5 1/2	57/64	7/8	1 1/4	1 9/32
5	6 3/4	63/64	1 1/8	1 1/2	1 5/8
6	8 1/8	1 3/32	1 1/4	1 3/4	1 23/32
7	9 1/4	1 3/32	1 3/8	1 7/8	2
8	10 5/8	1 3/8	1 1/2	2	2 23/64
10	13 1/8	1 37/64	1 3/4	2 1/4	2 9/16

*Single Acting Type 9002 may be applied with one flange mortised into the casing and the other into the door.

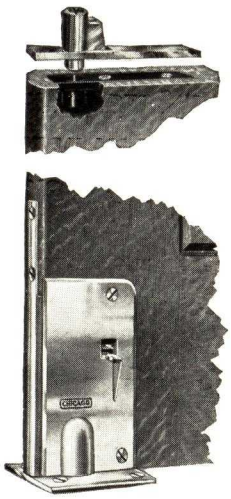
"Triplex" and "Simplex" Double and Single Acting Spring Butt-hinges

Application of proper size of hinge, according to conditions, is an essential to consider in specifying. It is advisable to avoid overloading the hinge by the selection of too small a size, thereby causing the annoyance of doors improperly operating and possible breakages. Details shown will assist in specifying "Triplex" and "Simplex" hinges. Single acting "Triplex" and "Simplex" hinges, when so specified, can be furnished with reverse-action springs to hold the door open. Supplied in steel, brass or bronze metal in standard finishes or to match other hardware

Chicago "Relax" Spring Pivot-hinges—Double Acting, Type 6001

The Chicago "Relax" Spring Pivot-hinge is suitable for the highest class requirements. It is applied to surface of floor, thereby avoiding cutting and possible interference with girders or iron beams. The tension is adjustable. The spring action is readily disengaged by a lever, allowing door to be placed open in any desired position. This is a great convenience and eliminates tendency of springs to lose their power as a result of remaining fixed at high tension when doors are held open by doorholders. Weight of door is carried on ball bearings located in top of hinge, thereby protected from dirt and moisture. Plunger top pivot, furnished with this hinge, permits the door to be fitted closely to the top casing and to be taken down readily without removing any screws. No hanging strip required. Jamb edge of door must be slightly rounded. For tile or concrete floors specify jamb attaching plate.

Furnished in three sizes, for doors 1⅛ to 1½ ins., 1½ to 2 ins., and 1¾ to 2¾ ins.

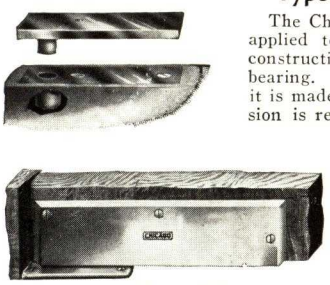


Type 6001

Chicago "Premier" Spring Pivot-hinges—Double Acting, Type 4001

The Chicago "Premier" Spring Pivot-hinge is applied to the surface of floor. Mechanical construction eliminates tendency of wear in bearing. Action of spring is compression and it is made of best tempered steel flat wire. Tension is readily adjusted. A device is provided for aligning door. With this hinge, door will remain open if opened 90°. No hanging strip is required. Jamb edge of door must be slightly rounded. For tile or concrete floors specify jamb attaching plates.

Furnished in two sizes, for doors 1⅛ to 1¾ ins., and 1¾ to 2¾ ins.



Type 4001

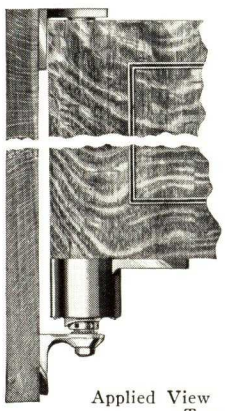
Chicago "Sagless" Gate Spring Pivot-hinges—Double Acting, Type 4007

The Chicago "Sagless" Gate Spring Pivot-hinge is of the pivot type, and if the gate is wide or heavy, it cannot sag. The weight of the gate is carried on ball bearings and is not supported by the spring, therefore a very light tension may be applied. Exterior tension adjustment permits use after hinge is applied. Convex lock washer forms a ball and socket adjustment which automatically aligns hinge pintle.

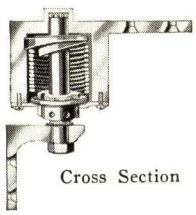
An adjustable pintle, with locking device, permits setting the gate or door to remain at rest in any desired position. The spring is of large dimension and made of best tempered steel flat wire. A ball bearing top socket is supplied with this hinge. The application is extremely simple and, if desired, all attachments may be applied to the surface of the post and gate without mortising. This is very desirable for metal gates.

These hinges are supplied in iron, brass or bronze metal and are suitable for gates 1⅛ to 2½ ins. thick, with a hand rail as wide as 2½ ins.

The attaching plates of the brackets are 2¼ ins. high by 1½ ins. wide. Pintle center to surface of post is 1⅝ ins.



Applied View



Cross Section

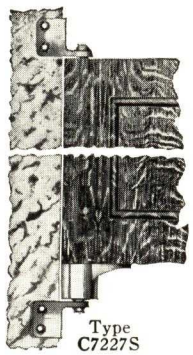
Type 4007

Chicago Lavatory Door Gravity Pivot-hinges, Type C47227S (Double Acting) Type C47228S (Single Acting)

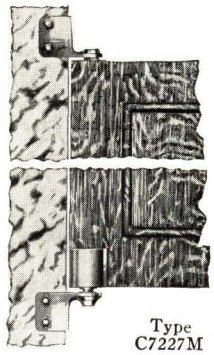
In our opinion a gravity type hinge is not as adaptable to varying conditions and requirements as a spring hinge, but we manufacture gravity type hinges which in design, appearance and application are similar to Type C7227S spring hinges illustrated on this page. We believe these hinges to be equal to or better than any other gravity hinges on the market and are prepared to supply them with various types of attachments, as illustrated in the next column.

Chicago "Sagless" Lavatory Door Spring Pivot-hinges, Type C7227S and C7227M

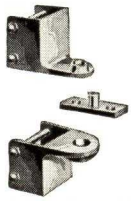
The "Sagless" lavatory door spring pivot-hinge is made with attachments for application to marble partitions or pipe standards. The clamp Type "C" attachments are adjustable ⅛ in. under or over the following sizes by which they are specified: 1, 1¼, 1½, 1¾ and 2 in. This hinge can be used either double or single acting. An adjustable pintle with locking device permits setting the door to remain at rest in any desired position. A larger hinge of similar type, C4227S or C4227M, with greater spring power and with exterior tension adjustment can also be furnished. This hinge is particularly adapted to double acting dwarf vestibule doors. See Type 4007 for description of features.



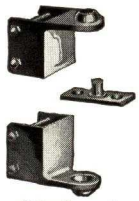
Type C7227S



Type C7227M



Attachment C



Attachment CI

Attachment P

Attachment F

Chicago "Triplex" Lavatory Door Spring Hinges

The Chicago "Triplex" Lavatory Door Spring Hinges, illustrated, are supplied for partition thickness as specified, in brass metal, nickel-plated. White bronze and other finishes are made to special order. The spring hinge flanges are 4 ins. long.

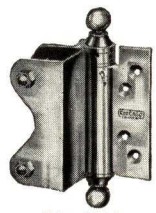
Type 2242, 2244 and 2246 hinges have adjustable clamp flanges and open head nuts on bolts, permitting adjustment of ⅛ in. under and over the following sizes by which they are specified: 1, 1¼, 1½, 1¾, and 2 ins.

The advantage of the adjustable clamp flange is that it can be properly and securely applied to partitions having slight variations in thickness.

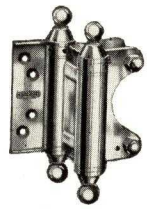
Where doors are very narrow or light a single-acting spring hinge may be used, together with a springless hinge, Type 2244. If doors swing "out" a checking springless hinge, Type 2246, may be used to hold the door ajar when not bolted shut. When doors swing "in," hinges can be furnished with reverse action springs to hold door open.

Types 2842 and 2642 are for doors opening "in" and Types 2742 and 2542 are for doors opening "out." These hinges are for application to partitions without hanging stiles.

Lavatory Door Stops, with keepers, similar to Type 1247F and various types of door bolts and latches can be supplied to meet conditions.



No. 2242

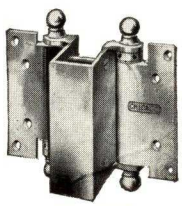


No. 2241

No. 2244

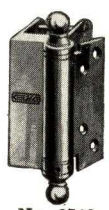
No. 2246

No. 2842

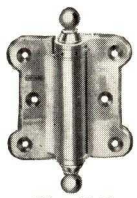


No. 2642

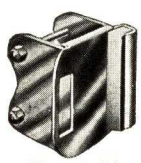
No. 2542



No. 2742



No. 2442



No. 1247F

MILWAUKEE STAMPING COMPANY

TELEPHONE
Greenfield 2400-1-2

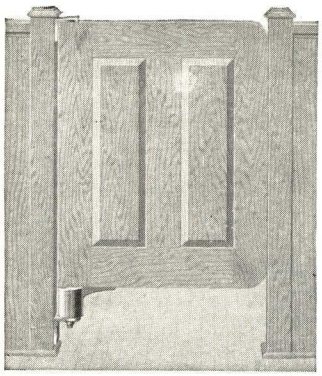
MILWAUKEE, WIS.

CHICAGO OFFICE AND WAREHOUSE, 150 No. Wacker Drive
NEW YORK OFFICE AND WAREHOUSE, 416 Broadway
SEATTLE OFFICE AND WAREHOUSE, R. F. Bevers, 521 Thirtieth Avenue, So.
LOS ANGELES OFFICE AND WAREHOUSE, F. W. Jonas, 912 E. 3rd Street
BOSTON OFFICE AND WAREHOUSE, C. E. Harris Co., 99 Bedford Street
DENVER OFFICE, Schmidt Sales Co., 3101 Walnut Street
SAN FRANCISCO OFFICE, F. W. Jonas, 244 Ninth Street
SALT LAKE CITY OFFICE, W. L. Glade, 1421 Sherman Avenue
SOUTH BEND, IND. OFFICE, R. W. Latta, 232½ Michigan Street
WASHINGTON (D. C.), OFFICE, John L. Lindstrom, 2929 Connecticut Ave., N. W.
COLUMBUS (OHIO), OFFICE, Paul E. Lehman, 431 Crestview Road
PITTSBURGH OFFICE, E. D. Randolph, 2229 Perrysville Avenue, N. S.
JACKSONVILLE (FLA.), OFFICE, Harry Hoffner, P. O. Box 4346
DALLAS OFFICE, John H. North, 1002 Woodlawn Avenue
NEW ORLEANS OFFICE, Fred J. Allen, 1009 Broadway, P. O. Box 169
NEW YORK STATE, Arthur Larose, Auburn, N. Y.
EASTERN PENNSYLVANIA, C. H. Speers, Mechanicsburg, Pa.
WESTERN VIRGINIA and WEST VIRGINIA, Fred Betz, Box 6551, Pittsburgh, Pa.
MONTREAL, QUE., C. J. Walker, Ltd., 6 Burton Avenue, Westmount
TORONTO, ONT., T. Mortimer & Co., 64 Wellington Street, W.

For Toilet Partitions, Showers and Doors, see File Index

MILWAUKEE-LAWSON HINGES

Complete Line of Spring Butts, Lavatory, Screen, and Floor Hinges and Accessories



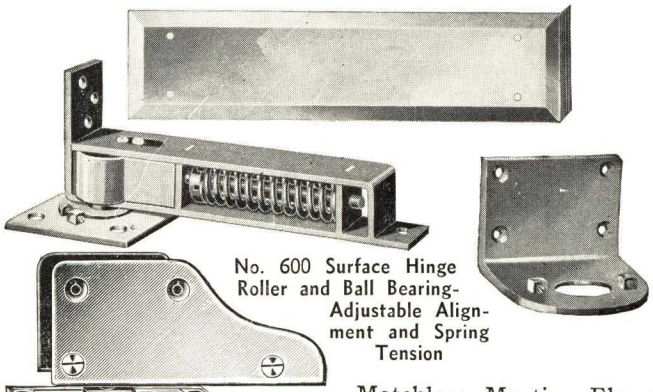
Gate Hinge

"Universal" Pivot Gate Hinge

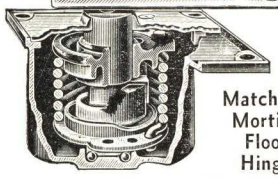
Is sagless and requires no hanging strip. The only gate hinge with a positive alignment feature. Can be used on stiles 2 in. or over. Thickness of gate, 1 to 2 in.; diameter of cup, 2 in.; brackets, 2x1⅛ in. wide.

Surface Floor Hinges

Series No. 600—Heavy construction; working parts enclosed in grease chamber—keeps out dirt, prevents wear. For 1⅛ to 1¾-in. doors.



No. 600 Surface Hinge Roller and Ball Bearing-Adjustable Alignment and Spring Tension



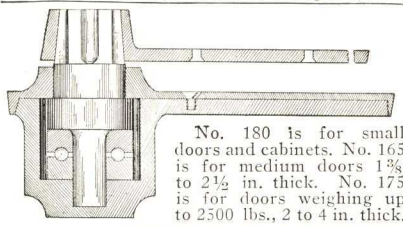
Matchless Mortise Floor Hinge

Matchless Mortise Floor Hinge—The oldest and best type of double acting floor hinge. No hold back. Specially adapted for heavy doors.

Do not use stronger than No. 1300 for residences. Width of door main point to consider.

MATCHLESS MORTISE FLOOR HINGE

Series No.	1200	1300	1400	1500	1600
Thickness of doors.	1⅛" to 1½"	1½" to 2"	2" to 2½"	2½" to 3¼"	3" to 4"
Size of cover	4¼"x4¼"	4¾"x4¾"	5"x5"	5½"x5½"	6⅛"x6⅛"
Center of pintle to door casing	1⅞"	2 1/16"	2⅜"	2½"	2 11/16"
Depth of hinge	3⅛"	3¼"	3½"	4"	4"



No. 180 is for small doors and cabinets. No. 165 is for medium doors 1⅜ to 2½ in. thick. No. 175 is for doors weighing up to 2500 lbs., 2 to 4 in. thick.

Matchless Pivot Hinges Without Springs

The ball bearings distribute the weight and provide easy and noiseless action. For double and single acting doors.

MATCHLESS PIVOT HINGE WITHOUT SPRING

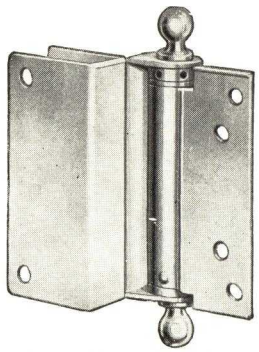
Dimensions	No. 165	No. 175	No. 180
Top plate	2 1/16"x4½"	4¾"x5¼"	1"x4"
Depth of cup	1¾"	3⅛"	1⅛"
Center of pintle to jamb	1"	1⅞"	11/16"
Bottom socket to floor	⅜"	⅝"	⅜"
Top pivot face plate	1⅜"x5⅞"	2"x8"	1"x4¾"
Invisible socket	1 3/16"x7⅞"	2"x9¾"	⅝"x3¾"

Lavatory Hardware

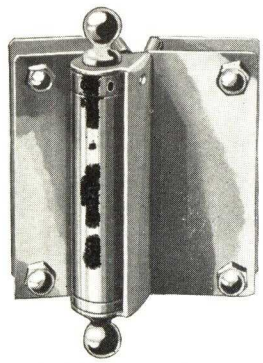
Lawson "Universal" Pivot Spring Hinge—Can be set to hold door open at any position desired. Pivot bearings prevent sagging of door. The pintle is tapered at bottom and fits in tapered socket. When nut is tightened, pintle is drawn down into socket and taper fit holds pintle firmly in place. Double-acting but can be used single-acting by application of door stop or strike.

Lawson Gravity Pivot Hinge—Resembles Lawson "Universal" pivot spring hinge in size, shape, and attachments. For use on double acting doors, but can be used on single acting by the application of a door stop or strike.

This hinge has a ball bearing roller which guarantees smooth action. All working parts are completely inclosed in the hinge housing. Furnished with brackets for attaching to marble, slate, or metal partitions.



No. 1900 Lavatory Hinge



No. 1902 Lavatory Hinge

No. 1900 Single Acting Lavatory Hinge—Same as above only one box for application to marble.

No. 1902 Single Acting Lavatory Hinge—With double box, one for marble and one for door. Used on government work.

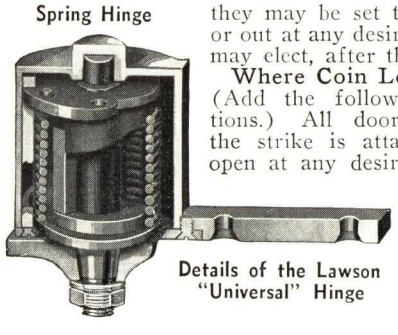
Hardware Specifications for Toilet Stalls

Marble, Slate, or Glass—All hinges for toilet stall doors shall be of the pivot type, similar to Lawson's No. 2234 or 2834, made by Milwaukee Stamping Company, and so arranged that they may be set to hold the door open at any desired position, either in or out, as the owner may elect, after the hinges are applied. They shall be of solid brass, nickel plated.

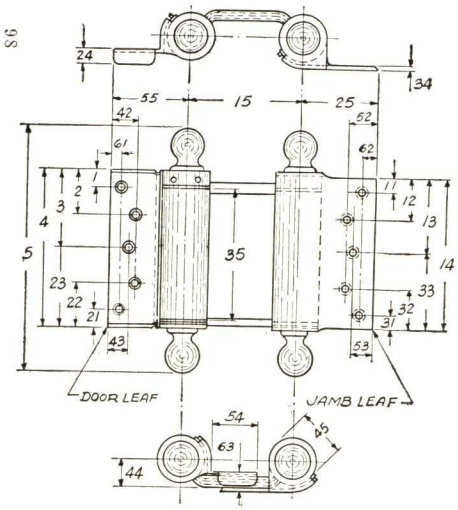
No. 2834 Spring Hinge

Metal Partitions—All doors shall be equipped with pivot hinges similar to Lawson's "Universal" hinge or Lawson's Gravity hinge for metal doors, made by Milwaukee Stamping Company, and so arranged that they may be set to hold the door open in or out at any desired position, as the owner may elect, after the hinges are applied.

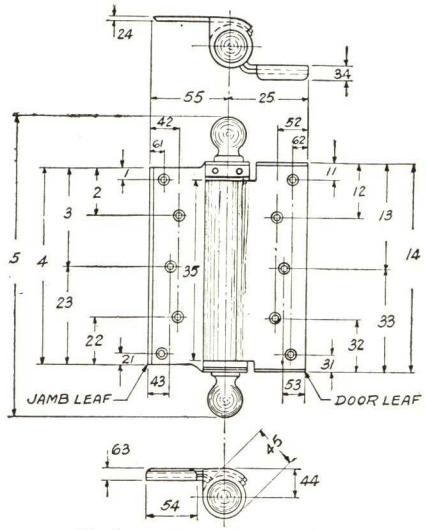
Where Coin Locks Are to Be Used—(Add the following to above specifications.) All doors shall be set, before the strike is attached, to hold the door open at any desired position. Open door out and attach strike, thus giving the spring additional power necessary to insure locking of the door, no matter how gently the door is closed.



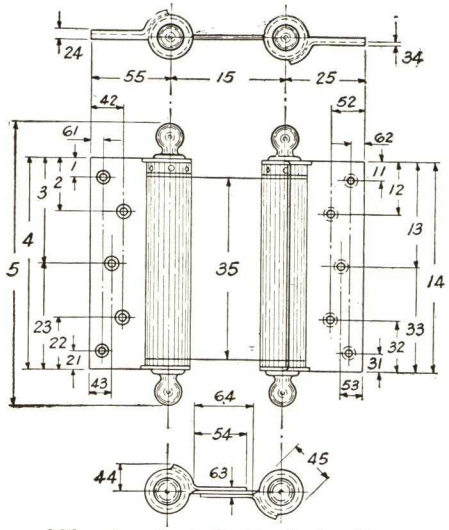
Details of the Lawson "Universal" Hinge



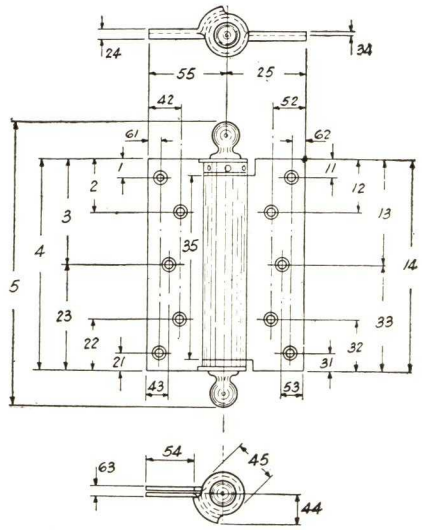
Nu-Jamb Double Acting Hinge
No Hanging Strip Required



Nu-Jamb Single Acting Hinge
No Hanging Strip Required



Milwaukee Jamb Double Acting Hinge
Hanging Strip Required



Milwaukee Jamb Single Acting Hinge
Hanging Strip Required

HINGE TEMPLATE DETAILS (INCHES)

Reference No.	1	2	3	4	5	11	12	13	14	15	21	22	23	24	25	31	32	33	34	35	42	43	44	45	52	53	54	55	61	62	63	64	No. of Screw Holes in Hinge	Type of F. H. Machine Screw	Type of F. H. Wood Screw
MILWAUKEE NU-JAMB DOUBLE ACTING HINGE																																			
Length of Flange 3 in.	.437	.....	1.500	3.000	4.625	.289	.....	1.351	2.703	2.125	.437	.....	1.500	.312	1.437	.289	.....	1.351	.072	2.421	.....	.468	.468	.843	.....	.468	.875	1.437	.281	.281	.375	.....	6	No. 8-32	No. 7x1
4 in.	.437	1.062	.....	4.000	5.625	.265	.890	.....	3.656	2.500	.437	1.062	.....	.362	1.687	.265	.890	.....	.083	3.296	.562	.....	.510	.937	.562	.....	1.062	1.687	.312	.312	.426	.....	8	No. 8-32	No. 7x1
5 in.	.500	1.375	2.500	5.000	6.937	.368	1.243	2.368	4.736	2.875	.500	1.375	2.500	.422	2.000	.368	1.243	2.368	.095	4.203	.750	.562	.561	1.031	.750	.562	1.312	2.000	.375	.375	.486	.....	10	No. 10-24	No. 10x1¼
6 in.	.562	1.562	3.000	6.000	7.937	.377	1.377	2.814	5.629	3.250	.562	1.562	3.000	.478	2.250	.377	1.377	2.814	.109	5.109	.843	.625	.610	1.125	.843	.625	1.500	2.250	.406	.406	.542	.....	10	No. 10-24	No. 10x1¼
7 in.	687	1.812	3.500	7.000	9.250	.470	1.595	3.282	6.565	3.625	.687	1.812	3.500	.528	2.500	.470	1.595	3.282	.120	6.015	.969	.687	.660	1.219	.969	.687	1.687	2.500	.406	.406	.593	.....	10	No. 10-24	No. 10x1½
8 in.	.687	2.125	4.000	8.000	10.250	.414	1.851	3.726	7.452	4.000	.687	2.125	4.000	.600	2.750	.414	1.851	3.726	.134	6.906	1.093	.750	.709	1.312	1.093	.750	1.875	2.750	.407	.407	.664	.....	10	No. 10-24	No. 10x1½
MILWAUKEE NU-JAMB SINGLE ACTING HINGE																																			
Length of Flange 3 in.	.289	.....	1.351	2.703	4.625	.437	.....	1.500	3.000	.....	.289	.....	1.351	.072	1.437	.437	.....	1.500	.156	2.421	.....	.468	.562	.843	.....	.468	.875	1.4375	.281	.281	.188	.....	6	No. 8-32	No. 7x1
4 in.	.265	.890	.....	3.656	5.625	.437	1.062	.....	4.000	.....	.265	.890	.....	.083	1.687	.437	1.062	.....	.181	3.296	.562	.....	.625	.937	.562	.....	1.062	1.687	.312	.312	.213	.....	8	No. 8-32	No. 7x1
5 in.	.368	1.243	2.368	4.736	6.937	.500	1.375	2.500	5.000	.....	.368	1.243	2.368	.095	2.000	.500	1.375	2.500	.211	4.203	.750	.562	.687	1.031	.750	.562	1.312	2.000	.375	.375	.243	.....	10	No. 10-24	No. 10x1¼
6 in.	.377	1.377	2.814	5.629	7.937	.562	1.562	3.000	6.000	.....	.377	1.377	2.814	.109	2.250	.562	1.562	3.000	.240	5.109	.843	.625	.750	1.125	.843	.625	1.500	2.250	.406	.406	.271	.....	10	No. 10-24	No. 10x1¼
7 in.	.470	1.595	3.282	6.565	9.250	.687	1.812	3.500	7.000	.....	.470	1.595	3.282	.120	2.500	.687	1.812	3.500	.256	6.015	.969	.688	.812	1.219	.969	.688	1.688	2.500	.406	.406	.296	.....	10	No. 10-24	No. 10x1½
8 in.	.414	1.851	3.726	7.452	10.250	.687	2.125	4.000	8.000	.....	.414	1.851	3.726	.134	2.750	.687	2.125	4.000	.300	6.906	1.093	.750	.875	1.312	1.093	.750	1.875	2.750	.406	.406	.332	.....	10	No. 10-24	No. 10x1½
MILWAUKEE GIANT JAMB DOUBLE ACTING HINGE*																																			
Length of Flange 3 in.	.453	1.000	.....	3.000	4.375	.453	1.000	.....	3.000	2.125	.453	1.000	.....	.165	1.375	.453	1.000	.....	.100	2.328	.328	.....	.500	.750	.328	.....	.875	1.375	.578	.578	.433	1.000	8	No. 8-32	No. 7x1
4 in.	.438	1.093	.....	4.000	5.687	.438	1.093	.....	4.000	2.500	.438	1.093	.....	.183	1.687	.438	1.093	.....	.083	3.320	.656	.....	.684	1.029	.656	.....	1.000	1.687	.313	.313	.296	1.250	8	No. 8-32	No. 7x1
5 in.	.500	1.375	2.500	5.000	6.687	.500	1.375	2.500	5.000	2.812	.500	1.375	2.500	.150	1.875	.500	1.375	2.500	.100	4.078	.840	.615	.650	1.000	.840	.615	1.250	1.875	.331	.331	.458	1.500	10	No. 10-24	No. 10x1¼
6 in.	.563	1.469	3.000	6.000	8.000	.563	1.469	3.000	6.000	3.250	.563	1.469	3.000	.109	2.250	.563	1.469	3.000	.109	5.160	.938	.625	.830	1.218	.938	.625	1.375	2.250	.375	.375	.375	1.750	10	No. 10-24	No. 10x1¼
7 in.	.575	2.000	3.500	7.000	8.875	.575	2.000	3.500	7.000	3.812	.575	2.000	3.500	.200	2.608	.575	2.000	3.500	.200	5.830	1.032	.625	.925	1.250	1.032	.625	1.625	2.608	.437	.437	.500	2.000	10	No. 10-24	No. 10x1½
8 in.	.....	.....	.....	8.000	10.375	.....	.....	.....	8.000	4.250	.....	.....	.....	.250	2.875	.....	.....	.....	.171	7.032	.....	.....	.987	1.375	.....	.....	2.000	2.875	.....	.....	.650	2.250	12	No. 10-24	No. 10x1½
10 in.	.....	.....	.....	10.000	12.750	.....	.....	.....	10.000	4.000	.....	.....	.....	.313	2.906	.....	.....	.....	.148	8.625	.....	.....	1.000	1.500	.....	.....	1.969	2.906	.....	.....	.634	2.125	14	No. ¼x20	No. 14x1¾
MILWAUKEE GIANT JAMB SINGLE ACTING HINGE*																																			
Length of Flange 3 in.	.453	1.000	.....	3.000	4.375	.453	1.000	.....	3.000	.....	.453	1.000	.....	.165	1.375	.453	1.000	.....	.100	2.328	.328	.....	.500	.750	.328	.....	.875	1.375	.578	.578	.312	.....	8	No. 8-32	No. 7x1
4 in.	.438	1.093	.....	4.000	5.687	.438	1.093	.....	4.000	.....	.438	1.093	.....	.083	1.687	.438	1.093	.....	.095	3.330	.656	.....	.684	1.029	.656	.....	1.000	1.687	.313	.313	.243	.....	8	No. 8-32	No. 7x1
5 in.	.422	1.391	2.500	5.000	6.687	.500	1.375	2.500	5.000	.....	.422	1.391	2.500	.150	1.875	.500	1.375	2.500	.100	4.078	.910	.666	.650	1.000	.840	.615	1.187	1.875	.270	.331	.427	.....	10	No. 10-24	No. 10x1¼
6 in.	.563	1.469	3.000	6.000	8.000	.563	1.469	3.000	6.000	.....	.563	1.469	3.000	.109	2.250	.563	1.469	3.000	.109	5.160	.938	.625	.830	1.218	.938	.625	1.375	2.250	.375	.375	.296	.....	10	No. 10-24	No. 10x1¼
7 in.	.575	2.000	3.500	7.000	8.875	.575	2.000	3.500	7.000	.....	.575	2.000	3.500	.200	2.608	.575	2.000	3.500	.200	5.830	1.032	.625	.925	1.250	1.032	.625	1.625	2.608	.437	.437	.375	.....	10	No. 10-24	No. 10x1½
8 in.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10 in.	.....	.....	.....	10.000	12.750	.....	.....	.....	10.000	.....	.....	.....	.....	.313	2.906	.....	.....	.....	.148	8.625	.....	.....	1.000	1.500	.....	.....	1.969	2.906	.....	.....	.....	.....	14	¼x20	No. 14x1¾

*Template Drawing furnished on request for 10-in. Single and 8-in. Double Acting Hinge.

THE OSCAR C. RIXSON COMPANY

MANUFACTURERS OF

Floor Checks, Overhead Door Closers, Door Holders, Special Hinges, Casement and Transom Hardware

CHICAGO, ILL.

REPRESENTATIVES

ATLANTA, GA., Luke Seawell, 152 Nassau Street
LOS ANGELES, CAL., George E. Tupper, 909 Santa Fe Avenue
NEW ORLEANS, LA., Fred J. Allen, 1009 Broadway
NEW YORK, N. Y., George Pariot, Inc., 2034 Webster Avenue and 101 Park Avenue
PHILADELPHIA, PA., G. Norris Williams, 211 Greenwood Avenue, Wyncote, Pa.
SAN FRANCISCO, CAL., George E. Tupper, 116 New Montgomery Street
CANADA, The Richards-Wilcox Canadian Co., Ltd., London, Ont.

The Company and Its Reputation

Since the turn of the century THE OSCAR C. RIXSON COMPANY has been engaged in the development and manufacture of improved mechanisms in builders' hardware. Manufacturers of one of the first reliable door checks and closers, we subsequently introduced the first double acting door check for use with spring hinges, a feat considered impossible at the time.

Then followed the development of the RIXSON line of Floor Checks, whose reliability and fitness have earned them a world-wide reputation and the unqualified specification of architects and builders for years. RIXSON floor checks have been *Imitated* but *Never Equaled.*

Many new and improved mechanisms have been introduced such as Casement Operators; Friction Stays; Tubular Friction Casement Holders; Improved Cremorne Bolts; Door Holders and Stays; Concealed Transom Operators; Olive Knuckle Hinges; Nos. 02, 2, 03, and 3 Adjustable Ball Hinges; and Thresholds of special designs for use with floor checks.

And now we present two new series of CONCEALED OVERHEAD DOOR CHECKS:

One designed for installation in HEAD JAMBS OR TRANSOM BARS and the other for the TOP RAILS OF DOORS.

Our Engineering, Designing and Service Departments are also at your disposal and will gladly assist in the solution of special problems.

SPECIFICATIONS

We believe that the following specifications will be of material service to those desiring to secure the proper style and size FLOOR CHECKS and CONCEALED OVERHEAD CHECKS of "Rixson" quality, appearance, performance and not goods of questionable quality.

Single Acting, Offset Type, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 20 single acting floor check for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 25 single acting floor check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide. Federal Specification FF H 121a Type 3520-A. Size II Rixson No. 20; Size III Rixson No. 25.

Doors over 7 ft. high shall be provided with RIXSON No. 19 intermediate pivot. Federal Specification FF H 121a Type 3525—Rixson No. 19, or No. 19 Modern.

Single Acting, Center Pivoted, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 21 single acting floor check for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 26 single acting floor check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide. Federal Specification FF H 121a Type 3520. Size II Rixson No. 21. Size III Rixson No. 26.

Single Acting, Independently Hinged, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 321 single acting floor check for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 326 single acting floor check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide.

Single Acting, Offset Type, Ordinary Interior Doors—Shall be provided with RIXSON No. 18 single acting floor check for ordinary interior doors not over 3 ft. wide. Federal Specification FF H 121a Type 3520-A. Size I Rixson No. 18.

Single Acting, Center Pivoted, Ordinary Interior Doors—Shall be provided with RIXSON No. 18½ single acting floor check for ordinary interior doors not over 3 ft. wide. Federal Specification FF H 121a Type 3520. Size I Rixson No. 18½.

Double Acting, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 30 double acting floor check for heavy interior doors not over 3 ft. 6 ins. wide; for entrance and vestibule doors not over 2 ft. 10 ins. wide. RIXSON No. 40 double acting floor check for extra heavy interior doors; for entrance and vestibule doors over 2 ft. 10 ins. wide. Federal Specification FF H 121a Type 3510. Size I Rixson No. 30. Size II Rixson No. 40.

Double Acting, Ordinary Interior Doors—Shall be provided with RIXSON No. 10 double acting floor check with hold-open, (No. 12 without hold-open) for doors not over 2 ft. 10 ins. wide; RIXSON No. 15 double acting floor check with hold-open, (No. 16 without hold-open) for doors not over 3 ft. 10 ins. wide. Federal Specification FF H 121a Type 3500. Size II Rixson No. 10 and No. 12. Size III Rixson No. 15 and No. 16.

Single Acting, Independently Hinged, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 220 single acting overhead concealed check, for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 225 single acting overhead concealed check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide.

Single Acting, Independently Hinged, Ordinary Interior Doors—Shall be provided with RIXSON No. 100 single acting overhead concealed check for ordinary interior doors not over 3 ft. wide.

SINGLE ACTING FLOOR CHECKS

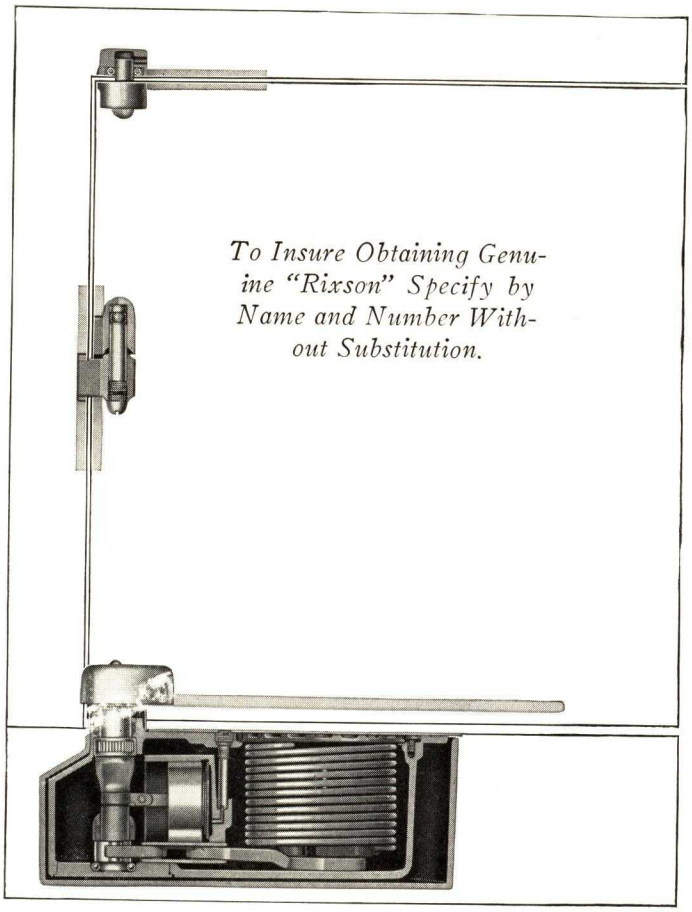
Rixson Single Acting Floor Checks are the foundation of this Company's good reputation. Having been used on most of the outstanding buildings in the country for over a quarter century, their durability is proven. They are constantly being improved. The latest models are equipped with new main spindles hardened and ground to close limits; the lower ball bearing is of an improved type. A roller bearing now supports the upper end of the spindle and a new packing gland has been added to reduce the possibility of leakage. The Nos. 20 and 25 Checks are equipped with ball bearing top pivots. The regular top pivot and No. 19 pivot are now made of high strength brass, bronze, and aluminum forgings.

No. 18, No. 20, No. 25 Checks—The offset type, a top pivot being furnished with each Check, so that no hinges are required for hanging the door. The several designs of top pivots and No. 19 side pivots are shown below.

No. 120, No. 125 Checks—The offset type, equipped with an arm for narrow doors which does not provide a vertical adjustment for the door. A top pivot is furnished with each Check.

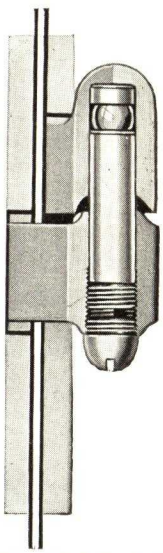
No. 18½, No. 21, No. 26 Checks—The center hung type, the pivot and arm being entirely concealed when the door is closed. These Checks are particularly adaptable to batteries of doors where no mullions are used.

No. 318½, No. 321, No. 326 Checks—Are supplied with a forged bronze arm and a sliding block and rail arrangement so that the door may be hung with any type of hinge desired. No pivots are furnished with this Check. No. 318½ has malleable iron arm.

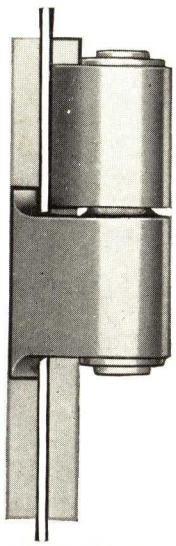


PIVOTS FOR SINGLE ACTING FLOOR CHECKS NO. 18, NO. 20, NO. 25, NO. 120, AND NO. 125
Offset Type (Handed)

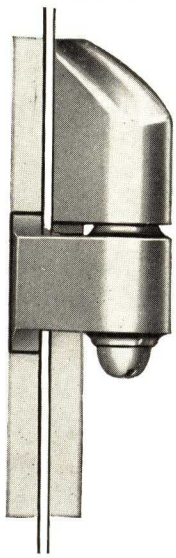
Rixson Top Pivots and No. 19 Side Ball Pivots are Furnished in Brass, Bronze, and Aluminum Forgings for Extra Strength



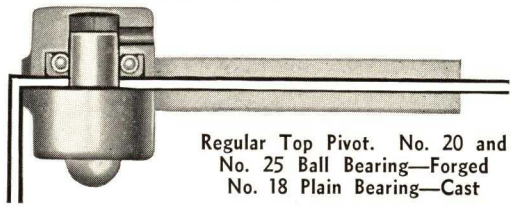
No. 19 Side Ball Pivot, Plain Design Forged



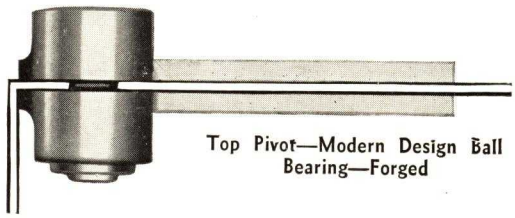
No. 19 Side Ball Pivot, Modern Design Cast



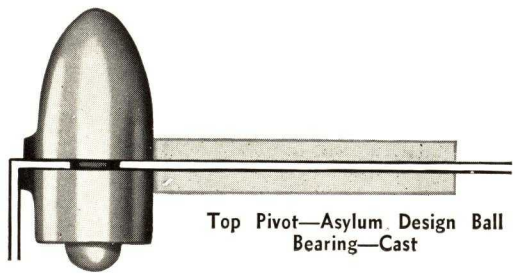
No. 19 Side Pivot Asylum Design Cast



Regular Top Pivot. No. 20 and No. 25 Ball Bearing—Forged No. 18 Plain Bearing—Cast



Top Pivot—Modern Design Ball Bearing—Forged



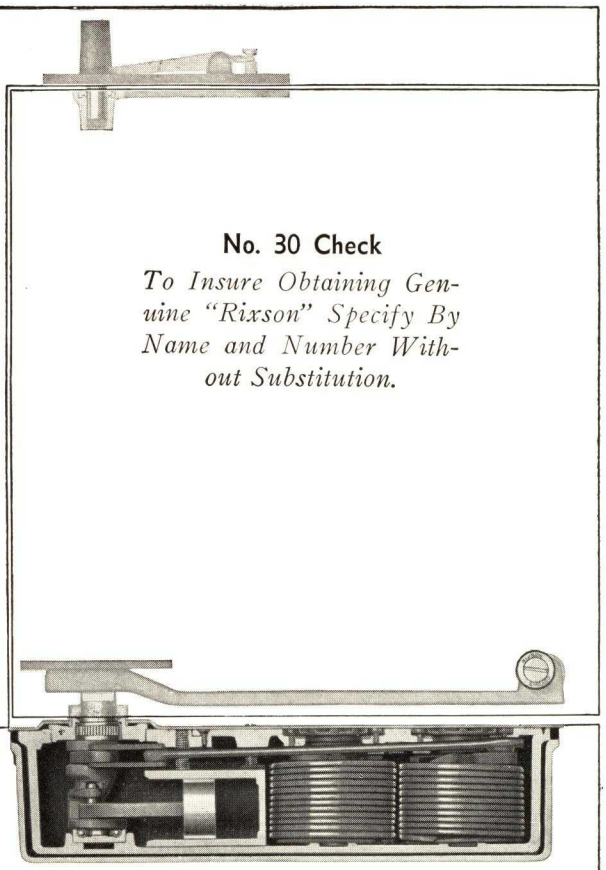
Top Pivot—Asylum Design Ball Bearing—Cast

We recommend the ball bearing top pivot for use wherever possible. No. 19 Pivot is intended as an intermediate pivot and, for use where the regular top pivot cannot be used.

See page 1 for Suggested Specification for Floor Checks.

Blue Print Templates Furnished on Request

DOUBLE-ACTING FLOOR CHECKS



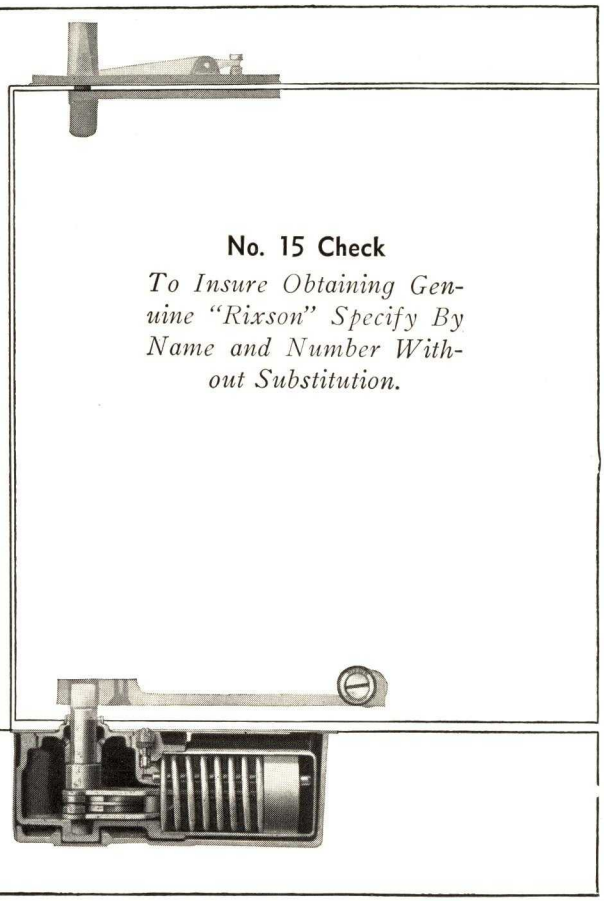
No. 30 Check

To Insure Obtaining Genuine "Rixson" Specify By Name and Number Without Substitution.

No. 30, No. 40 Checks

Like the single acting Floor Checks, these have been produced for years and their worth is proven. The latest models are equipped with hardened and ground spindles, new packing glands, new lower spindle ball bearings operating in hardened steel ball races, and new upper spindle roller bearings. The upper door pivot furnished is of the ball bearing type. The two Checks are particularly designed for heavy duty entrance and vestibule doors.

Both Checks are equipped with two separately adjustable springs and two separately adjustable checking mechanisms to meet the varying wind conditions on different entrance doors. Adjustments are provided for centering the door and for taking up play in the mechanism.



No. 15 Check

To Insure Obtaining Genuine "Rixson" Specify By Name and Number Without Substitution.

No. 10, No. 12, No. 15, No. 16, New Improved Checks

Designed to control medium duty interior doors, such as pantry, rail gate, or coupon booth doors. The parts are of heavy construction and steel parts, such as spindle, draw bar, cam, and rollers, are hardened to provide for long life. A patented pressure release valve is used to prevent breakage to the door or Check when closing action is forced.

Nos. 10 and 15 when opened to 90 degrees hold the door automatically in that position, so that no holder is needed.

Nos. 12 and 16 correspond in all respects to Nos. 10 and 15, but do not have automatic door holder.

Junior Check

Similar to the Nos. 10 and 15 Checks, but is lighter in construction. For light interior doors, such as pantry doors in the moderate cost house, this Check will give fine service. Rixson Junior can be supplied with or without 90-degree automatic hold-open.

See page 1 for Suggested Specification. Blue Print Templates Furnished on Request.

CONCEALED SINGLE-ACTING OVERHEAD DOOR CHECKS

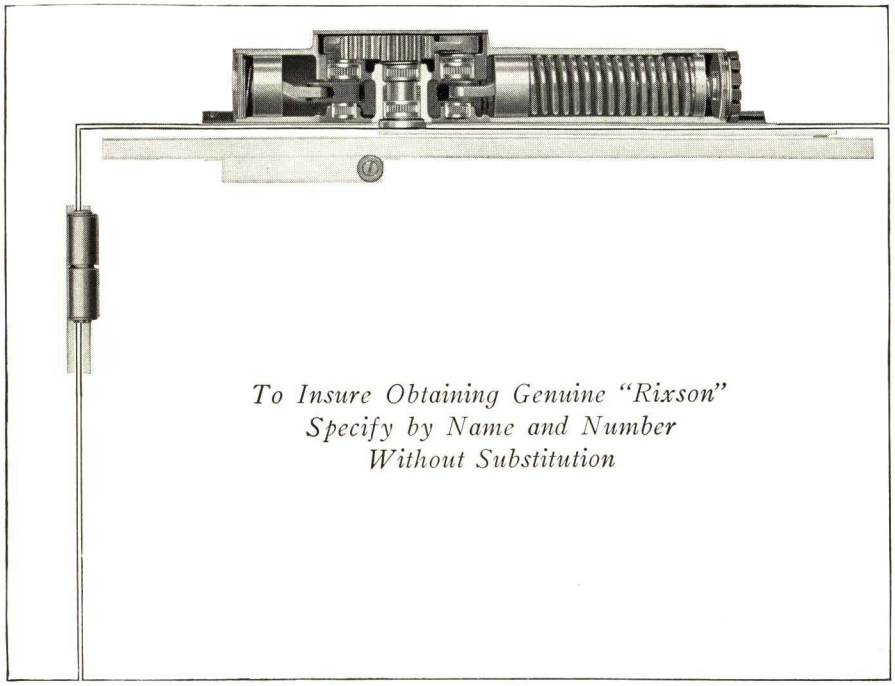
No. 220, No. 225 Checks (Handed)

For entrance, vestibule, and interior doors hung on butts.

This new type of Check is placed in the head jamb or transom bar. It will fit in a very narrow transom bar due to its small section, the Check measuring 2⅞ ins. wide, 2⅞ ins. high and 17 ins. long. All parts are concealed when the door is closed.

When required, a concealed door holder can be furnished that holds the door at 90 degrees. This operates with a small knob on the face of the door. The device serves as an automatic or manually operated holder as desired. A maximum hold-open of 100 degrees can be furnished on request.

The regular non-hold-open arm permits the door to open to a maximum of 160 degrees.



Cut Open View of No. 225 Showing Rugged Construction and Roller Bearings
(Illustration Shows Check with Holder Mechanism Below Rail. Butt Shown Is Rixson No. 02 Adjustable Ball Hinge, Modern Design)

Roller bearings are used throughout these Checks, there being six supporting the three hardened and ground shafts. This is something new in door closing devices. The gears are forged steel with cut and hardened teeth of special shape to give great strength.

The Checks are equipped with a simple, accessible spring control and a two-valve, two-speed checking control.

No. 100 Check (Non-handed)

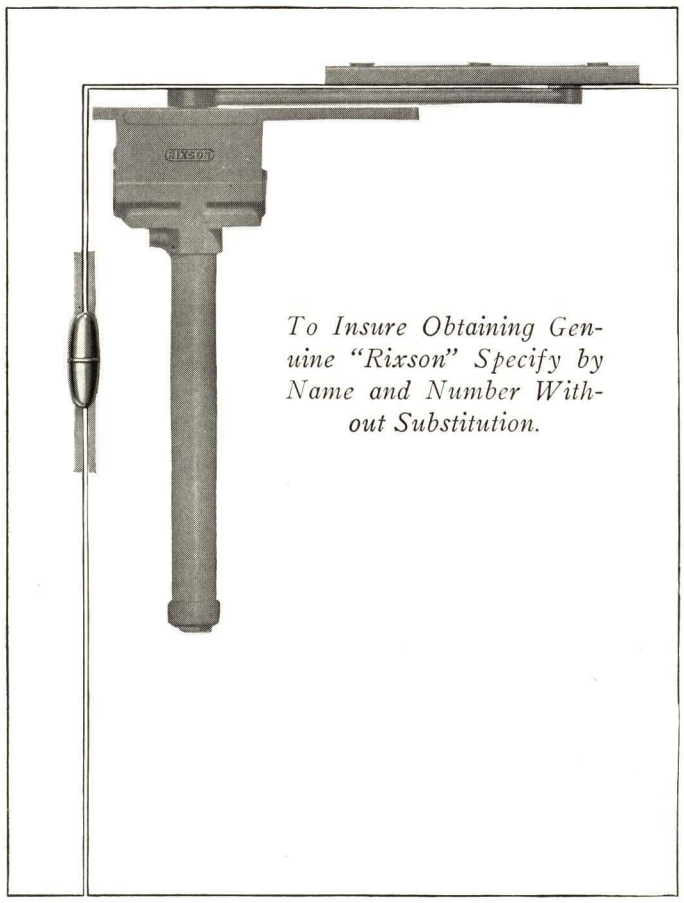
For interior doors only. An overhead concealed door Check designed particularly for hollow metal doors not less than 1½ in. thick. The Check may be installed in wood doors by using side plates. Write for special details. Nothing is exposed on either side of the door.

The Check is constructed of the finest materials. The case and arm are of malleable iron. The spindle, gear teeth, plunger and rack teeth are all of machined steel, hardened. The gear teeth are of special shape to produce great strength.

The Check with regular non-handed arm will permit the door to open to a maximum of 150 degrees. Where 180-degree opening is required a special handed arm is furnished.

The spring power is adjustable. The checking speed is of the two-speed type, controlled by two valves.

See Page 1 for Suggested Specification.

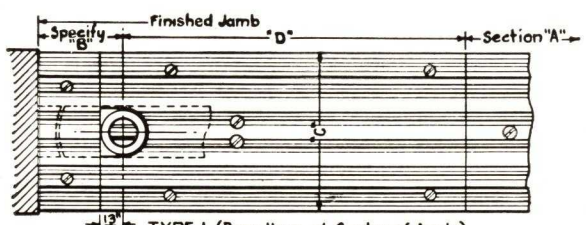


Phantom View of No. 100
(Butt Shown Is Rixson No. 81 Olive Knuckle Hinge)

Blue Print Templates Furnished on Request

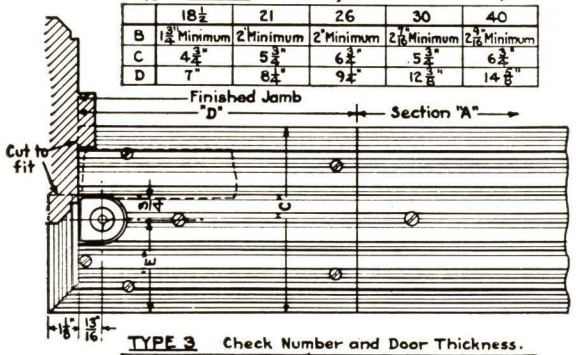
Architectural Bronze and Aluminum—Cast Abrasive Bronze, Aluminum, White Metal and Iron

A symmetrically pleasing design of Threshold adapted for use with Rixson Floor Checks or where floor checks are not used. When considering Thresholds and Floor Checks it is essentially logical to specify Rixson Floor Checks and Rixson Thresholds by number and type, assuring the utmost in satisfaction and quality. This Company being the most successful manufacturer of Floor Checks, and with the longest experience, is eminently qualified to furnish Thresholds as an installation integral with Floor Checks.



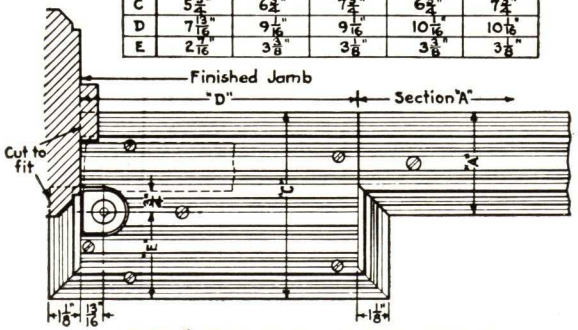
TYPE 1 (Door Hung at Center of Jamb.)

	18½	21	26	30	40
B	1¾" Minimum	2" Minimum	2" Minimum	2 7/16" Minimum	2 9/16" Minimum
C	4¾"	5¾"	6¾"	5¾"	6¾"
D	7"	8¼"	9¼"	12 5/8"	14 7/8"



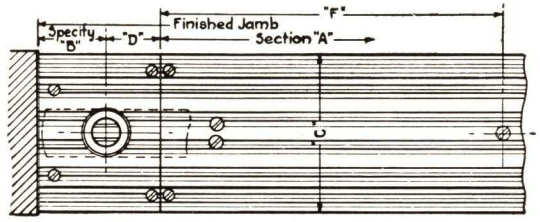
TYPE 3 Check Number and Door Thickness.

	18-1¾ or less	20-1¾ or less	20-3 or less	25-1¾ or less	25-3 or less
C	5¾"	6¾"	7¾"	6¾"	7¾"
D	7 13/16"	9 1/16"	9 1/16"	10 1/16"	10 1/16"
E	2 7/16"	3⅜"	3⅜"	3⅜"	3⅜"



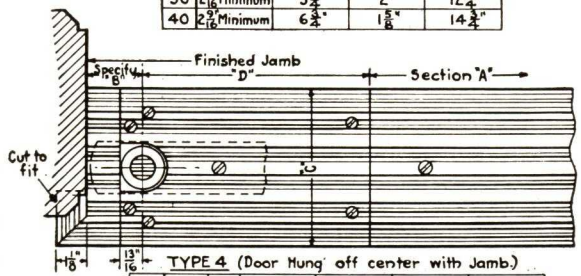
TYPE 5 Check Number and Door Thickness.

	18-1¾ or less	20-2 or less	20-3 or less	25-2 or less	25-3 or less
A	3¾" or 4¾"	3¾"	4¾"	3¾"	4¾"
C	5¾"	6¾"	7¾"	6¾"	7¾"
D	7 13/16"	9 1/16"	9 1/16"	10 1/16"	10 1/16"
E	2 7/16"	3⅜"	3⅜"	3⅜"	3⅜"



TYPE 1A (Door Hung at Center of Jamb.)

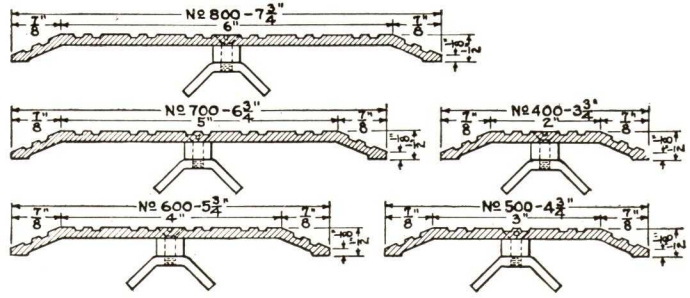
	B	C	D	F
30	2 7/16" Minimum	5¾"	2"	12¼"
40	2 9/16" Minimum	6¾"	1⅝"	14¾"

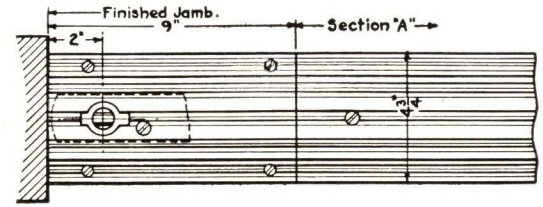


TYPE 4 (Door Hung off center with Jamb)

	18½	21	26	30	40
B	1¾" Minimum	2" Minimum	2" Minimum	2 7/16" Minimum	2 9/16" Minimum
C	4¾"	5¾"	6¾"	5¾"	6¾"
D	7"	8¼"	9¼"	12 5/8"	14 7/8"

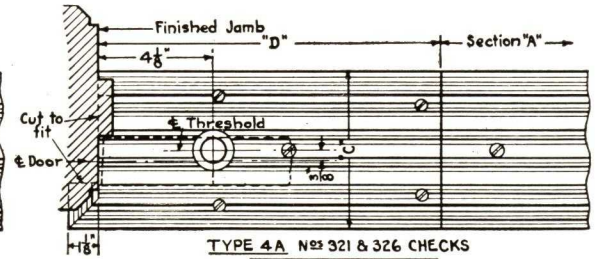
SECTION "A"
When specified with Concrete Anchors – drilled on center line for #12 oval head machine screws.
When specified with Wood Screws – drilled near each edge for 1½" x #12 oval head wood screws.





TYPE 2 (Door Hung at Center of Jamb.)

Junior	10	12	15	16



TYPE 4A Nos 321 & 326 CHECKS

	321	326
C	5¾"	6¾"
D	12 5/8"	13 7/8"

Important

The *Exact Distance* between *Finished Jambs* (not door stops) and between *Check Spindles* and *Finished Jambs* must be specified. We are *Not Responsible* if the length ordered does not fit the opening.

Blue Print Templates Furnished on Request.

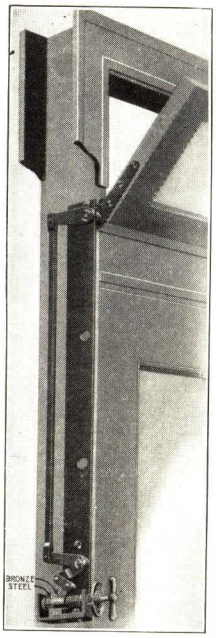
In setting thresholds, the floor checks and cement cases should be at hand. The entire assembly should be blocked up in the door opening so that the check spindles are properly located and the sections of the threshold line up perfectly.

When pouring concrete floors, openings should be left between jambs so that checks and threshold may be grouted in accurately after the finished jambs are in place.

When Type No. 3 or No. 5 is specified the thickness of doors must be given so that the proper width of cover plate can be supplied.

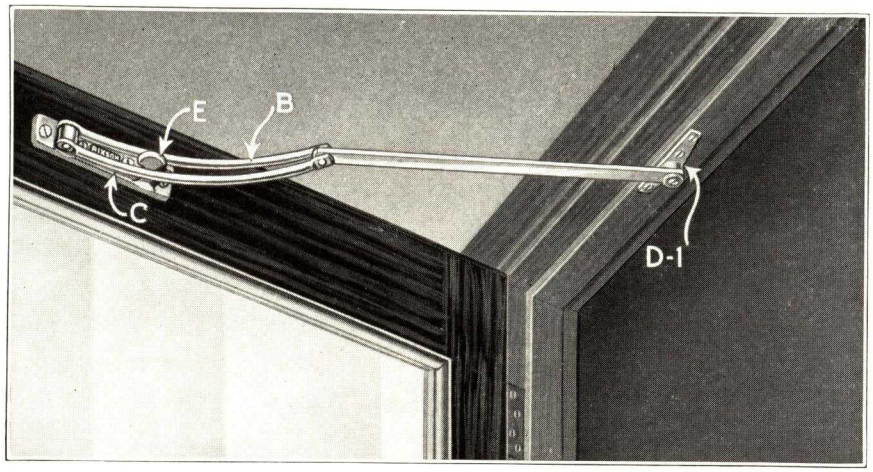
On batteries of doors or where unusual conditions prevail submit drawings for prices.

THRESHOLD SECTIONS—OPERATORS—HOLDERS—STAYS—HINGES



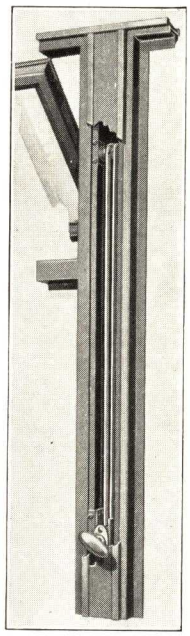
No. 48 Concealed Transom Operator

For wood or metal construction. Only the operating handle is exposed. Can be furnished to operate bottom, top or center pivoted transoms. Recommended for interior transoms. Obtain template information when detailing door jamb



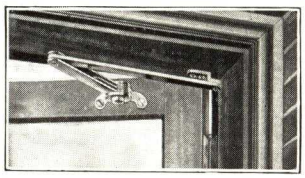
The Rixson Door Stay and Holder No. 38

A holder for heavy traffic single acting doors, particularly those equipped with Rixson floor checks. The hold-open is operated manually. The No. 39 holder is automatic



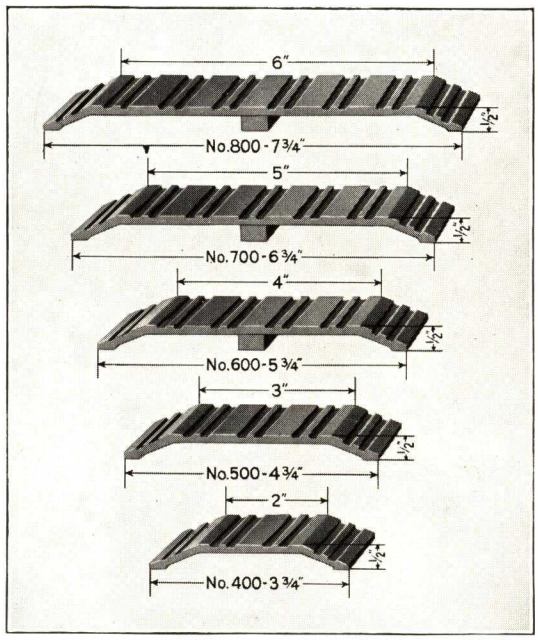
No. 50 Concealed Transom Operator

Especially designed for use in the new hollow metal type of partition where jamb sections are extremely small. It is recommended particularly for center pivoted transoms. Mounting brackets can be furnished to fit most makes of metal partition



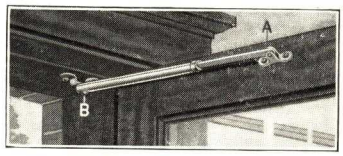
No. 33 Friction Stay

The original jointed friction disc type of holder for casement windows, transoms, etc. Friction adjustment is effected by turning the hexagon head screw



Thresholds

The above sections are used in fabricating Rixson Thresholds

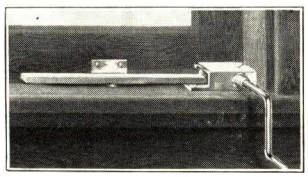


No. 35 Type Casement Holder

An adjustable friction holder of the tubular type. Furnished in brass, bronze or steel. Suitable for casement windows, transoms, etc.

Nos. 2—3 Adjustable Ball Hinges

Sturdy in construction and suitable for large or heavy duty doors. The special ball type of bearing insures long life

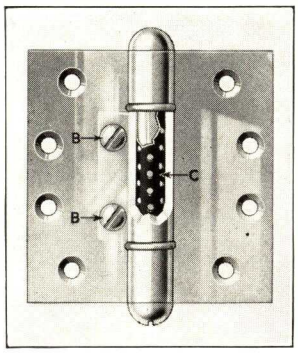


No. 94 Casement Operator

A crank type operator for outswinging casement windows will move window and hold in any desired position without removing screen. The No. 194 is for steel or wood sash.

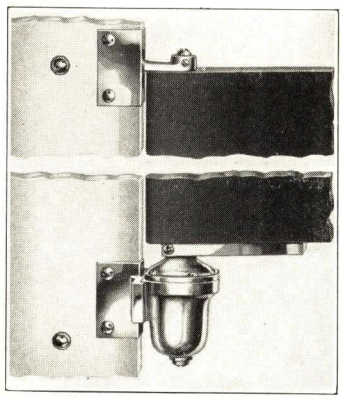
No. 95 Casement operator for highest grade of construction.

No. 93 Casement operator for the moderately priced house.



No. 85 Friction Hinge

Recommended for hospital, hotel and bedroom doors and In-Swinging Casement windows



No. L-1 Single Acting Checking Pivot Hinge

For lavatory doors. It eliminates the possibility of marble or glass partition breakage. The door is under checking control when closing. Other mountings for rail gates, hospital doors, etc.

THE SHELBY SPRING HINGE COMPANY

SHELBY, OHIO

NEW YORK REPRESENTATIVE—Harvey Bronner, 41 Warren St., New York, N. Y.
PACIFIC COAST REPRESENTATIVE—Pond Hardware Specialty Co., 2115 Arapahoe St., Los Angeles, Calif.
PHILADELPHIA REPRESENTATIVE—H. S. Hendrickson, 1015 Chestnut St., Philadelphia, Pa.
BOSTON REPRESENTATIVE—Kenneth H. Bullard, 751 Little Bldg., Boston, Mass.

SHELBY CHECKING FLOOR HINGES

Construction

The working parts of all Shelby Hinges are built of substantially proportioned parts of wrought iron or steel, accurately machined.

The spindles of all, except the smallest hinges, are mounted in ball bearings of suitable size.

Springs are manufactured from the most suitable steel obtainable and are carefully heat treated and tempered.

Checking liquid is non-freezing and meets the requirements of the U. S. Government specification.

Finish

Floor plates, pivots, and the other exposed parts can be furnished in wrought and cast white metal, brass and bronze finished in any of the standard hardware finishes.

Templates

Blue print templates of any of our hinges will be furnished on request.

Catalogue

A complete catalogue will be mailed on request.

Hand of Doors

To determine the hand of single acting checking hinges: stand on the outside of entrance doors, on the corridor side of room doors, on the room side of closet doors.

A door hinged on the right-hand side and opening from you as you enter requires a *right-hand hinge.*

A door hinged on the left-hand side and opening toward you as you enter requires a *right-hand hinge* but a left-hand reverse bevel lock.

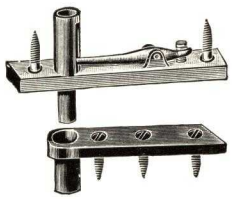
SHELBY DOUBLE ACTING CHECKING FLOOR HINGES NOS. 10, 11 AND 66

For Interior Doors

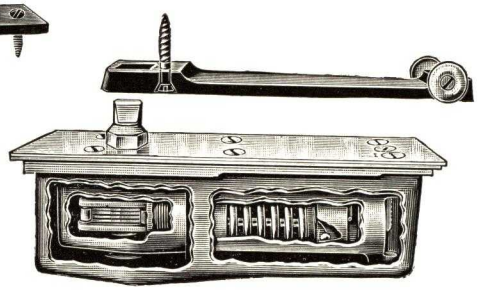
Federal Specification FFH 121: Type No. 3500: Size II, No. 10 and Size III, No. 11

These hinges have cam action with cam of laminated and hardened steel. Compression spring, liquid checking, needle valve speed control, adjustable alignment.

Nos. 10 and 11 Cement Cases are provided with cork gasket to prevent scrub water getting into the case. Holdopen unless non-holdopen is specified. Prices do not include cement case, which can be furnished at additional cost.



No. 1 Pivot



Also made for office and partition gates. Nos. G10 and G11

No. 66 controls double acting doors between those sizes specified for our No. 11 and our No. 22. The top of the spindle is supported by a special anti-friction bronze bearing with graphite treated packing washer. A special valve in the piston acts as relief when the manual force pushing the door is greater than the power of the spring. Uses No. 2 pivot and is furnished non-holdopen unless holdopen is specified and priced with Cement Case.

MAXIMUM DOOR SIZES, WOOD AND KALAMEIN DOORS

Hinge No.	Width	Height	Thickness
10	2 ft. 8 in.	7 ft. 0 in.	1⅜ in.
11	3 ft. 0 in.	7 ft. 6 in.	1¾ in.
66	3 to 4 ft.	7 ft. 6 in.	1¾ in.

HINGE DIMENSIONS

	Part	Length in.	Width in.	Depth in.
No. 10 and No. 11	Floor Plate	9⅜	5	...
	Iron Hinge Case	8⅝	4 5/16	2 11/16
	Cast Iron Cement Case.	9 5/16	4⅝	3
No. 66	Floor Plate	11 11/16	5	...
	Iron Hinge Case	10 13/16	4½	3 1/16
	Cast Iron Cement Case.	11¼	5	3¼

SHELBY DOUBLE ACTING CHECKING FLOOR HINGES NOS. 22 AND 23

For Exterior and Heavy or Wide Interior Doors—Non-Holdopen

Federal Specification FFH 121: Type 3510: Sizes I and II

These hinges have two torsion springs and two checking chambers. Each side of the hinge operates independently from the same spindle or post.

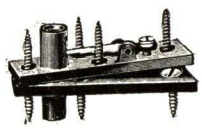
The weight of the door is supported on a forged steel spindle which is seated on ball bearings with special hardened steel ball race.

A new ball bearing device with hardened steel ball race at the top of the spindle takes care of the thrust of the springs. Special bronze bushing and packing about the spindle insures long service and freedom from leakage.

Adjustable spring tension. Closing speed controlled by two needle valves. Top pivot and hinge arm concealed in the edge of the door.

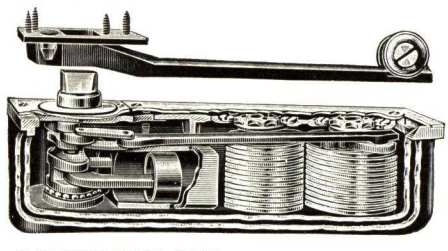
HINGE DIMENSIONS

Hinge No.	Part	Length in.	Width in.	Depth in.
22	Floor plate	14¾	5½	...
	Cast iron cement case	14 9/16	5⅜	3¾
23	Floor plate	17⅛	6⅛	...
	Cast iron cement case	17	6 1/16	4⅛



No. 2 Pivot

With special self-lubricating bronze bearing



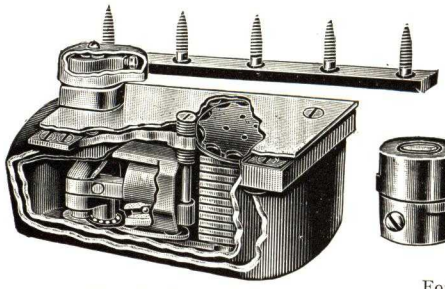
MAXIMUM DOOR SIZES

Hinge No.	Width	Height	Thickness
Interior Doors			
22	For Heavy or Wide Doors		
Exterior and Vestibule Wood and Metal Covered Doors			
22	2 ft. 10 in.	7 ft. 6 in.	2 in.
23	3 ft. 6 in.	7 ft. 6 in.	2½ in.

SHELBY SINGLE ACTING CHECKING FLOOR HINGES NOS. 8, 18 AND 19

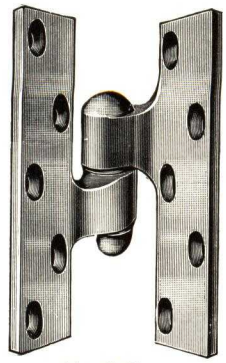
Offset Arm—Torsion Spring Type—For Interior, Entrance and Vestibule Doors—Non-Holdopen

Federal Specification FFH 121: Type No. 3520A: Sizes I, II and III

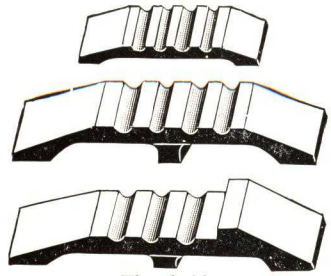


Specify Hand of Door

No. 6 Pivot
For Segment Head Doors Use No. 7



No. 7 Pivot
For segment head doors; or used as an intermediate pivot. Federal specification FFH 121 Type No. 3525



Thresholds

Furnished in bronze, brass, aluminum, bronzobrasive (grit), alumobrasive (grit), for straight thresholds. Thresholds for all types of our checking floor hinges have removable sections over the hinges of same material and design so that the hinges can easily be removed without taking up the entire threshold. Special thresholds with *stop* can be furnished.

Blue prints supplied on request.

These hinges have crank action. Spindle and hinge arm are steel forgings. The weight of the door is carried on a ball bearing with hardened steel balls and raceways.

Will allow door to open to 180° and is self-closing.

Spring tension and speed of closing is adjustable.

Top pivot is a bronze casting with hardened steel pin and has a special bronze self-lubricating bushing.

MAXIMUM DOOR SIZES

Hinge No.	Width
Interior Doors	
8	3 ft.
18	3 ft. 6 in.
Exterior and Vestibule Doors	
18	2 ft. 10 in.
19	over 2 ft. 10 in.

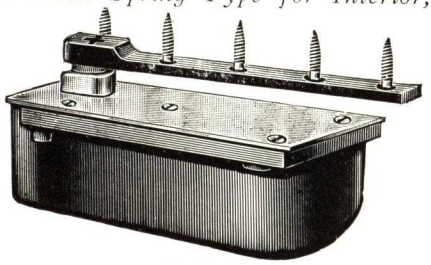
HINGE DIMENSIONS, HINGES NOS. 8, 18, 19, 118 and 119 (See Note)

Hinge No.	Part	Length in.	Width in.	Depth in.
8	Floor Plate	7 3/4	4 5/8	...
	Hinge Case	8 1/4	4 3/16	3 1/32
	Cast Iron Cement Case	8 9/16	4 3/8	3 3/16
18 and 118	Floor Plate	8 13/16	5 1/16	...
	Cast Iron Cement Case	10 9/32	5	3 5/8
19 and 119	Floor Plate	9 7/8	6 1/8	...
	Cast Iron Cement Case	11 1/8	5 7/8	4 1/16

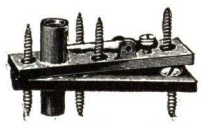
Note: *Nos. 118 and 119 refer to Shelby Single Acting Checking Floor Hinges with offset arm and tapered spindle for heavy doors where vertical adjustment provided on Nos. 18 and 19 is unsatisfactory.*

SHELBY CENTER HUNG SINGLE ACTING CHECKING FLOOR HINGES NOS. C8, C18 AND C19

Torsion Spring Type for Interior, Entrance and Vestibule Doors Hung Without Mullions—Non-Holdopen



Specify Hand of Door



No. 1 Pivot (C8)
No. 2 Pivot (C18 and C19)

Federal Specification FFH 121: Type No. 3520: Sizes I, II and III

These hinges are same construction as hinges Nos. 8, 18 an 19 above, but are applied differently to the door, being "center pivoted." No hardware shows on the face of the door, and the floor plate centers under the door. Prices include cement case.

MAXIMUM DOOR SIZES

Hinge No.	Width
Interior Doors	
C8	3 ft.
C18	3 ft. 6 in.
Exterior and Vestibule Doors	
C18	2 ft. 10 in.
C19	over 2 ft. 10 in.

HINGE DIMENSIONS

Hinge No.	Part	Length in.	Width in.	Depth in.
C8	Floor Plate	8 21/32	4 5/8	...
	Hinge Case	8 1/4	4 3/16	3 1/32
	Cast Iron Cement Case	8 5/8	4 3/8	3 3/16
C18	Floor Plate	10 1/4	5 1/16	...
	Cast Iron Cement Case	10 9/32	5	3 5/8
C19	Floor Plate	11 1/4	6 1/8	...
	Cast Iron Cement Case	11 1/8	5 7/8	4 1/16

SHELBY DOUBLE ACTING GRAVITY HINGES

Wood Heading Nos. G1, G2, G3—Channel Heading Nos. G1½, G2½, G3½

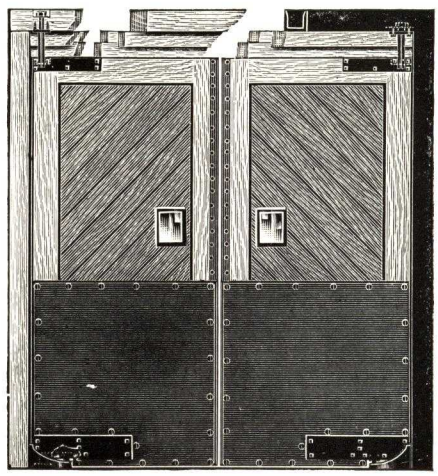
For all kinds of heavy double acting doors in pairs, through which it is desired to push trucks, without first opening the doors.

These hinges are accurately manufactured to template and special attention given to strength.

May be used with either wood or metal frames, as illustration shows, and no special jambs are needed as the weight of the doors rest entirely on the heavy iron floor castings supported by hardened, tapered steel rollers. The top pivot supports no weight.

Hinges are furnished holdopen at 90° but may be easily made non-holdopen either before or after installation.

For doors 1¾ in. thick, wood heading No. G1; structural channel No. G1½.
For doors 1⅞ in. thick, wood heading No. G2; structural channel No. G2½.
For doors 2¼ in. thick, wood heading No. G3; structural channel No. G3½.
Each set packed with all necessary screws, bolts and lag screws.
Shipping weight 78 lbs. per set (set consists of two hinges for a pair of doors).



MEMORANDA

MADE IN U.S.A.
NORTON
MODEL TO REGULATE 1930
USE SCREW NEAREST HINGE

16
34

MANUFACTURING *Exclusively* DOOR CONTROLLING DEVICES . . . .

★DOOR CLOSER DEPENDABILITY. The unanimous verdict of the most discriminating architects, builders, and building superintendents is that the Norton Door Closer is the most practical, mechanically-perfect door closer made. Repeated specifications and orders from the same sources bear out this testimony.

For over fifty (50) years Norton Door Closer Company engineers have been continuously engaged in the design of door closers. Back of them is the largest plant in the world devoted exclusively to the manufacture of door controlling devices — equipped with the most modern precision machinery obtainable.

Norton engineers are door closer specialists. Their advice and recommendations are available at any time for the satisfactory solution of unusual problems.

★NORTON RESPONSIBILITY ONLY BEGINS WITH THE SHIPMENT TO THE JOB. Every Norton representative is a factory trained specialist in door closer application and operation. Invariably, as soon as installations are completed, each closer is inspected and tested by an experienced Norton representative to check and verify the closing operation and make sure that spring tension and regulation are correct for the particular door equipped.

This unique service policy is a part of every sale and is available to every customer. It is never left to chance or special demand. When the order is placed, this inspection and adjusting service is assured.

Norton Door Closer installations are covered by a two (2) year guarantee — see page 10.

★THERE ARE SIX DIFFERENT SIZES OF NORTON DOOR CLOSERS. Norton Door Closers are made in six different sizes, each designed to properly control the size of door for which it is recommended. Under normal conditions, where no excessive draft exists, the following may be used as a guide to the correct size:

Size A — Ordinary screen doors or light interior doors — 2 ft. 6 in. x 6 ft. 6 in. x 1⅛ in. or smaller.

Size B — Heavy screen doors — 3 ft. x 7 ft. x 1⅜ in.; and light interior doors — 2 ft. 8 in. x 7 ft. x 1⅜ in.

Size C — Corridor or office doors — 3 ft. x 7 ft. x 1¾ in.; and light exterior doors — 2 ft. 6 in. x 7 ft. x 1¾ in.

Size D — Exterior doors — 3 ft. x 7 ft. x 2¼ in.; and heavy interior doors — 4 ft. x 7 ft. x 2¼ in.

Size E — Heavy exterior doors — 3 ft. 6 in. x 7 ft. 6 in. x 2¼ in.; and heavy interior doors subject to strong drafts.

Size F — Extra heavy entrance doors of unusual height or width, doors with heavy glass panels and doors subject to strong drafts require one size larger closer than recommended above.

NORTON PRODUCTS

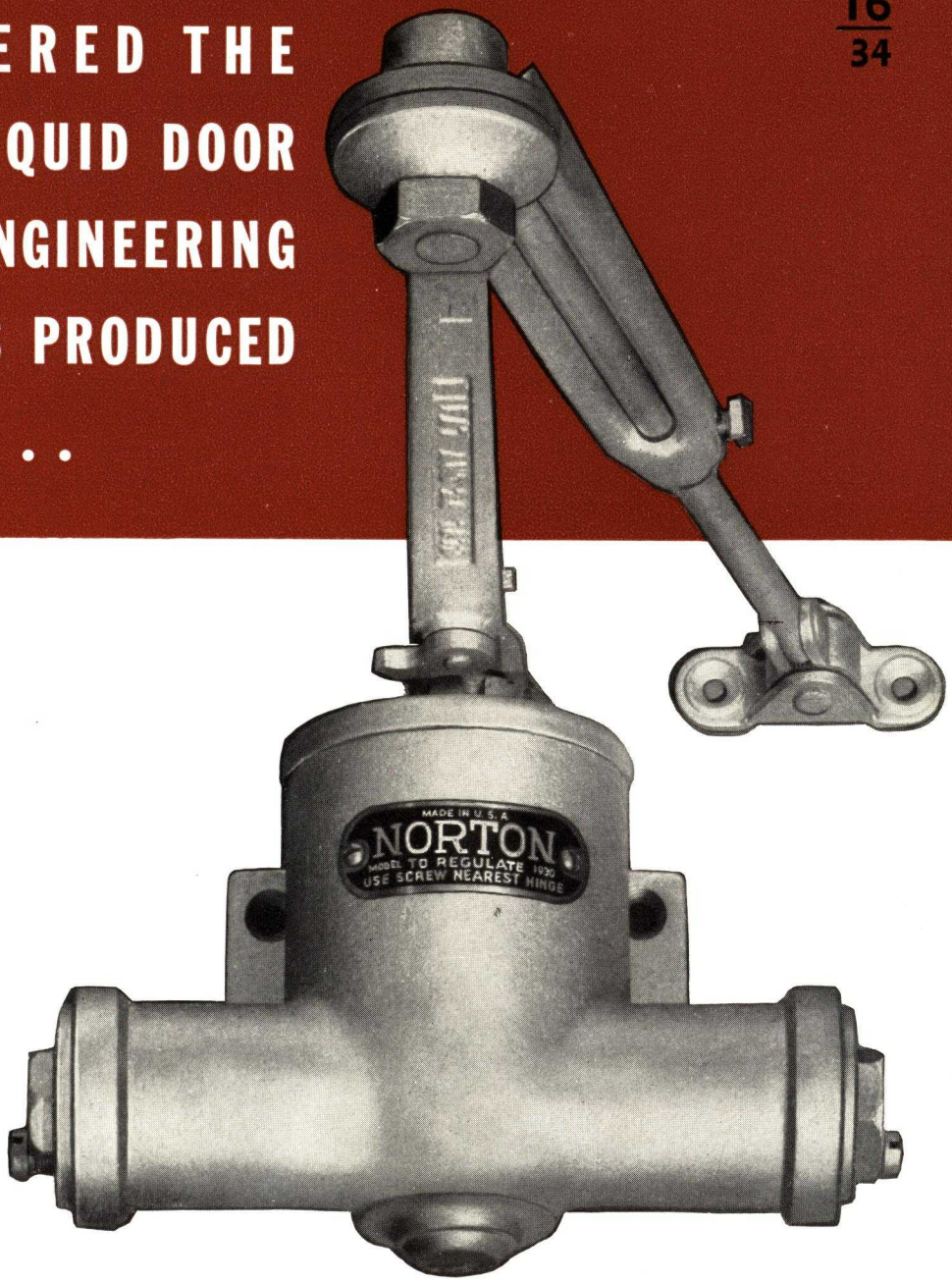
In most of these six standard sizes the Norton Door Closer Company manufactures several types of closers and accessories for special purposes as follows:

	Page
Brackets	10
Coupon Booth Closers	7
Door Closers	2-5
Double Door Holder Arms	10
Fire Door (Fusible Link) Closers	8
Holder Arms	6
Hospital Closers	6
Parallel Arm Closer	9
Screen Door Closers	9
Sliding Gate Closers	9
Telephone Booth Closers	7

Specify DOOR CLOSERS AS A *Special* HARDWARE ITEM

Door closers are a highly specialized mechanical device and have nothing in common with the ordinary trim hardware (butts, locks, latches, escutcheons, knobs, etc.). Their selection merits the same special attention and analysis given mechanical equipment used elsewhere in the building. Fair cost comparisons measured in terms of mechanical accomplishment (courted by Norton) are only possible where they are specified as a separate item (see page 10) divorced from the usual hardware trim list.

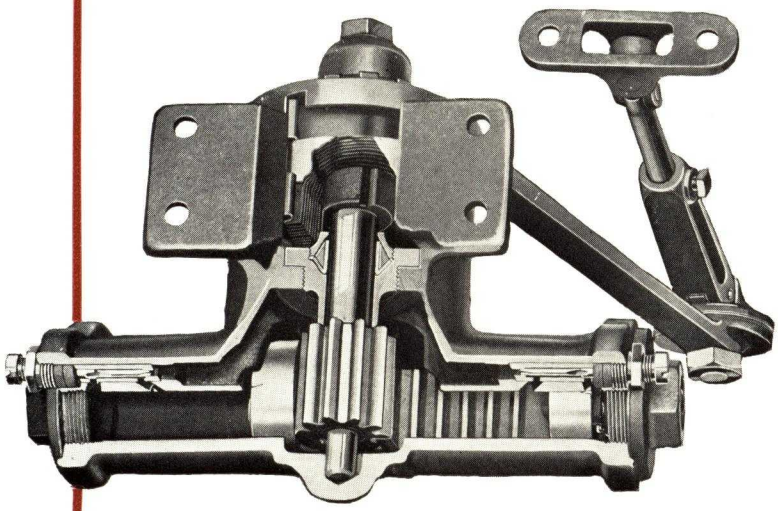
CONSIDERED THE FINEST LIQUID DOOR CLOSER ENGINEERING SKILL HAS PRODUCED TO DATE...



★ Mechanically the Norton Door Closer is as perfect as specialized engineering skill and fifty years of door closer experience can make it. All internal working parts and the end plugs are of steel, all machined to a high degree of accuracy and precision. Only two gray iron parts are used in the entire closer — the shell of special analysis gray iron and an iron ratchet.

There are a number of important individual features that only Norton offers, such as the use of mineral oil for checking and lubrication, a new packing nut that is absolutely guaranteed against leakage, and the Norton Rack and Pinion principle which positively holds the door under control every inch of the closing arc.

TESTED AND APPROVED BY THE NATIONAL BOARD OF FIRE UNDERWRITERS



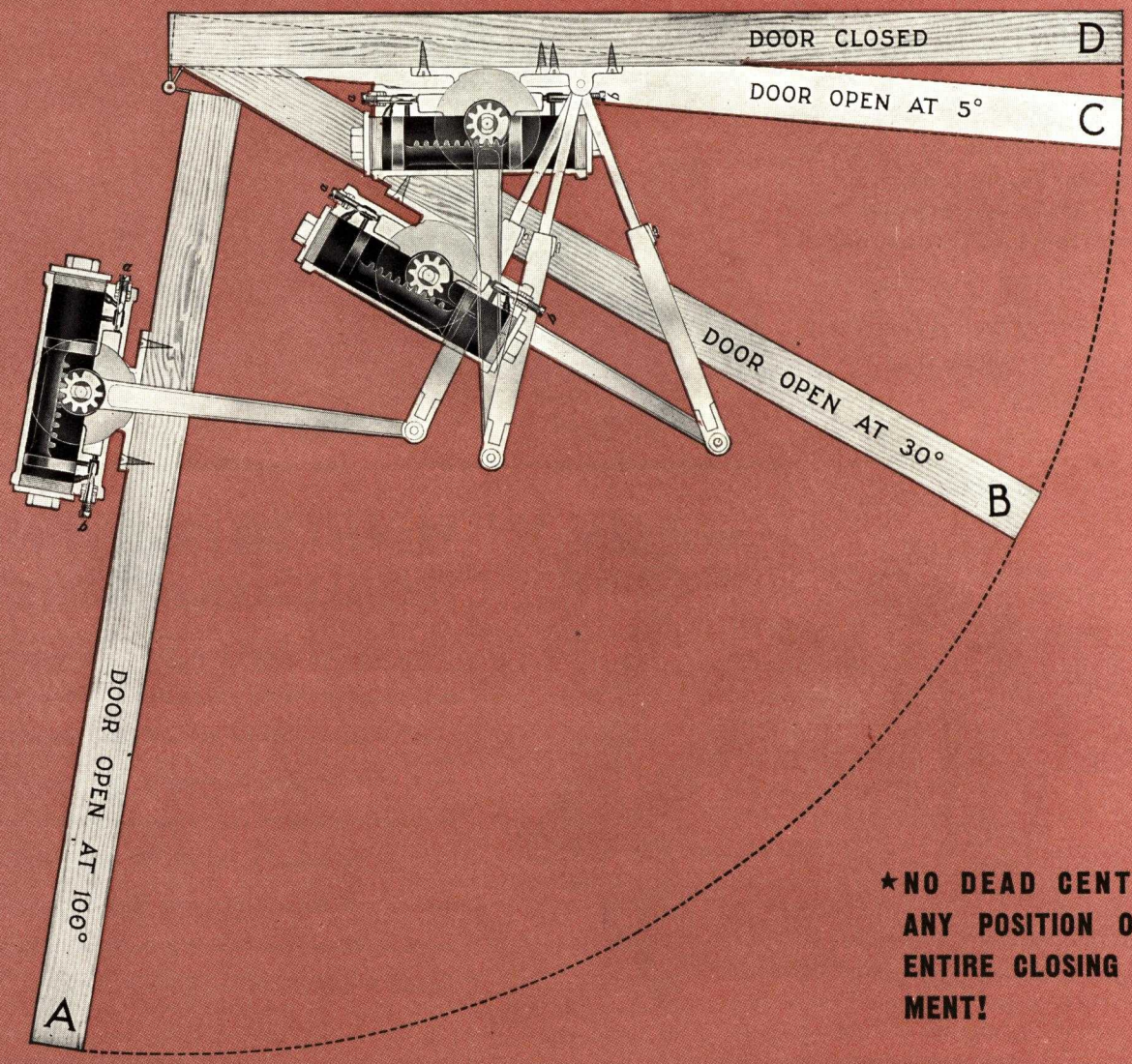
THE RACK AND PINION PRINCIPLE PROVIDES ABSOLUTE CONTROL...

The Norton Rack and Pinion principle, with two-speed control, holds the door under absolute control from start to finish of the closing operation, and provides a separate "slow or fast" adjustment at the latch required for noiseless closing. No other principle of design can so well accomplish these objectives. This cut-away illustration shows the working principles and assembly of the Norton rack and pinion design.

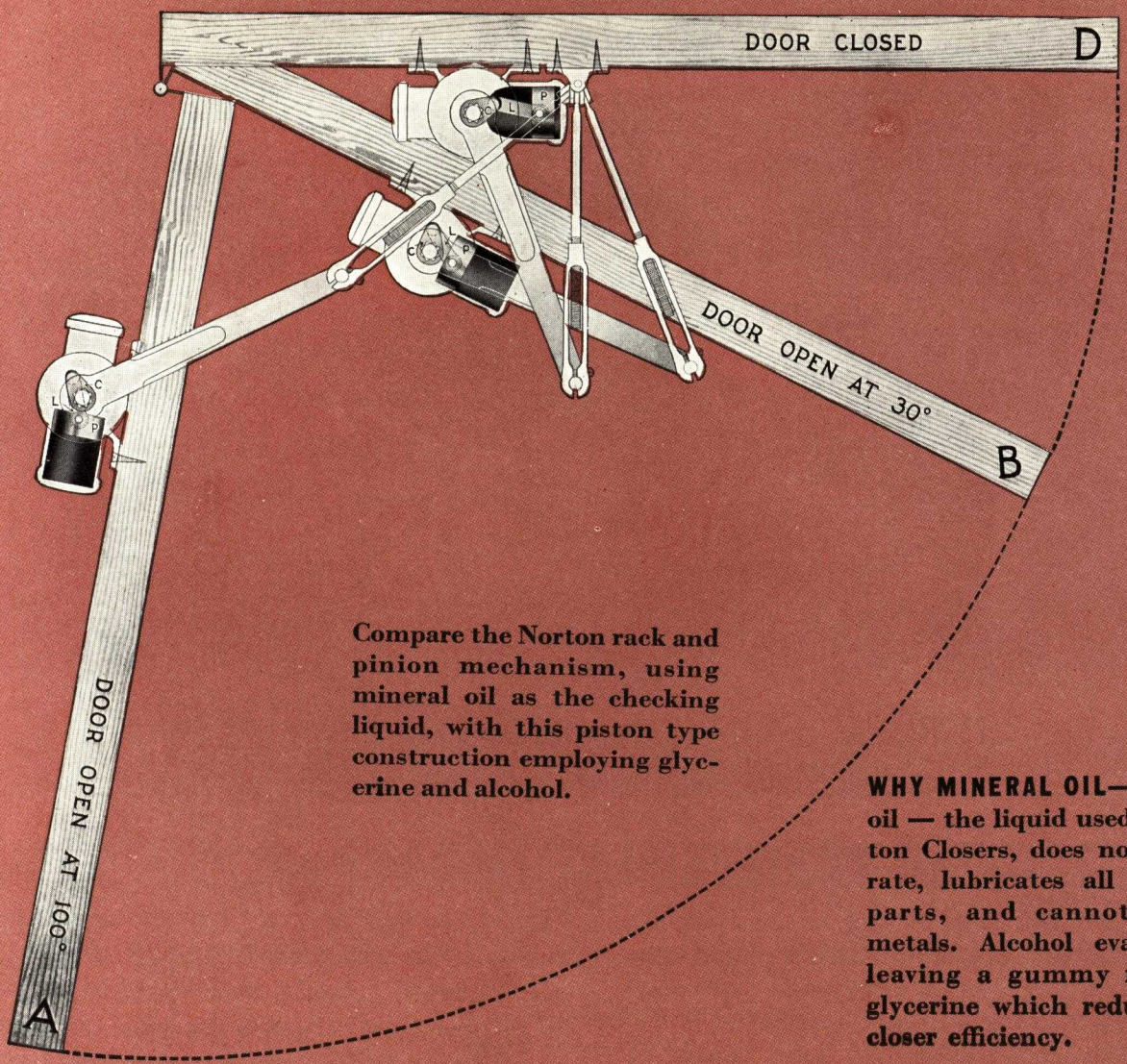
THE *Norton* RACK AND PINION PRINCIPLE GUARANTEES POSITIVE CONTROL AT EVERY POINT

The Norton Rack and Pinion principle, with two speed control, positively holds the door under absolute control through the entire closing movement. It provides a separate adjustment at the latch, slow or fast, for noiseless closing or overcoming the many latch and draft conditions encountered in service.

In this rack and pinion type the piston is moved back and forth by a pinion working in a rack. There are no dead centers—the piston moves at uniform speed from "A" to "C". The instant the door starts to close the checking begins controlling the movement of the door at any speed desired. At "C" the speed can be regulated to "fast or slow" by the adjusting screw nearest the hinges. This two speed action is secured by one regulating screw combined with the rack and pinion movement. The Norton Closer, with its special process tempered steel spring, causes NO STRAIN ON HINGES AND DOORS.



★NO DEAD CENTER AT ANY POSITION OF THE ENTIRE CLOSING MOVEMENT!



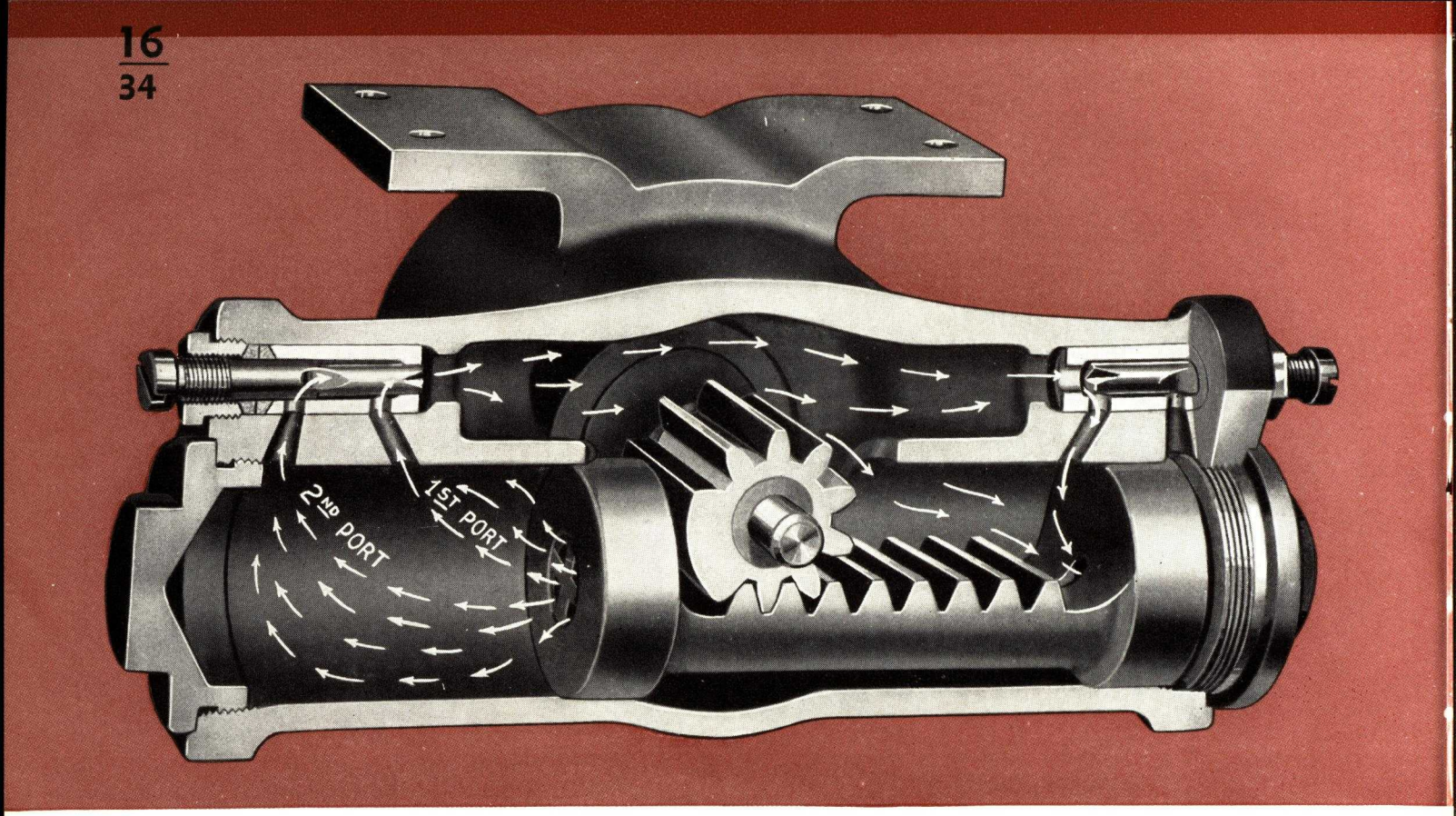
Compare the Norton rack and pinion mechanism, using mineral oil as the checking liquid, with this piston type construction employing glycerine and alcohol.

WHY MINERAL OIL—Mineral oil — the liquid used in Norton Closers, does not evaporate, lubricates all working parts, and cannot injure metals. Alcohol evaporates, leaving a gummy mass of glycerine which reduces the closer efficiency.

THE CRANK STYLE OF DOOR CLOSER GIVES ONLY PARTIAL CONTROL

Quarter Check Efficiency

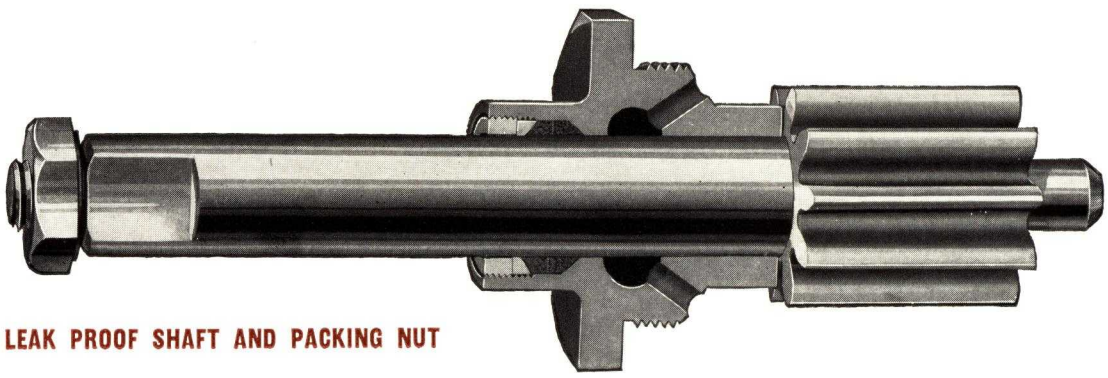
The crank style door closer controls the door from points B to D only. Here the piston is moved back and forth in the cylinder by a crank and link. "P" is the piston, "L" the link, "C" the crank. The employment of the crank style principle results in but slight movement of the piston at two dead center points — when the door is opened about 30 degrees to "B", the piston is drawn to full length of its stroke and when closed from "A" to "B" — there is no checking as the crank goes over the dead center point. Checking is actually confined to the distance between "B" and "D" and less effectively near "D". This brings great strain on hinges and doors.



THE CROWNING ACHIEVEMENT IN DOOR CLOSER DESIGN

Here are illustrated the exclusive features of the Norton Door Closer construction. Shell of special analysis, annealed gray iron, strong and non-porous—all internal working parts and end plugs of steel — actuating spring of special process tempered spring steel, powerful, flexible, and non-breakable—arms of certified malleable iron — accurate machining to less than one thousandth of an inch. A special, high grade mineral oil is the checking liquid — it constantly lubricates vital working parts — its flow is illustrated above.

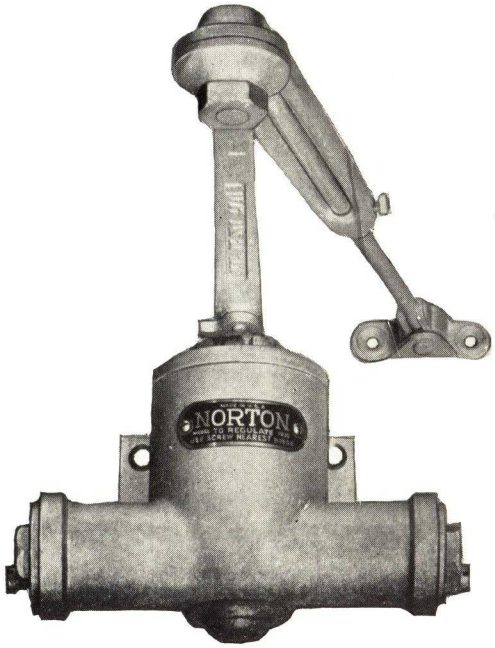
The Norton crowning achievement is the successful, non-leak feature. Oil, acknowledged to be the ideal checking liquid, is difficult to retain under pressure. This is accomplished by the Norton time-tested shaft and packing gland construction shown below. Accurate machining holds the maximum clearance between shaft and bearing to .00125 of an inch — just sufficient to allow oil to pass for lubrication. This oil is collected in globules in the reservoir above the bearing and returned to the piston chamber through drip holes — it cannot climb above the reservoir because capillary attraction is broken at this point. The soft leather packing is used only to prevent leakage in case the closer is inverted in shipping and handling.



NORTON LEAK PROOF SHAFT AND PACKING NUT

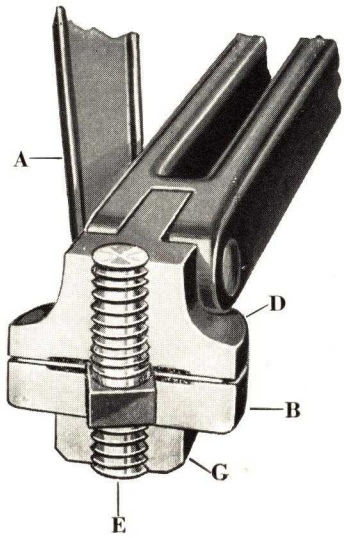
THE NORTON HOLDER ARM

May be set to hold the door open at any angle



For ordinary use, this closer controls the door in exactly the same manner as the regular arm closer; but because of a difference in the arm construction, it also holds the door open when desired. It may be easily released by giving it a slight pull. The arm can be regulated to hold at any point up to a 135° opening. For 135° to 180°, a slightly different arm is used which operates the same way.

When the door is opened, the main arm "A" prevents the jack-screw "E" from turning because of the square shank. At the same time the motion of the arms forces the holder head "D" to screw down on the jack-screw. That brings the surface of "B" and "D" together and the friction between them holds the door open. To prevent any possibility of "freezing" due to corrosion should the door be held open for long periods, a brass non-corroding disc is inserted between them. The point at which the door is held open is easily determined by adjusting the nut "G." This feature is valuable for entrance doors and doors to auditoriums, gymnasiums, and class rooms, and practically all public building doors.



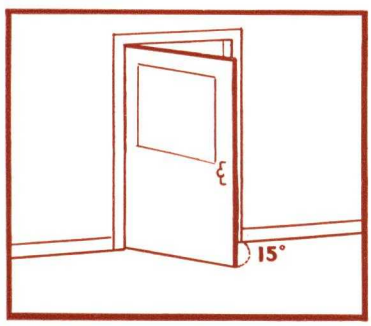
And for Hospital Service:

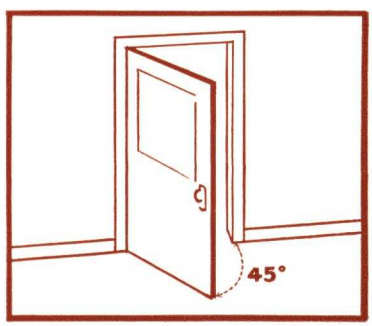
THERE IS THE NORTON 3 POINT HOLDER CLOSER

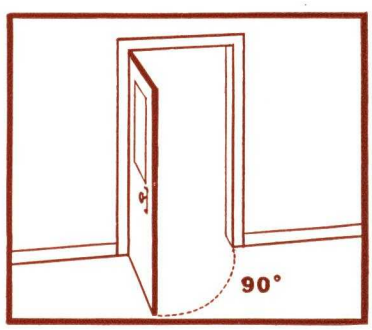
This closer is a variation of the famous Norton Holder Arm Closer and its control of doors held open at various degrees is illustrated in the three sketches below.

This special Norton Holder Closer operates as a regular closer, smoothly and quietly, but it also holds the door open at three points. The advantages for hospitals are apparent. When the door is pushed back, the unhampered passage of various hospital wheeled equipment is permitted. When a partially closed door is desired to provide whatever degree of ventilation or privacy is needed, the Norton Three Point Holder Closer holds the door at either of the other two positions illustrated.

Such outstanding features of convenience have built leadership for the Norton Door Closer. Each individual closer has its special service to perform and should be carefully selected in order to get the most efficient operation.



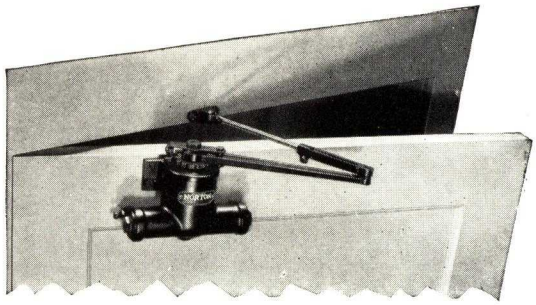




NORTON TELEPHONE AND COUPON BOOTH DOOR CLOSERS

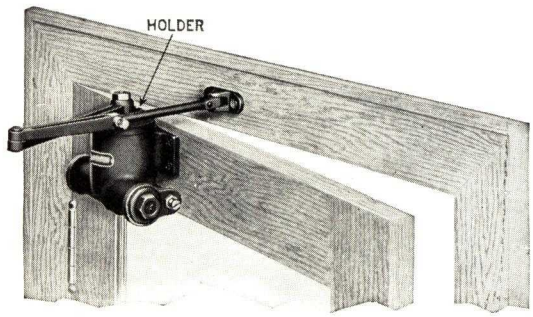
★COUPON BOOTH DOOR CLOSER

The function of a coupon booth closer is to close the door securely while the booth is occupied to insure privacy and to keep it closed after the user has departed to protect anything that might have been left by mistake in the booth. After the guard has unlocked and inspected the booth, he opens the door a few inches and the closer holds it there to ventilate the booth and indicate a vacancy. This closer operates like the Three-Point Hospital Holder Closer except that it holds the door at one point only.



★TELEPHONE BOOTH DOOR CLOSER

Every time the booth is used this closer returns the door to position about three or four inches from the jamb. This aids in ventilation and minimizes danger of damage from careless handling. The construction of this special feature is very simple. As the door nears the jamb, a pin in the cover catches a similar pin in the ratchet and checks the spring power. Then the inertia of the liquid in the closer stops the door and holds it there until the occupant pulls the door shut. The door cannot be slammed shut because the regulating screw controls the motion whether the operation is by the spring or by hand. We supply, without extra cost, a back check which controls the door so that it cannot be thrown back against a wall or door of another booth.



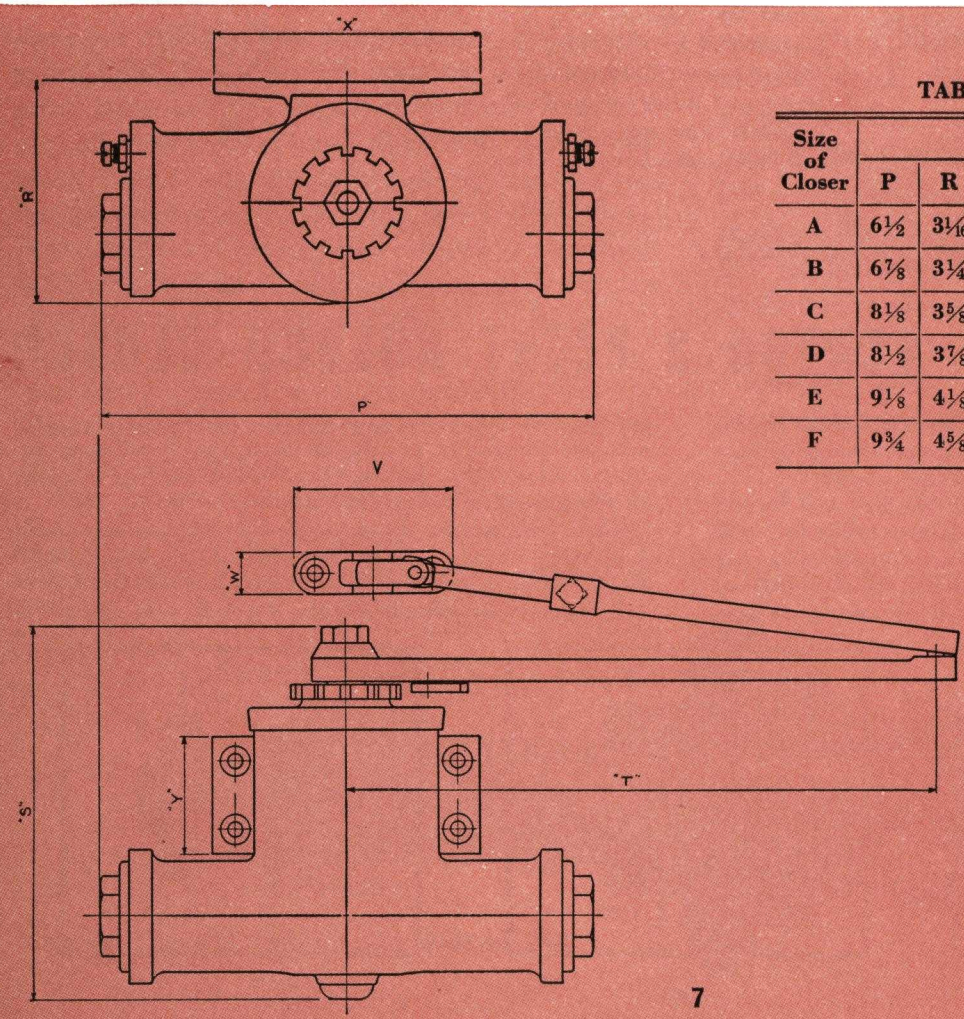


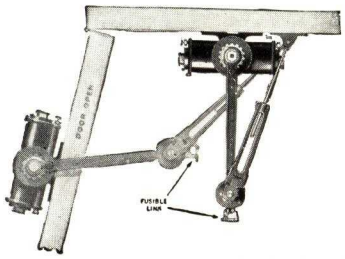
TABLE OF DIMENSIONS

Size of Closer	Dimensions							
	P	R	S	T	V	W	X	Y
A	6½	3 1/16	4⅞	8	2 5/16	1 1/16	3⅜	1½
B	6⅞	3¼	5½	9	2 5/16	1 1/16	3 15/16	1¾
C	8⅛	3⅝	6¼	9¾	2 7/16	1 1/16	4 7/16	1 15/16
D	8½	3⅞	6⅞	11	2 7/16	1 1/16	4⅞	2¼
E	9⅛	4⅛	7 7/16	12	2⅝	¾	5¼	2⅜
F	9¾	4⅝	8¼	13	2⅝	¾	5¾	2⅝

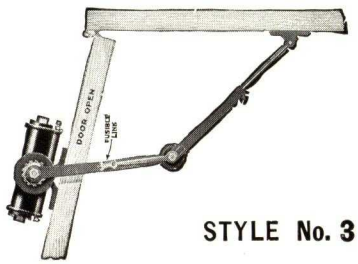
★ *always specify Norton Door Closers . . . they cost no more than ordinary crank style closers!*

NORTON FUSIBLE LINK ARMS *Simple and Unfailing*

GIVE POSITIVE AND UNFAILING PERFORMANCE IN ANY EMERGENCY



STYLE No. 5



STYLE No. 3

STYLE NO. 5

The Fusible Link Arm consists of two clamps and a fusible link which are assembled on a variation of a regular Norton Holder Arm. The clamps when closed put the adjusting nut in position to set the Door Closer arms at any desired angle. As the link fuses, the clamps fly apart so that the holder feature releases and the door closes under the pressure of the spring in the closer. In normal operation the arm looks like the regular Norton Holder Arm with the addition of a small, inconspicuous fusible link near the outer edge. When the holder is in use, the fusible link is in position directly in the door opening where an increase in the temperature (160°) will quickly fuse the link and release the holder arm, closing the door and preventing the further spread of the fire.

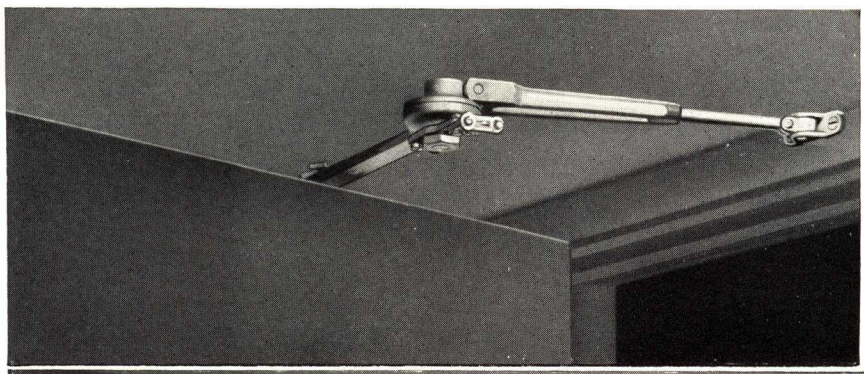
This style, tested and approved by the National Board of Fire Underwriters, can be set to hold the door in any predetermined position up to 135°. It requires only a slight push or pull to operate and is very simple. Made in four sizes—C, D, E, and F—in both regular and key types.

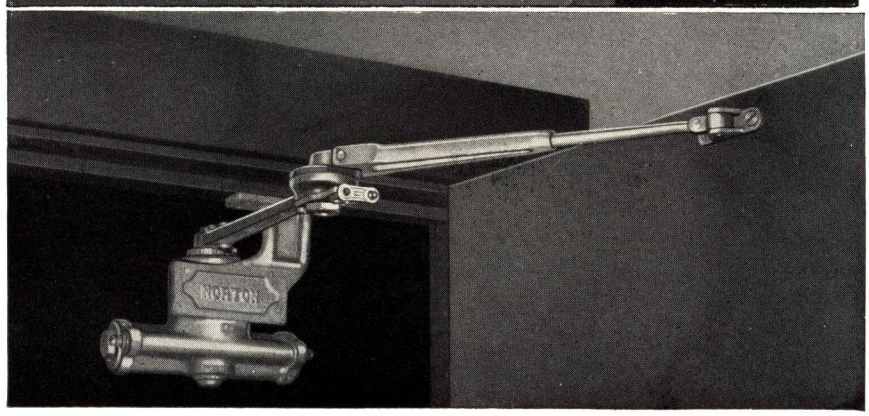
STYLE NO. 3

Style No. 3 is not approved by the National Board of Fire Underwriters. The arms are not reversible and it is necessary to specify the hand of the door and also whether or not the closer is to be used on a bracket. Standard arms permit opening to 135° and special arms to 180°.

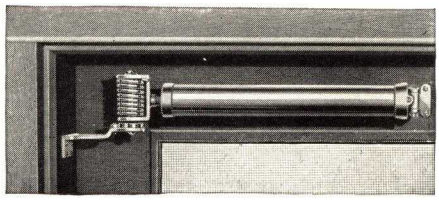
BOTH STYLES OF FUSIBLE LINK ARMS CAN BE USED ON EITHER SIDE OF DOORS

We illustrate Norton Door Closers with Style No. 5 Fusible Link Arms installed on either side of the door. No. 3 can be used in a similar manner with all the advantages of the standard Norton Door Closer. The door is under complete control from the moment it is released until it is fully latched so that there is no uncontrolled rush with a sudden, jerking stop. By the use of only one regulating screw the closing motion can be changed to meet a great variety of conditions.

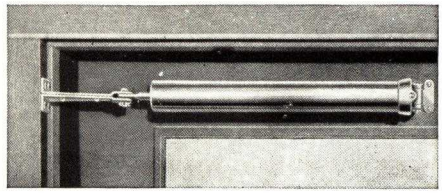




★NORTON SCREEN DOOR CLOSERS . . . . . .



Two No-Slam Devices that will stand hard usage



NO. 4 CLOSER

NO. 04 CLOSER

THE NO. 4 Norton Screen Door Closer is strongly built to function over a long period of time. Made with seamless brass, the tube will not rust.

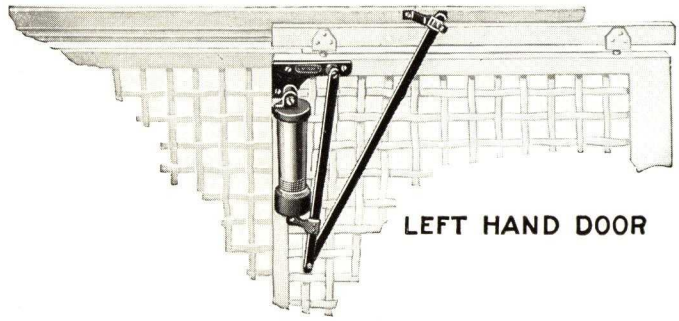
The bracket, spring holder, and hinge plate are of heavy steel stampings which will not break. The piston is constructed with a spring to hold the cup leather washer against the side walls. This assures checking at all times. It is packed in individual cartons with full instructions for applying.

THE NO. 04 is a fine closer in the lower price class.

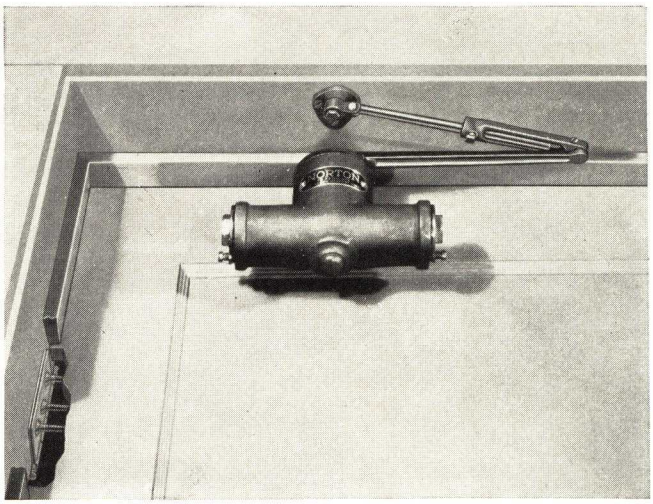
The same expert workmanship goes into the manufacture of the new Norton No. 04 Screen Closer as in the Norton No. 4. The same size cylinder is used and is made of seamless brass also. No. 04 conceals the spring in the cylinder. The leather washer inside the closer is one piece of carefully selected leather. It is offered at a surprisingly low price; packed in individual cartons with full instructions for applying. (To be installed on opposite the hinge side of door only.)

★SLIDING GATE CLOSER . . .

The Norton Sliding Gate Closer for a sliding gate or door was designed for bank cage doors and sliding doors in offices where the gates must lock when the teller or clerk leaves the cage. Regular finish is gold bronze. Size No. 1 is for light grille gates, two to three feet wide weighing less than 100 lb. No. 2 size is for doors and heavy bar gates two to three feet wide weighing more than 100 lb. In ordering, give size, style of track, and state hand of door.



PARALLEL ARM CLOSER AND AUTOMATIC DOOR AND WINDOW HOLDERS



This type of installation is used when there is not room between two doors for the closer with the arm in the usual position. It can also be used when there is not enough head room for the closer to be installed on a bracket.

We do not recommend the use of parallel arm closers when it can be avoided. Because of the way the closer has to operate, it cannot possibly give as satisfactory performance as when installed normally. There are two ways of making this installation — one for 90° opening and another for 180° opening. The 90° installation gives fairly satisfactory performance and can be used wherever there is room between the doors for the closer itself. (See table of dimensions on Page 7.) The 180° installation has much less power and control, and a size larger closer should be used than would normally be used on a door of that size and location.

DOOR HOLDERS—Norton Door Holders operate on the same principle as the Norton Holder Arms but in this case no closers are used.

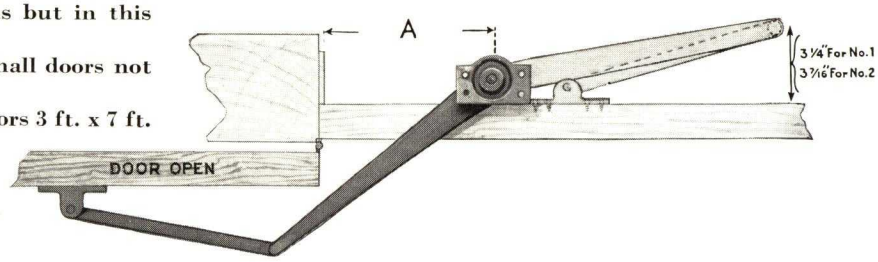
SIZE NO. 1—Suitable for windows and small doors not over 2 feet wide.

SIZE NO. 2—Suitable for windows and doors 3 ft. x 7 ft.

Base plate 1½ in. wide.

To open 90°, dimension A for size No. 1—6 in.; for size No. 2—9 in.

To open 180°, dimension A for size No. 1—4½ in.; for size No. 2—6 in.



NORTON HOLDER ARMS FOR DOUBLE DOORS WITH SOFFIT POSTS AND HINGE SIDE BRACKET

The Holder Arm with Soffit Post Bracket is designed for use on the standing door of a pair of doors. The appearance is similar to that of the operating door which is equipped with a Norton Holder Arm Closer on a soffit bracket.

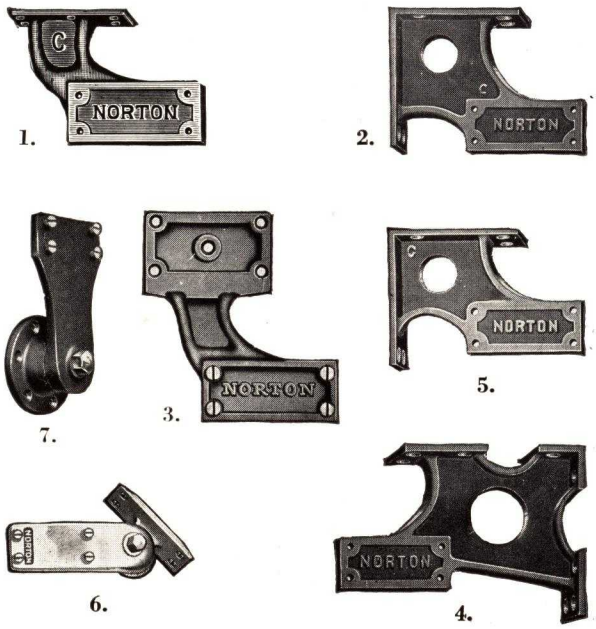
This type of equipment is especially useful on doors to auditoriums and gymnasiums. While a crowd is entering, the operating door only is open and is held open by the holder arm on the closer. While the crowd is leaving, both doors are open and are held in position by the holder arms.

When the closer and arm are to be put on the hinge side of the doors, an arm with a hinge side bracket is furnished.

★ NORTON BRACKETS

The Norton brackets have been built to accommodate all door conditions. Special brackets are made to order.

1. SOFFIT BRACKETS—For use where there is room on the overhead jamb. This places the door closer to best advantage.
2. CORNER BRACKETS — Used only when door opens to 180° or when the head room is too low.
3. FLUSH BRACKETS — Used when the soffit (or jamb) is not wide enough to receive a soffit bracket.
4. EXTENSION CORNER BRACKETS — Used with Holder Arm Closers when extra rigidity is desired.
5. G.J. CORNER BRACKETS —Used to avoid interference with separate door holders.
6. ADJUSTABLE BRACKETS —Used for circular top doors when the closer is placed on opposite the hinge side of the door.
7. OFFSET BRACKETS — Used for circular top doors when the door closer is placed on the hinge side of the door.



★ GUARANTEE

We guarantee perfect operation of Norton Door Closers for two years providing proper recommended sizes are used. Defects in workmanship or material appearing during this period will be promptly rectified.

★ DOOR CLOSER SPECIFICATIONS

Door closers shall be rack and pinion type. Where required, they shall check the door in its opening swing. Rack and pinion shall be of cold rolled steel. Actuating spring shall be of flat motor clock type. Checking liquid shall be non-evaporating mineral oil of stabilized viscosity.

Holder Arm Closers, where used, shall be friction type with non-corrosive brass washer between discs. On completion of the installation, final adjustment of all closers shall be made by the manufacturer's factory representative. Closers shall be covered by a two-year factory guarantee.

NORTON

DOOR CLOSER

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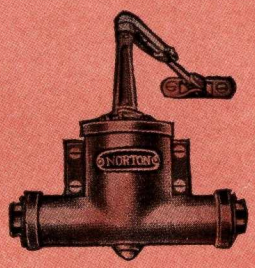
https://archive.org/details/buildingtechnologyheritagelibrary



MADE IN A PLANT THAT IS DEVOTED EXCLUSIVELY TO DOOR CLOSER PRODUCTION

★

GUARANTEED FOR TWO YEARS

★

COSTS NO MORE THAN ORDINARY CRANK STYLE DOOR CLOSERS

★

SERVICE IS UNEQUALLED

NORTON DOOR CLOSER COMPANY

Division of the Yale & Towne Manufacturing Company

GENERAL OFFICE AND PLANT

2900-2918 North Western Avenue, Chicago, Ill. • Cable Address: "NODOCO, Chicago, Ill." Bentley Code

BRANCH OFFICES

Norton Pacific Sales Co., San Francisco, Calif. • Norton Door Closer Co., New York, N.Y.

Representatives in All Principal Cities

SECTION 16

CONTINUED ⟶

NORTON LASIER COMPANY

MANUFACTURERS OF

LCN Overhead Concealed, Floor Type Concealed and Standard Surface Type Door Closers

TELEPHONE
Superior 7108

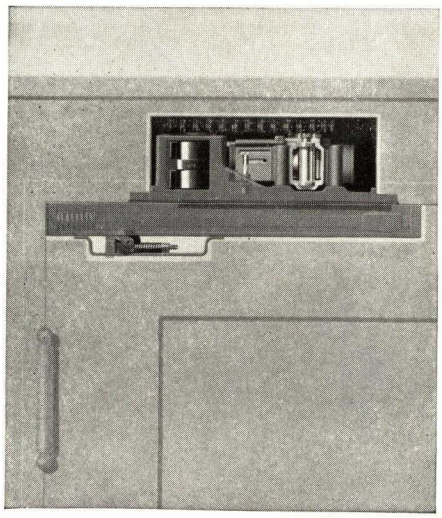
466 West Superior Street, CHICAGO, ILLINOIS

SALES AND SERVICE REPRESENTATIVES

AUBURN, Progressive Sales Agency
P. O. Box 157, Auburn, N. Y.
BOSTON, C. E. Harris
99 Bedford St., Boston, Mass.
BUFFALO, Wm. Royce Luxford
Pinehurst, Lakeview, N. Y.
CLEVELAND, The Gesing Company
Terminal Tower Arcade, Cleveland, Ohio
COLUMBUS, Paul E. Lehman
P. O. Box 32—Station B, Columbus, Ohio
DALLAS, J. H. North
1002 Woodlawn Ave., Dallas, Tex.
DENVER, L. E. Cleavinger
509 Charles Bldg., Denver, Colo.
DETROIT, Brown-Darnell Company
1046 Holden Ave., Detroit, Mich.
HARRISBURG, C. H. Speers
208 W. Maplewood Ave., Mechanicsburg, Pa.
KANSAS CITY, Fred B. Kennedy
1200 Oak St., Kansas City, Mo
LOS ANGELES, R. R. Moss
405 So. Hill St., Los Angeles, Calif.
MIAMI BEACH, Gilbert A. Viola
1542 Drexel Ave., Miami Beach, Fla.
MINNEAPOLIS, A. N. Stark
205 Lumber Exchange Bldg., Minneapolis, Minn.
NEW YORK, Door Hdw. Equipment Co.
11 Warren St., New York, N. Y.
OMAHA, S. M. Hawkins
P. O. Box 300, Omaha, Neb.
PHILADELPHIA, J. E. Leonard
2402 Market St., Philadelphia, Pa.
PITTSBURGH, E. D. Randolph
P. O. Box 6332, N. S. Station, Pittsburgh, Pa.
PORTLAND, J. C. Hertsche
3707 N. E. 24th Ave., Portland, Ore.
ST. LOUIS, Franks & North
J. T. North, 4171 Flad Ave., St. Louis, Mo.
SALT LAKE CITY, W. L. Glade
1421 Sherman Ave., Salt Lake City, Utah
SAN FRANCISCO, D. A. Reade
420 Market St., San Francisco, Calif.

LCN OVERHEAD CONCEALED DOOR CLOSER

Nos. 202-204-206



Completely concealed in the head jamb and door, this arrangement of the dependable LCN door closer provides constant control, yet leaves the doorway details unmarred. Full rack-and-pinion checking mechanism with two-speed closing action easily adjustable. No extra door holders or stops required, as the closer may be had with hold-open feature if desired. Moderate in cost; easy to move, with door frame. Truly the modern door closer.

DIMENSIONS

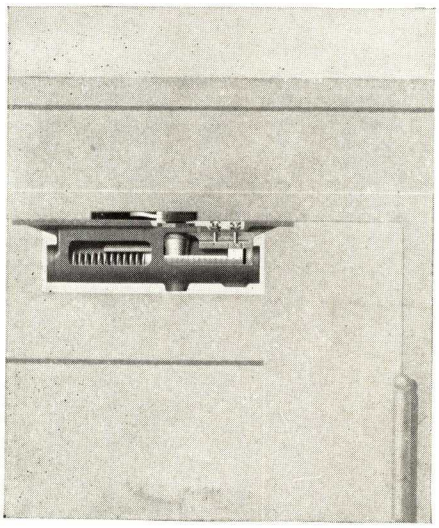
Closer size	Over-all length	Over-all width	Over-all height
202	13″	3½″	4″
204	13″	3½″	4″
206	13½″	3⅞″	4¼″

Schedule of Door Sizes

No. 202—For light interior doors not over 3′ wide.
No. 204—For interior doors not over 3′ 6″ wide, for outswinging entrance and vestibule doors not over 2′ 10″ wide, and for inswinging entrance doors not over 2′ 6″ wide.
No. 206—For extra heavy interior doors not over 4′ wide, and outside entrance and vestibule doors over 2′ 10″ wide.
Butt hinges not furnished with closer.

LCN CLOSER CONCEALED-IN-DOOR

Nos. 302-303



This type meets the wide demand for a concealed closer to be used with light to medium weight interior doors. Only the flat steel arm is visible. Efficient, simple to install in metal or wooden doors, the latter not less than 1¾ in. thick. Especially good with flush-type partition work. Full rack-and-pinion mechanism with two-speed adjustable action in closing and latching. Furnished with or without hold-open feature. Here is concealed door control at moderate cost.

DIMENSIONS

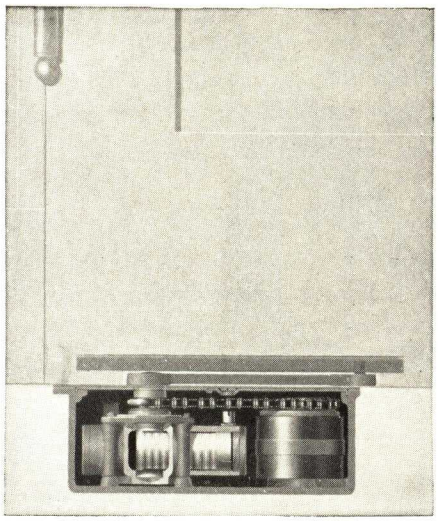
Closer size	Over-all length	Over-all width	Over-all height
302	10¼″	1⅜″	2⅝″
303	10¼″	1⅜″	2⅝″

Schedule of Door Sizes

No. 302—For light interior residence doors not less than 1¾″ thick.
No. 303—For inside doors 3′x7′ not less than 1¾″ thick.
Butt hinges not furnished with closer.

Installation Templates Available on Request

LCN FLOOR TYPE CONCEALED CLOSERS



Nos. 2-4-6

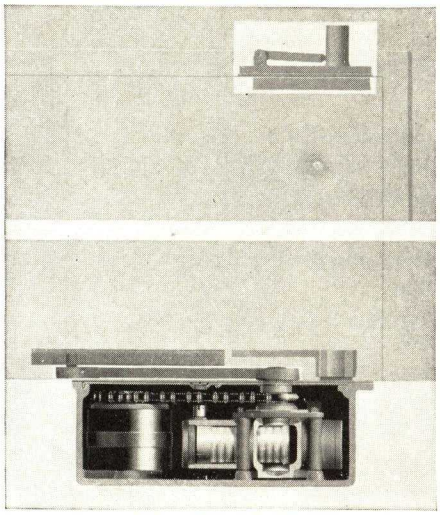
The door is hung independently of this floor type concealed closer, which carries none of the door's weight, and can be serviced without removing the door. Power effectively applied by a lever arm, from typical LCN mechanism.

DIMENSIONS

Closer size	Over-all length	Over-all width	Over-all height
2	11¾″	4½″	3⅞″
4	11¾″	4½″	3⅞″
6	12½″	5⅛″	3⅞″

Schedule of Door Sizes

No. 2—For light interior doors not over 3′ wide.
No. 4—For interior doors not over 3′6″ wide, for outswinging entrance and vestibule doors not over 2′10″ wide, and inswinging entrance doors not over 2′6″ wide.
No. 6—For extra heavy interior doors not over 4′ wide, and outside entrance and vestibule doors over 2′10″ wide.
Butt hinges not furnished with closer.



Nos. 02-04-06

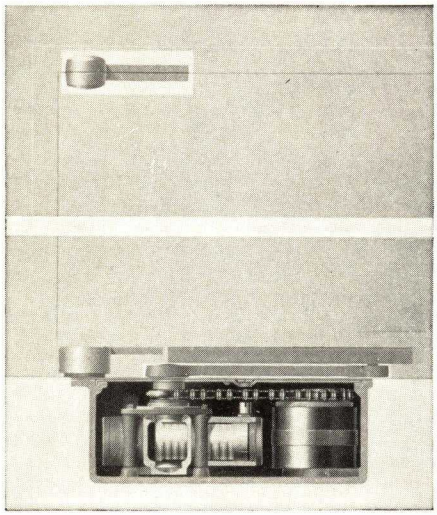
Furnished with center-hung pivots, for complete concealment and for doors in openings without mullions. Lower pivot mounted on rigid case, so weight of door is *not* borne by checking mechanism. Power applied through lever arm.

DIMENSIONS

Closer size	Over-all length	Over-all width	Over-all height
02	11¾″	4½″	3⅞″
04	11¾″	4½″	3⅞″
06	12½″	5⅛″	3⅞″

Schedule of Door Sizes

No. 02—For light interior doors not over 3′ wide.
No. 04—For interior doors not over 3′6″ wide, for outswinging entrance and vestibule doors not over 2′10″ wide, and inswinging entrance doors not over 2′6″ wide.
No. 06—For extra heavy interior doors not over 4′ wide, and outside entrance and vestibule doors over 2′10″ wide.
Furnished with drop forged bronze ball bearing pivots top and bottom.



Nos. 12-14-16

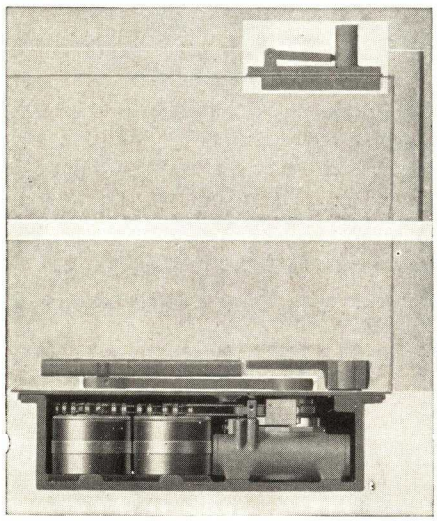
For doors to be hung on offset pivots, this closer employs the typical LCN mechanism with lever arm. Weight of door rests *not* on closer mechanism but on rigid case. Furnished with top and bottom pivots complete.

DIMENSIONS

Closer size	Over-all length	Over-all width	Over-all height
12	12¼″	5⅛″	3⅞″
14	12¼″	5⅛″	3⅞″
16	13″	5⅛″	3⅞″

Schedule of Door Sizes

No. 12—For light interior doors not over 3′ wide.
No. 14—For interior doors not over 3′6″ wide, for outswinging entrance and vestibule doors not over 2′10″ wide, and for inswinging entrance doors not over 2′6″ wide.
No. 16—For extra heavy interior doors not over 4′ wide, and outside entrance and vestibule doors over 2′10″ wide.
Furnished with drop forged bronze ball bearing pivots.



Nos. 44-66

For double acting doors, this closer has two separate checking cylinders and power coils, separately adjustable. Center hung pivots are furnished. Weight of door carried *not* by closer mechanism but by rigid case. Power applied by lever arm.

DIMENSIONS

Closer size	Over-all length	Over-all width	Over-all height
44	14⅝″	4 13/16″	3⅞″
66	15¾″	5¼″	3⅞″

Schedule of Door Sizes

No. 44—For heavy interior doors not over 3′6″, or light vestibule doors not over 2′10″ wide.
No. 66—For extra heavy interior doors and outside entrance and vestibule doors.
Furnished with drop forged bronze ball bearing pivots.

Installation Templates Available on Request

LCN STANDARD SURFACE TYPE DOOR CLOSER

LCN Surface Type Door Closer with Regular Arm

Six Sizes—A to F

Here are some of the reasons why this product of 50 years' experience in successful door closer design is supreme in performance and long life:

(1) It has surplus power, equal to *any* condition if the right size closer is used.

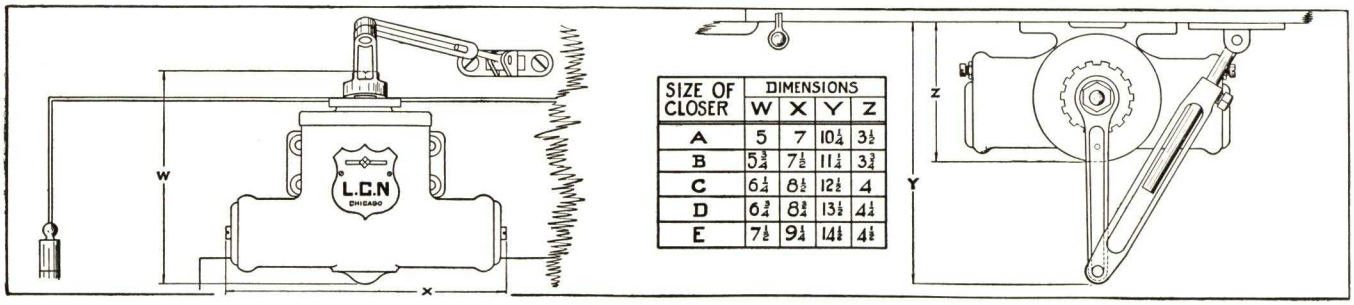
(2) Its *full* rack-and-pinion checking mechanism keeps the door under control at all times, with minimum resistance to opening; ample back-checking action to protect walls, etc.; adjustable two-speed action in closing and latching; and no abrupt changes of speed in the swing.

(3) Leakproof construction with rigid shaft assembly and large bearings to eliminate side-thrust and prolong life of closer.

(4) Made throughout by precision methods in a modern plant devoted solely to door closers.

Where the highest mechanical efficiency is desired, with low cost, this closer should be specified.

Dimensions of L C N Closers



SIZE OF CLOSER	DIMENSIONS W	X	Y	Z
A	5	7	10¼	3½
B	5¾	7½	11¼	3¾
C	6¼	8½	12½	4
D	6¾	8¾	13½	4¼
E	7½	9¼	14½	4½

Schedule of Sizes

Size A—For screen, storm, and light interior doors.

Size B—For interior doors 2'8" x 7'0".

Size C—For interior doors 3'0" x 7'0" or light exterior doors 2'6" x 7'0".

Size D—For extra heavy interior doors and average 3'0" x 7'0" exterior doors.

Size E—For wide and heavy exterior doors.

Size F—For extremely heavy exterior factory or refrigerator doors.

List of Finishes

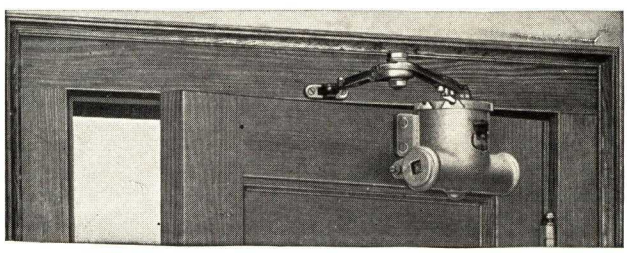
Painted Finishes—LCN Standard, Gold Bronze, Silver Bronze, Dead Black, Special Paint Finishes.

Plated Finishes—Bronze Plate, unpolished; Bronze Plate, polished; Nickel Plate, unpolished; Nickel Plate, polished; Statuary Bronze, unpolished, Statuary Bronze, polished; Genuine Bower Barff.

Special Finishes—To match your sample submitted.

LCN SPECIAL PURPOSE DOOR CLOSERS

LCN is the only line of its kind supplying a hydraulic door closer for every type of swing door and every situation. There are a number of special purpose closers, of which four principal ones are here listed.



LCN Hospital Type Closer

Hospital Type—Will hold the door open at any one of three points: approximately 6 in. from the jamb, 45 or 100 degrees, depending on the setting. Size D-113 only. Illustration at lower left.

Parallel Arm—Required where there is not sufficient space between doors for closer to operate in normal position. Minimum space required, C-5", D-5¼", E-5½".

Coupon Booth—Combination door closer and holder; may be set in partly open position until booth is occupied and door closed. Size B-112 only.

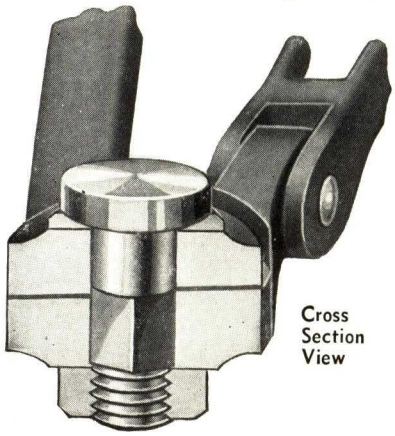
Telephone Booth—Used to insure proper ventilation. Door closes to 4" until pulled shut. Size B-111.

Installation Templates Available on Request

LCN SURFACE TYPE DOOR CLOSER WITH HOLD-OPEN ARM

For holding a door open, at any selected point, a hold-open arm on the door closer is the only mechanically correct means, as others tend to spring or warp the door. The extra cost of this arm, in place of the regular arm, is so little that the majority of installations should have it.

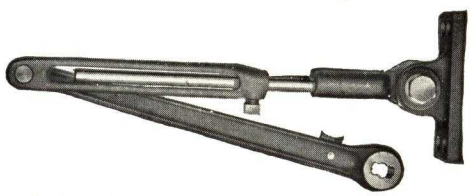
LCN "90-degree" Hold-open Arm



Cross Section View

May be set to operate at any point between 90 and 140 degrees. Located at the extreme end of the arms where it finds greatest purchase, the LCN standard hold-open arm is a marvel of simplicity, strength and effective action. Designed on the cam principle, with no springs or other delicate parts. May be used either side up, right or left hand, and is made for long life.

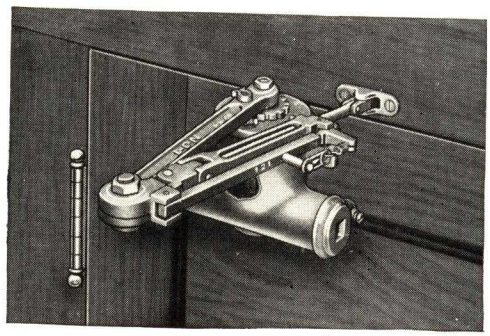
LCN "180-degree" Hold-open Arm



Designed for doors to be held open at 180 degrees, with closers mounted on corner brackets. When ordering, specify size of butts.

LCN HOLD-OPEN ARM CLOSER WITH FUSIBLE LINK

Listed as Standard by Underwriters' Laboratories



Here is the simple, inexpensive way to handle fire doors. The LCN Hold-open Closer with Fusible Link Release operates instantly to close door when temperature reaches fusing point.

Its action is simple, direct, and cannot fail. It does *not* depend on releasing the main holder arm. Fusion of link instantly transfers action of arm to an independent, free pivot, allowing rapid, positive closing of door.

It can be applied on hinge side of door or can be used with a bracket. It is universal, and cannot be applied incorrectly. Fusible Link Arms may be purchased separately for conversion of standard surface type LCN Closers.

Underwriters' Laboratories
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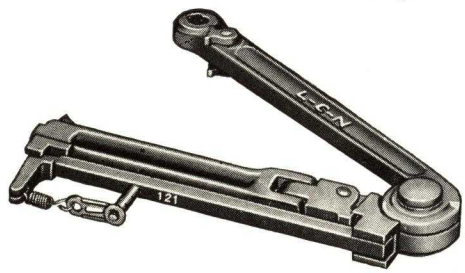
ESTABLISHED AND MAINTAINED BY THE
National Board of Fire Underwriters
FOR SERVICE - NOT PROFIT
207 EAST OHIO STREET, CHICAGO

The L. C. N. Closers, sizes C, D, and E, regular type, and the L. C. N. Closers, sizes C, D, and E, provided with special hold-open automatic arms equipped with fusible link type of release, have been tested and listed as standard by The Underwriters' Laboratories on December 31, 1926, and October 17, 1930, respectively.

LCN Fusible Link Hold-open Arm

Holds Door Open 100 to 140 Degrees



Action of this device may be seen from illustration above. Hot air currents at top of doorway fuse link at left, releasing arm marked "121" which instantly throws action to free pivot, left of main pivot, rapidly closing the door.

Guarantee

When the proper size closers are installed as listed in our schedule of sizes, we positively guarantee the LCN Closers to operate efficiently for two years.

Installation Templates Available on Request

MEMORANDA

16/36

AUSTRAL

WINDOW..
HARDWARE

WARDROBES

"GRIPTITE" ALL-METAL
BLACKBOARD ASSEMBLY

MOVABLE BLACKBOARDS

MULTI-USE
BLACKBOARDS

AUSTRAL SALES CORP.
101 PARK AVENUE
NEW YORK, N. Y.

CATALOG 1938

A TYPICAL GROUP OF AUSTRAL WINDOWS AS USED IN CLASSROOMS
Note wide opening at center, slight opening at top but no opening at sill.

Austral Windows

Permit Ventilation without Direct Draft Better Control of Light and Shade . . . Cost no more than ordinary Double Hung Windows . . .

Advantages

(1) A Perfect System of Ventilation without Direct Draft—The Austral Window affords a perfect system of ventilation, without direct draft—without expensive or complicated equipment or operating costs. The Austral Window may be relied upon to furnish adequate ventilation during the entire school period.

(2) Light Is Easily Regulated—Light is regulated and controlled by the arrangement of Shades on Sash without obstructing the free circulation of air. This arrangement makes an ideal awning effect without added expense.

(3) Sash Reversible for Cleaning or Glazing—The Upper and Lower Sash are both reversible for Cleaning or Glazing, eliminating all risk to window cleaners and making reglazing less expensive.

(4) Ease of Operation—Heavy sash operate as easily as a well-hung door and openings may be regulated as desired. This feature is an Austral characteristic.

(5) Additional Light Space Secured—Additional Daylight Space is secured by the use of Austral Plank Frames. Austral Mullions are about one-half the size of mullions required for double hung windows, yet larger than the mullions of the light steel window which are so small that they give the schoolhouse the "Industrial" appearance.

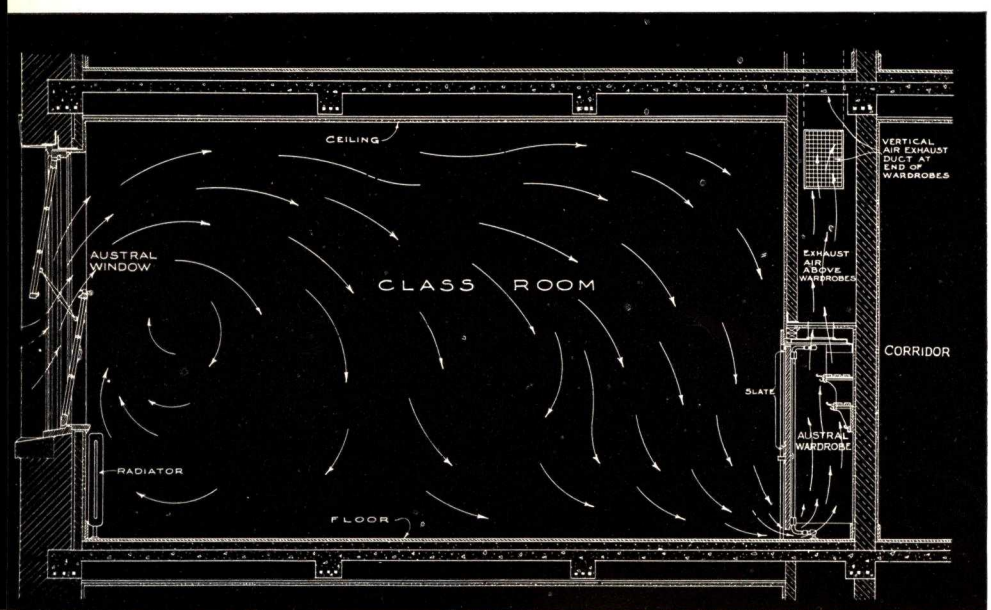
(6) Advantages of the Balance Arms—Austral Balance Arms eliminate the use of box frames, chains, weights, and pulleys. There is no space for the accumulation of dust and dirt.

(7) Readily Weatherstripped—Wood Austral Windows lend themselves readily to Weatherstripping, and may, without affecting the operation of the sash in the slightest degree, be made tighter than the ordinary double hung window, weatherstripped.

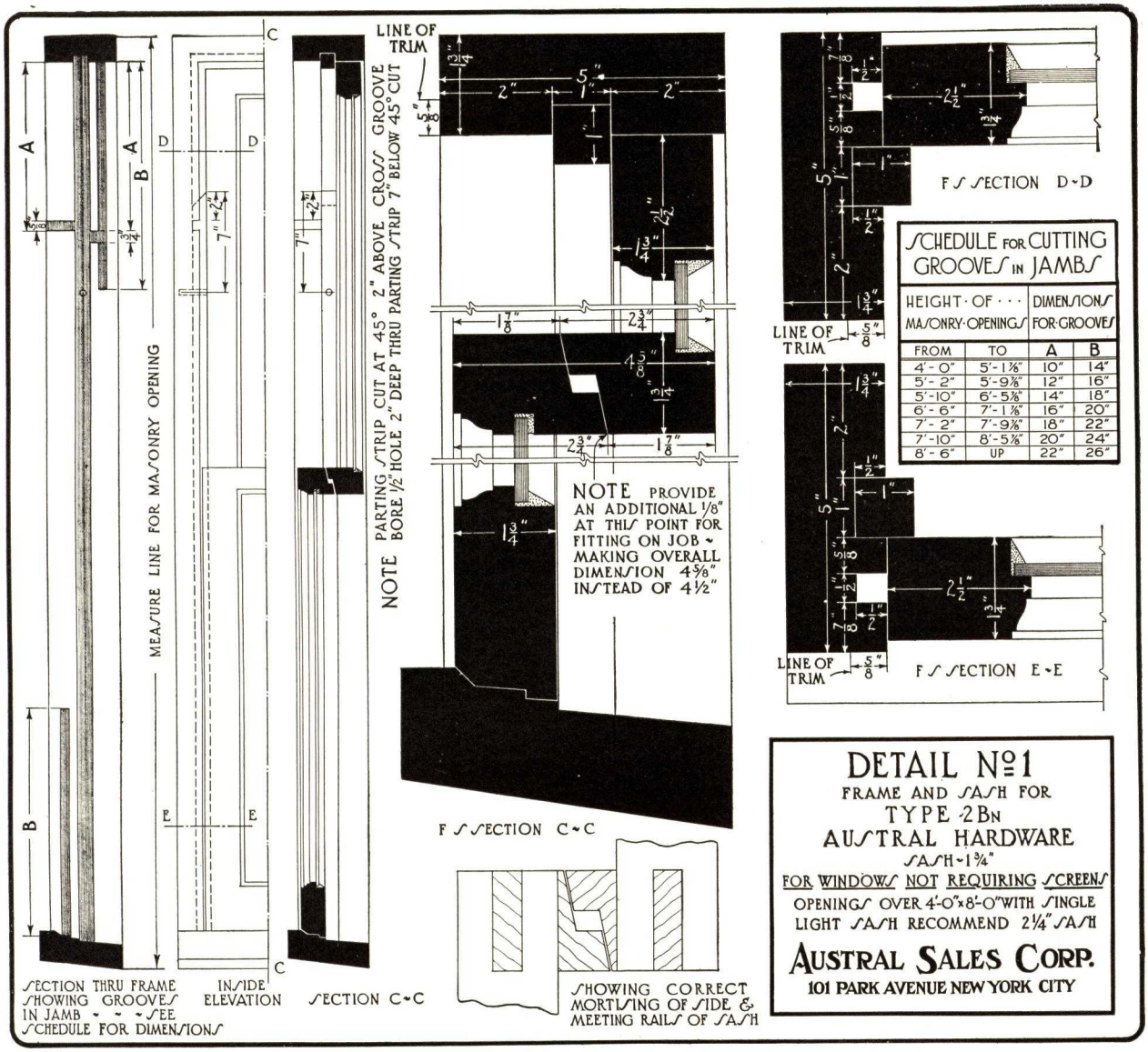
(8) No Additional Cost—The cost of Austral Windows with hardware installed is no more, often less than that of double hung windows.

(9) Installation of Austral Hardware—It is suggested that the fitting of the sash and the installation of the Austral Hardware be done by us as we can thereby assume the entire responsibility for the perfect operation of the sash.

DIAGRAM SHOWING CIRCULATION OF AIR CURRENTS
Showing method of ventilating through Austral Windows and Wardrobes.

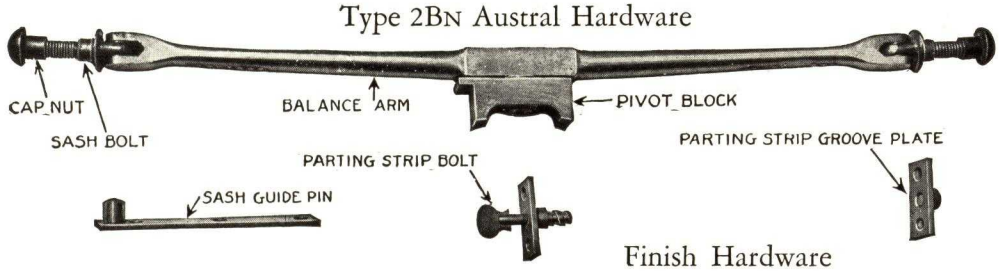


Wood Windows (*Not Requiring Screens*)



NOTE—We Supply Only the Austral Hardware—Sash and Frames Supplied by Others

Type 2BN Austral Hardware



Finish Hardware

A set of Type 2BN AUSTRAL HARDWARE consists of the following:

- 2 Balance Arms, with Pivot Blocks, Sash Bolts and Cap Nuts attached
- 4 Sash Guide Pins
- 2 Parting Strip Bolts
- 2 Parting Strip Groove Plates
- Screws for applying all parts

All parts thoroughly Electro Galvanized

AUTOMATIC SASH FAST
No. 1200N

OFFSET PULL
No. 300N

POLE No. 600N

HOOK No. 700N

HANGER
No. 800N

Specifications:—

Wood Windows (*Not Requiring Screens*)
Type 2BN Austral Hardware

Note: Specifications should also require the fitting of sash and the installation of all Austral Hardware by AUSTRAL SALES CORP., 101 Park Ave., New York, N. Y.

Frames—All exterior frames shall be made from clear white pine, well seasoned. The head and sides shall be finished 1¾ x 5 in., and the sill of 2 x 6 in. as per full size detail. The jambs shall be grooved to receive Austral Hardware.

(See Schedule on Austral Detail No. 1, for length of these grooves for various masonry openings.)

The parting strips shall be made of straight-grained white pine 1 x 1 in., in cross section.

Bracing—Frames are to be braced with two diagonal braces at head, and one brace, placed horizontally, in center of frame—all to be left in position until sash are to be hung.

Anchoring—Frames are to be anchored to metal or wood anchors, placed at intervals of 24 in. on sides, and to an anchor, in center of head of frame.

Sash—The sash shall be 1¾ in. thick, made of clear, straight-grained white pine, well seasoned. They shall be made true to required size and moulded as per detail.

Glazing—Care must be used in glazing, to keep sash of equal weight, as all sash must be in perfect balance.

Hardware—The above frames and sash shall be fitted with Type 2BN Austral Hardware as made by the AUSTRAL SALES CORP., 101 Park Avenue, New York, N. Y., whose working drawings and instructions shall be considered part of these specifications.

Finish Hardware—Each pair of sash shall be fitted with one Solid Bronze No. 1200N (or Malleable Iron No. 7200½N) Austral Automatic Sash Fast, to be placed at the center of the meeting rails.
Each pair of sash shall be fitted with one pair of Solid Bronze No. 300N (or Malleable Iron No. 7300½N) Austral Offset Pulls placed on the bottom rail of the lower sash.

Poles, Hooks and Hangers—Supply for each classroom steel pole No. 600N, 4 ft. 6 in. in length, equipped with a solid bronze hook No. 700N and a solid bronze pole hanger No. 800N.

NOTE: For single light sash, openings exceeding 4 ft. 6 in. x 8 ft., dimensions of frame and sash should be as follows:

Head and jambs to finish	*1¾ x 6 in.*
Sill	*3 x 7 in.*
Sash	*2¼ in. thick*

Any opening 5 ft. in width by 8 ft. 6 in. or over in height should be equipped with 2¼-in. sash.

Wood Windows (*Provisions for Screens*)
Type 2CN Austral Hardware

Note: Specifications should also require the fitting of sash and the installation of all Austral Hardware by AUSTRAL SALES CORP., 101 Park Ave., New York, N. Y.

Frames—All exterior frames shall be made from clear white pine well seasoned. The head and sides shall be finished 1¾ x 5 in., and the sill, of 2 x 6 in., as per full-sized detail. The jambs shall be grooved to receive Austral Hardware.

(See Schedule on Austral Detail No. 2, for length of these grooves for various openings.)

The parting strips shall be made of straight-grained white pine 1 x 1 in., in cross sections.

Bracing—Frames are to be braced with two diagonal braces at head, and one brace, placed horizontally, in center of frame—all to be left in position until sash are to be hung.

Anchoring—Frames are to be anchored to metal or wood anchors, placed at intervals of 24 in. on sides, and to an anchor, in center of head of frame.

Sash—The sash shall be 1¾ in. thick, made of clear, straight-grained white pine, well seasoned. They shall be made true to required size and moulded as per detail.

Glazing—Care must be used in glazing, to keep sash of equal weight, as all sash must be in perfect balance.

Hardware—The above frames and sash shall be fitted with Type 2CN Austral Hardware, as made by the AUSTRAL SALES CORP., 101 Park Avenue, New York, N. Y., whose working drawings and instructions shall be considered part of these specifications.

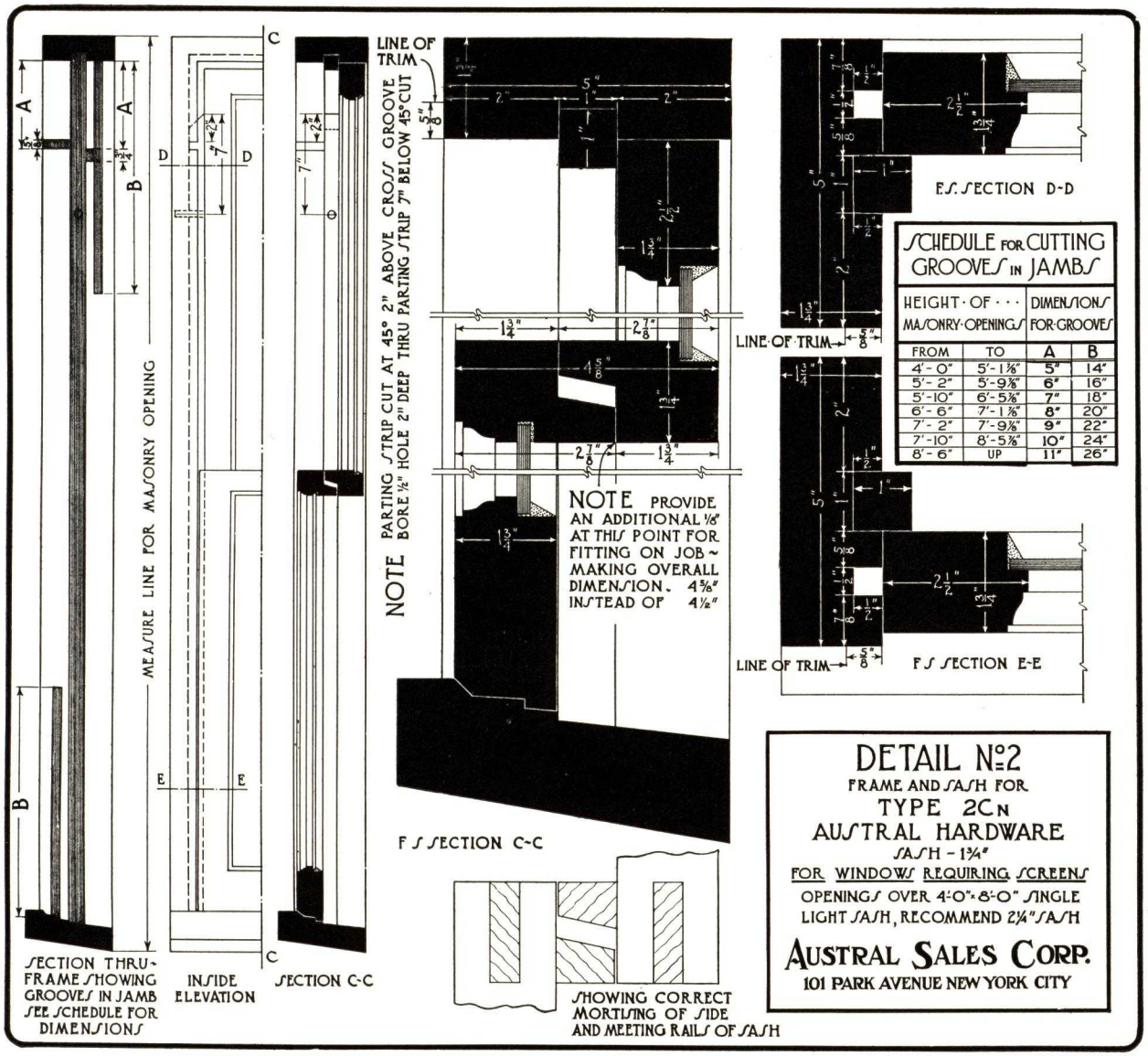
Finish Hardware—Each pair of sash shall be fitted with one pair of solid bronze Austral Turnbuckles No. 400, to be placed on the side rails of the lower sash.

NOTE: For single light sash, openings exceeding 4 ft. 6 in. x 8 ft., dimensions of frame and sash should be as follows:

Head and jambs to finish	*1¾ x 6 in.*
Sill	*3 x 7 in.*
Sash	*2¼ in. thick*

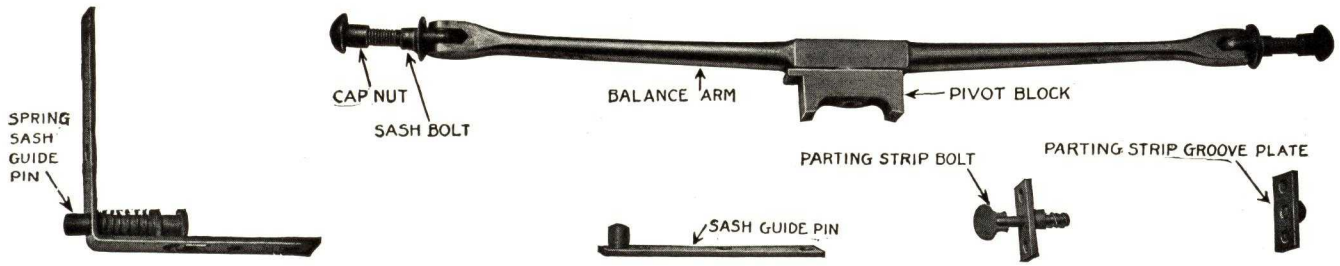
Any opening 5 ft. in width by 8 ft. 6 in. or over in height should be equipped with 2¼-in. sash.

Wood Windows (*Requiring Screens*)



NOTE—We Supply Only the Austral Hardware—Sash and Frames Supplied by Others

Type 2CN Austral Hardware



A set of 2CN AUSTRAL HARDWARE consists of the following:

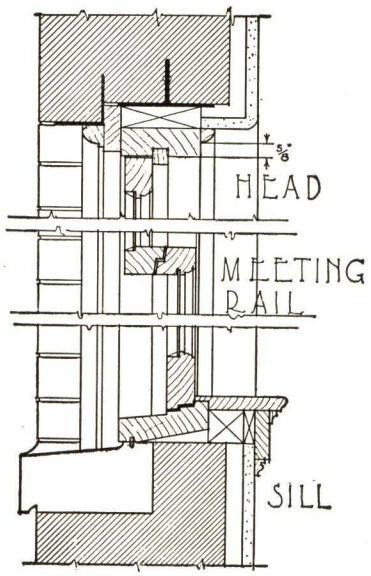
- 2 Balance Arms, with Pivot Blocks, Sash Bolts and Cap Nuts attached
- 2 Sash Guide Pins
- 2 Spring Sash Guide Pins
- 2 Parting Strip Bolts
- 2 Parting Strip Groove Plates
- Screws for applying all parts

All parts thoroughly Electro Galvanized

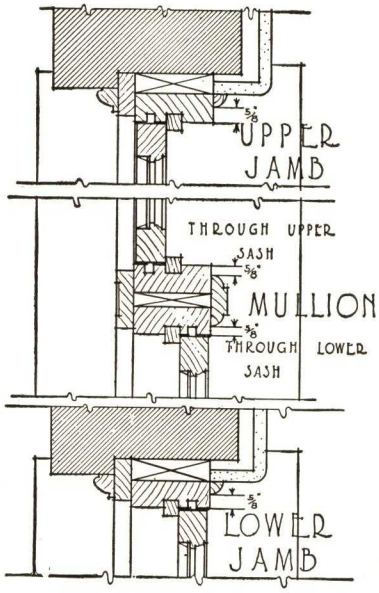
Finish Hardware

Turnbuckle No. 400

Wood Window Detail Suggestions

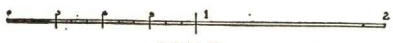


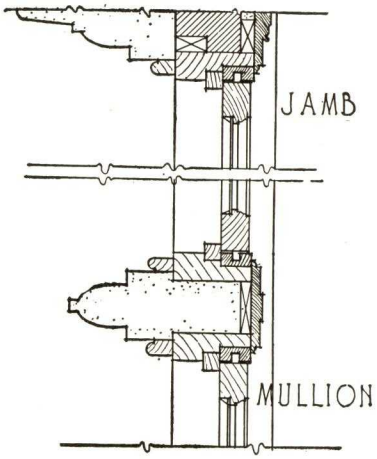
SECTION



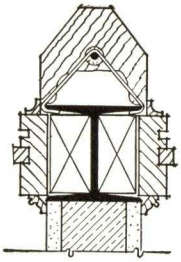
PLAN

DETAIL "A" AN AUSTRAL WINDOW WITH PLASTER JAMBS SUITABLE FOR SCHOOLS OFFICE BUILDINGS ETC.

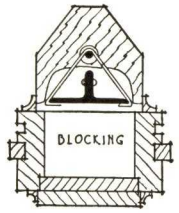




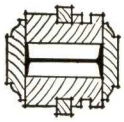
DETAIL "B" AN AUSTRAL FRAME ADAPTED TO STONE WITH HARD WOOD INTERIOR FINISH.



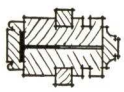
DETAIL "F" - SHOWING A WINDOW WITH A TERRA COTTA MULLION REINFORCED WITH AN "I" BEAM.



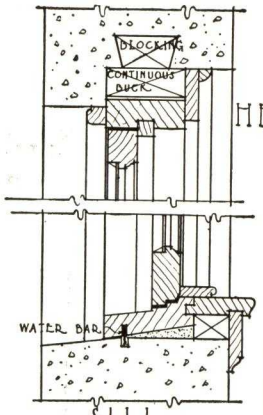
DETAIL "G" SHOWING A TERRA COTTA MULLION REINFORCED WITH ANGLES.



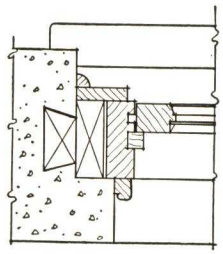
DETAIL "C" MULLION WITH I BEAM REINFORCING.



DETAIL "D" MULLION WITH T BAR REINFORCING



DETAIL "E" SUGGESTED TREATMENT FOR CONCRETE WALLS



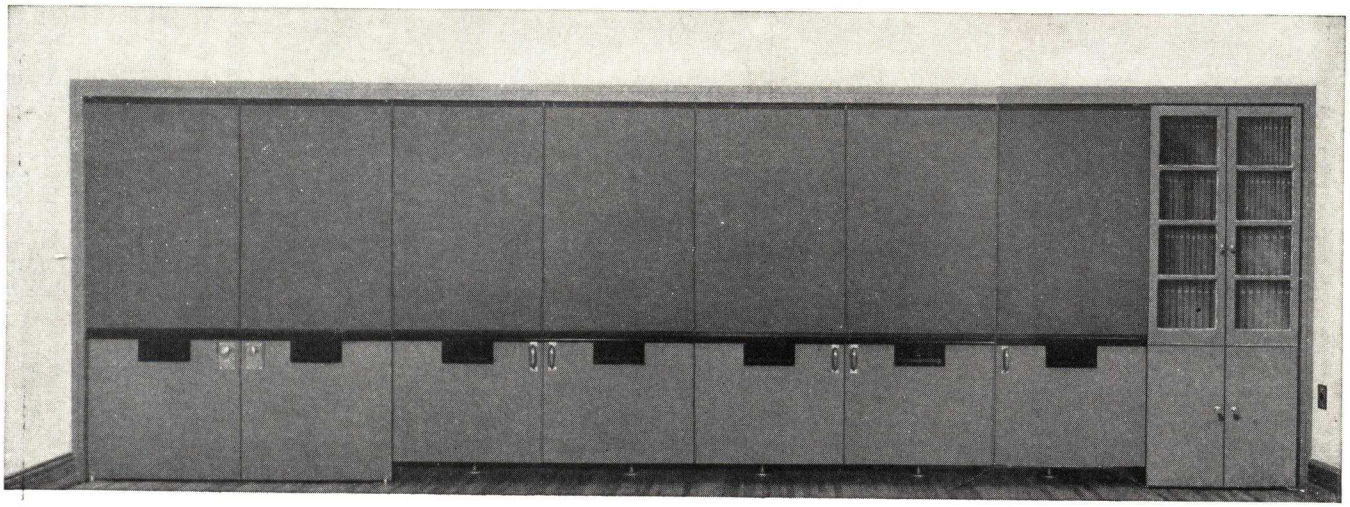
JAMB.

DETAIL N°3

SHOWING VARIOUS CONSTRUCTIONS OF FRAMES, MULLIONS AND INTERIOR TREATMENTS.

AUSTRAL SALES CORP.
101 PARK AVENUE NEW YORK CITY

Austral "Straight 8" All Steel Wardrobes



VIEW OF UNIT SHOWING DOORS IN CLOSED POSITION

Standardization on high-quality steel construction now enables Austral to build a superlative wardrobe unit at a new low price.

The "Straight-8" unit consists of a five doored wardrobe adequate for 40 pupils, teacher's locker, supply closet and bookcase designed to fill entire rear of classroom. Six foot or seven foot heights optional. Any section or sections of the unit may be purchased.

The unit affords true minimum spacing and every inch of it is accessible. (Many attempts to solve the classroom wardrobe problem unfortunately result in reducing space below practical limits. Overcrowding and unsanitary conditions are inevitable.)

Both the teacher's and pupils' compartments are thoroughly ventilated by large grilles directly over wraps.

Cork or process slate may be applied to all except bookcase doors. The process slate, of best quality, is guaranteed for 10 years.

The six-way adjustable hardware on compartment doors and the solid bronze surface hardware are standard equipment.

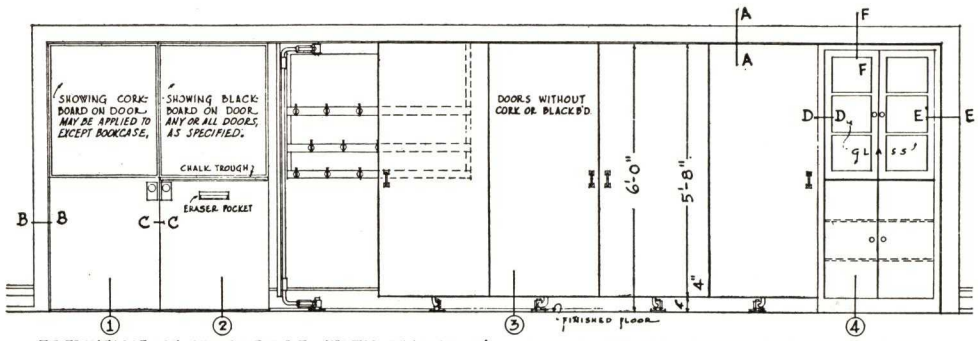
This unit satisfies an insistent demand for adequate space for all requirements without crowding—designed simplicity — low cost — excellent ventilation — sanitation — ease of cleaning.

Austral offers the "Straight-8" wardrobe unit as a masterpiece of 25 years of experience in designing and building finer school equipment.

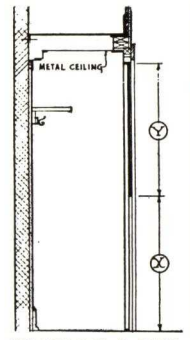
Austral Wardrobes are also furnished with 1¾ in. wood doors and 1⅜ in. flushtype steel doors. The same rugged adjustable hardware steel header jamb and shelving, as indicated on page 8, being used on all types.

VIEW SHOWING WARDROBE AND TEACHER'S CLOSET WITH DOORS OPEN

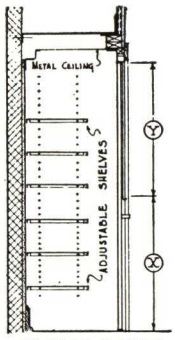
Detail Austral "Straight 8" All Steel Wardrobe



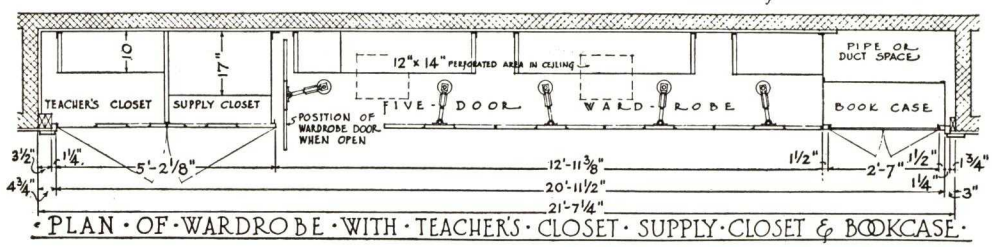
ELEVATION OF WARDROBE WITH TEACHER'S CLOSET · SUPPLY CLOSET & BOOKCASE



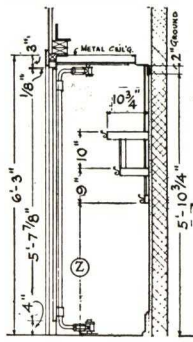
SECTION 1 THRU TEACHER'S CLOSET



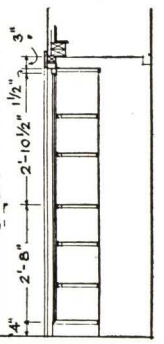
SECTION 2 THRU SUPPLY CLOSET



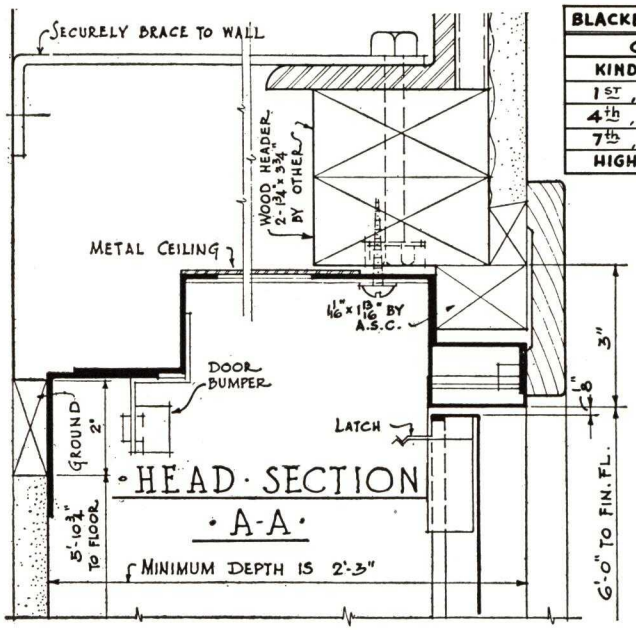
PLAN OF WARDROBE WITH TEACHER'S CLOSET · SUPPLY CLOSET & BOOKCASE



SECTION 3 THRU WARDROBE

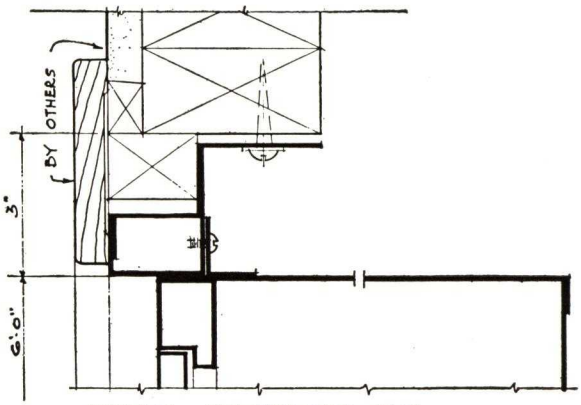


SECTION 4 THRU BOOKCASE



HEAD · SECTION · A-A ·

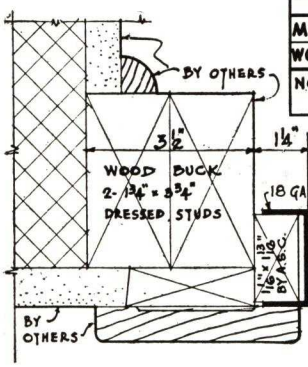
BLACKBOARD & SHELVING DIMENSIONS			
GRADES	X	Y	Z
KINDERGARTEN	25⅝"	46¼"	32"
1st, 2nd, 3rd	27⅝"	44¼"	32"
4th, 5th, 6th	29⅝"	42¼"	36"
7th, 8th	35⅝"	36¼"	42"
HIGH SCHOOL	35⅝"	36¼"	42"



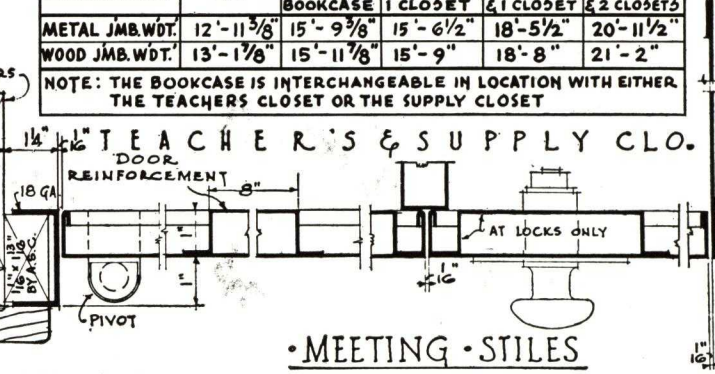
HEAD · SECTION · F-F

SCHEDULE OF STANDARD OPENING DIMENSIONS					
ARRANGEMENT	WARDROBE ONLY	WARDROBE & BOOKCASE	WARDROBE & 1 CLOSET	WARDROBE BOOKCASE & 1 CLOSET	WARDROBE BOOKCASE & 2 CLOSETS
METAL JMB. WDT.	12'-11⅜"	15'-9⅜"	15'-6½"	18'-5½"	20'-11½"
WOOD JMB. WDT.	13'-1⅞"	15'-11⅞"	15'-9"	18'-8"	21'-2"

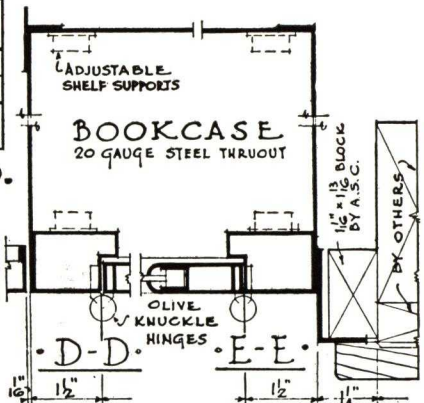
NOTE: THE BOOKCASE IS INTERCHANGEABLE IN LOCATION WITH EITHER THE TEACHERS CLOSET OR THE SUPPLY CLOSET



JAMB · SECTION · B-B ·



MEETING · STILES · SEC. C-C ·



JAMB SECTIONS

Specification:—

Austral "Straight 8" School Wardrobe

1. **Wardrobes, General**—Pupils' Wardrobes, teacher's closet, storage closet, as shown on plans and elevations, shall be equipped with flush steel doors provided with door control hardware, latches, locks and pivots. Jambs, heads, shelving, cross bracing and wall angles to be of steel of gauge specified. The bookcase shall be provided with two (2) hinged doors with glazing strips and with necessary hardware.
   Pupils' Wardrobe to be equipped with coat racks and suitable hooks.
   Teacher's closet to be provided with one (1) steel shelf, coat hooks and mirror.
   Storage closet to be provided with five (5) adjustable steel shelves.
   Bookcase to be provided with five (5) steel shelves.
   All to be furnished and erected by the Austral Sales Corp., 101 Park Avenue, New York, N. Y. The recesses to receive this unit and all necessary grounds, bucks, trim, painting or staining to be furnished and installed by others.

2. **Doors—Metal**—Doors, except for bookcase, shall be flush type, with edges returned and corners welded of height indicated on detail, formed up of 16 gauge steel reinforced. Bookcase doors to be hollow steel construction.

3. **Hardware**—Door control hardware shall consist of rigid offset pivot arms, extending from the floor pivot to the top of wardrobe. The pivot arms to be equipped with a "six-way" adjustment device, universal joints, and ball bearing pivots, all machined to accuracy.

4. **Finish Hardware**—All wardrobe doors to be equipped with "anti-rattle" latches with handles of solid bronze. Teacher's closet and supply closet doors to be provided with bronze pivots, pivot sockets and a special "anti-rattle" lock with two keys. Bookcase doors to be equipped with olive knuckle butts and suitable lock with two keys.

5. **Metal Jambs**—Jambs and head to be of 16 gauge steel, cross bracing 20 gauge, wall angle 11 gauge. The entire unit to be covered with 20 gauge steel welded to cross bracing. Grilles to be provided in the ceiling of pupils' wardrobe compartment and teacher's closet.

6. **Wardrobe Interiors**—Each section of the wardrobe to be provided with standard coat rack suspended from cross bracing, consisting of two shelves and one hanging strip, provided with forty (40) double prong coat hooks. Provide metal partitions between storage closet, teacher's closet and wardrobe.

7. **Operation**—The door operating mechanism shall be so constructed as to hold the face of the doors, when closed, in perfect alignment and in a straight and rigid position, providing a continuous flush surface.

8. **Finish**—All metal work for the entire unit to receive two coats of standard brown enamel, baked on.

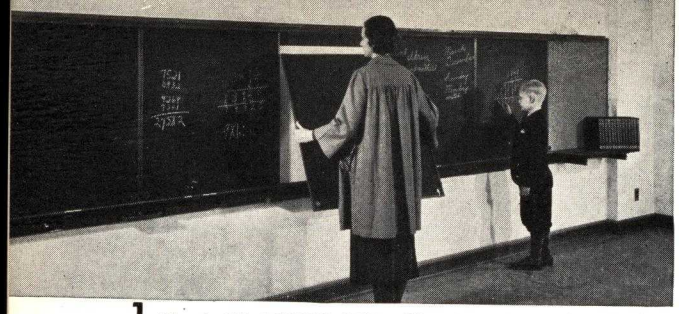
9. **Guarantee**—The entire wardrobe and equipment shall be guaranteed against all mechanical defects, for a period of one year from the date of final acceptance of the building. No painting or staining of metal work, glass or glazing, other than above specified to be included in this contract.

Add the Following if Processed Slate is Required:

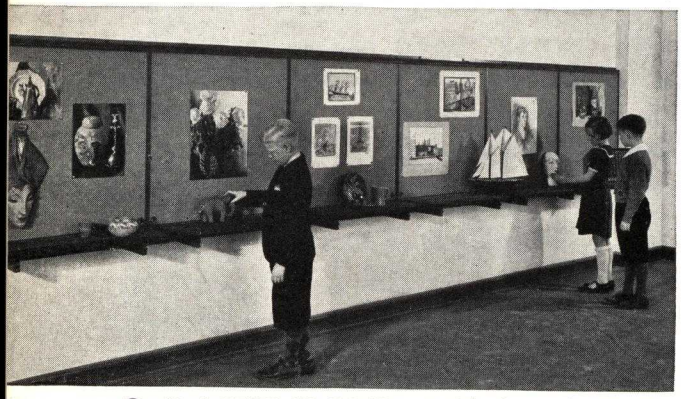
10. **Processed Slate**—Equip all wardrobe, teacher's closet and storage closet doors with best grade processed slate, 3/8" thick, extending the full width of doors, held in position by means of metal angles.

11. **Chalk Rails, Etc.**—Provide metal slate angles and metal chalk rails directly under the slate angle, extending the full width of the door; and eight-inch metal eraser pocket with a reversible dust tray. All to be of 13 gauge steel.

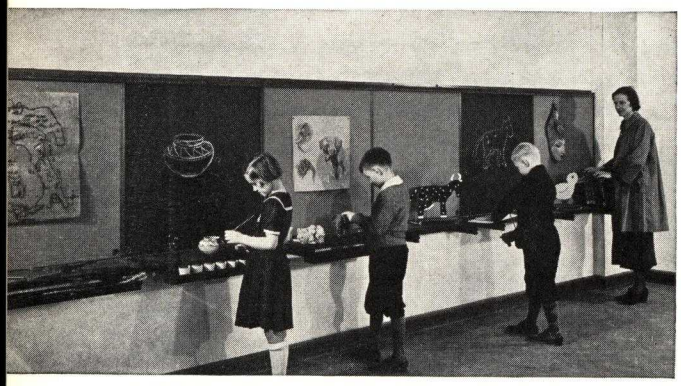
12. **Cork**—Equip all wardrobe, teacher's closet and storage closet doors with best grade cork 1/4 in. thick extending the full width of doors, cemented to the face of the doors and held in position by means of metal angles at top, bottom and sides.



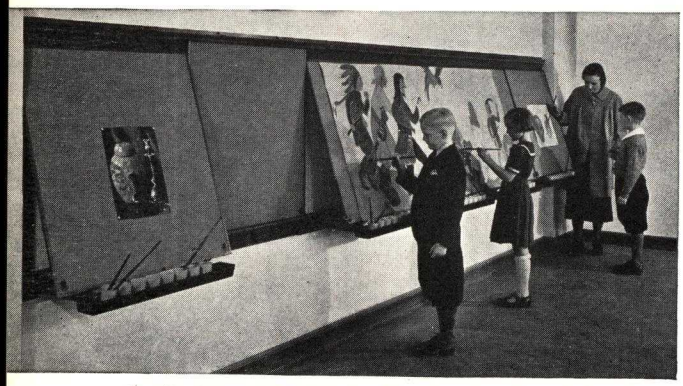
1 *AS A BLACKBOARD—Showing Ease of Handling*



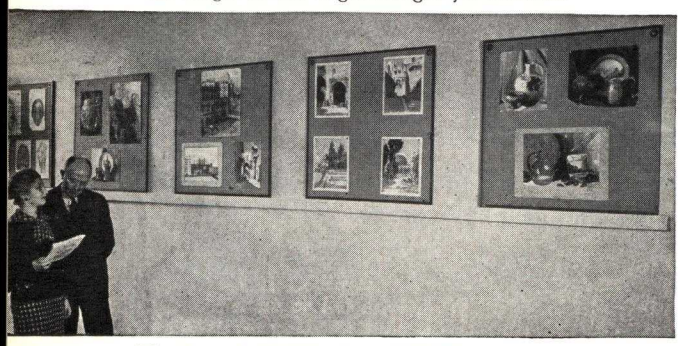
2 *AS A DISPLAY BOARD—With the Cork Side Out and the Blackboard Side Reversed*



3 *PART DISPLAY BOARD AND PART BLACKBOARD—With Work Shelf for Display or Modeling*



4 *AS AN ART EASEL—Showing Position of Panels at an Angle at the Right Height for Students*



5 *AS A CORRIDOR EXHIBITION BOARD—Quickly Set up or Removed from Permanently Installed Hooks*

Austral Multi-Use Blackboard Fixture

The Multi-Use Blackboard Fixtures—Increases the functions of the classroom by instantly adapting it for Art, Music, Nature Study, Craft, Exhibition, or other study purposes.

This means that, since it is no longer necessary to provide special rooms for the foregoing purposes, construction costs are greatly reduced.

And, in old buildings, all such special rooms may now be released for standard purposes. The teacher finds this device a real help in imparting knowledge to the pupil, and that it creates interest in school work more readily.

It will be found desirable for use wherever lectures are given, bulletins posted, or art work displayed. Also for special uses in churches, offices and factories.

(No. 1) As a Blackboard—Every panel is reversible. Panels with blackboard one side and cork on reverse side are usually preferred, but panels may be had with both sides blackboard or cork.

Obviously, these reversible panels in reality give the classroom double the ordinary amount of working surface. For example, 10 panels would present 90 square feet of blackboard surface, but another 90 square feet of cork surface may be instantly brought into use by merely reversing the 10 panels.

The instructor may prepare the work in advance on the blackboard side and then divulge it to the students at the desired time.

The panels are light weight and easily reversed.

In old buildings, installation is made directly over existing slate, thus doubling the utility of this area.

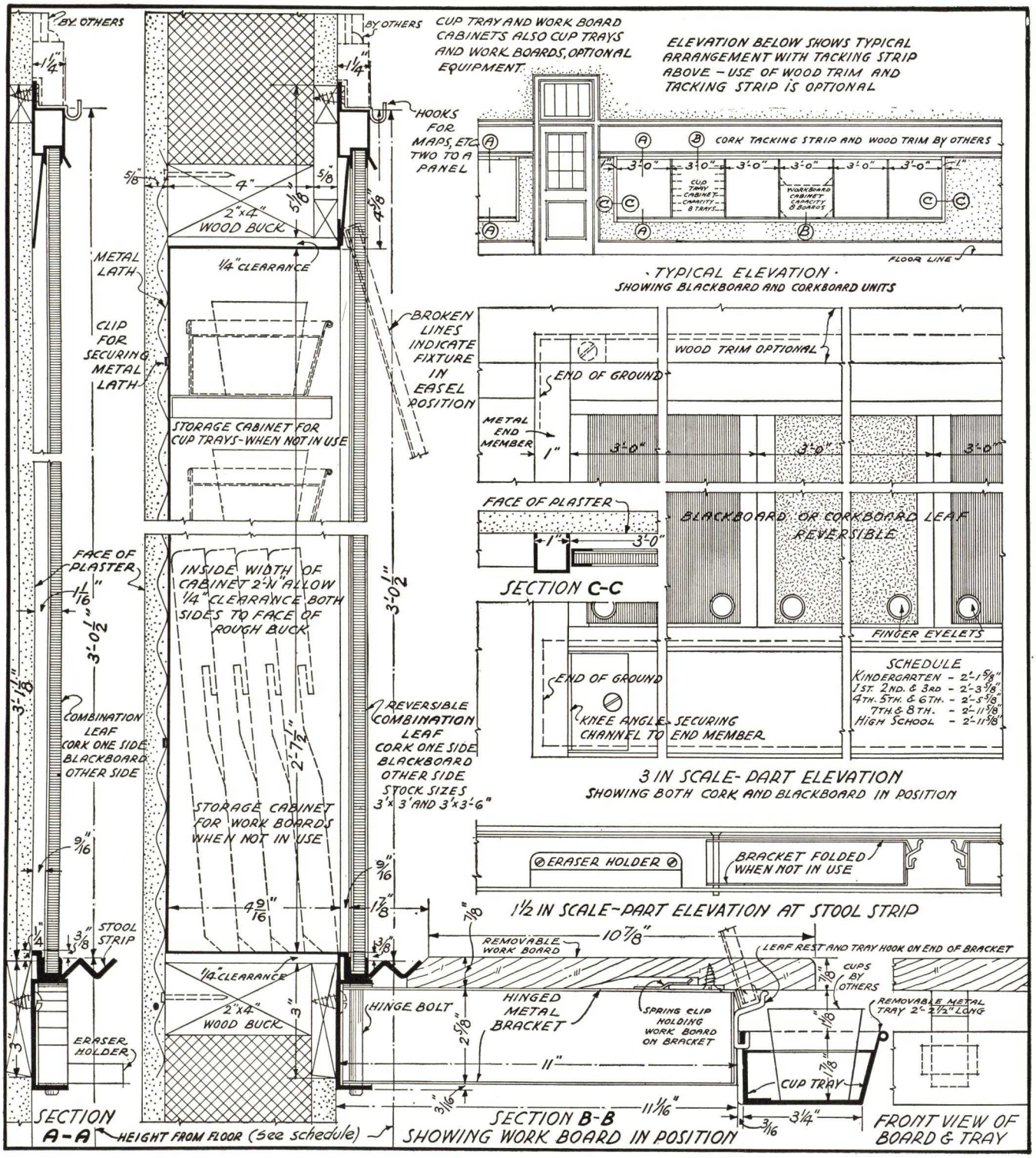
(No. 2) As a Display Board—Any desired portion of blackboard area may be converted into display area by reversing the leaf, bringing the cork side out. Educational material may be readily pinned to the cork side. Whether for exhibition or for class instruction the work displayed is always at the proper visual height.

(No. 3) As a Display Shelf and Work Board—With leaf in vertical position, the work boards placed upon brackets and engaged thereto, provide display shelves or work benches. These work benches are sufficiently strong for all ordinary school craft, such as Nature Study, Clay Modeling, etc. They may also be used for displaying completed work, or as a base for chart standard. Unquestionably, the ingenious teacher will find many other uses.

(No. 4) As an Art Easel—Two pivoted metal brackets (attached to the channel below the rail strip) permit the leaf to be brought forward into easel position as shown above. The color tray catches any drip from painting, thus both wall and floor are properly protected. The youngest student can set up this arrangement instantly. No part of the easel touches the floor and it is always at proper height.

(No. 5) As a Corridor Exhibition Board—The leaf of the fixture becomes a movable display board when hung from permanently installed hooks or pegs, the finger eyelets being utilized for this purpose. The instructor may prepare his display in the classroom before placing the leaf in the corridor position, thus avoiding confusion in the corridor, damage to its wall surface, etc.

Detail Austral Multi-Use Blackboard Fixture



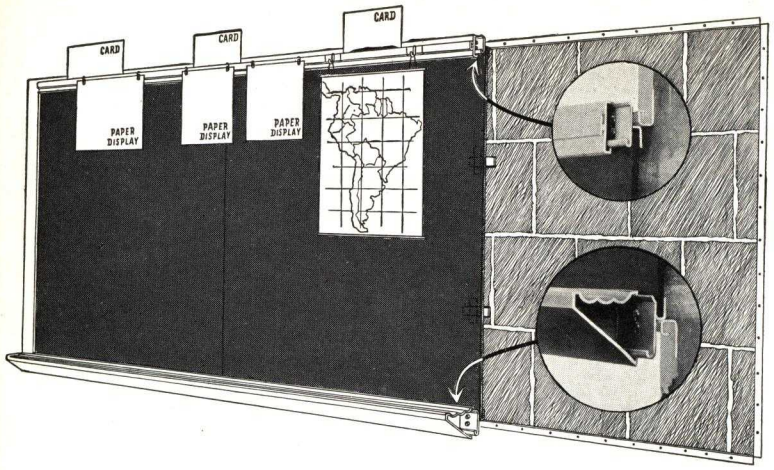
Specifications:—Austral Multi-Use Blackboard Fixture

Furnish and install in all classrooms where indicated the Multi-Use Blackboard Fixture, consisting of head strip, stool strip with channel, brackets and eraser holder, combination blackboard and cork board leaf, work shelf and paint tray and necessary metal storage cabinets for paint trays and work boards. This equipment shall be equal to that manufactured by the AUSTRAL SALES CORP., 101 Park Avenue, New York, N. Y., whose working drawings and details shall be considered a part of this specification. Any grounds, trim, painting or staining other than that specified herein shall be furnished and installed by others.

Austral Metal Storage Cabinets for the storage of paint trays and work boards shall be located in the walls directly back of the blackboard panels and shall be either built into the walls before plastering or provision made for their insertion after the plastering has been completed as directed by the architect.

Face of cabinet shall be set flush with face of finished plaster.

Rough wood bucks and grounds shall be provided and shall be accurately set by others in accordance with detail drawings as supplied by the blackboard manufacturer.



Austral "Griptite"

ALL METAL

Blackboard Assembly

"MASTERS PATENTS"

Austral "Griptite" All-Metal Blackboard Assembly, with the Blackboards mechanically clamped in metal grounds, were first introduced in Pennsylvania in 1928. Repeated installations by prominent architects prove that it has stood the test of continuous use with entire satisfaction.

Austral "Griptite" is the original blackboard assembly with a continuous steel ground and an independent means of securing the blackboard within it. This is recognized as the best and most economical method yet devised.

Practically all failures and difficulties experienced in connection with the usual type of blackboard frames can be traced to warpage or loosening of the foundation or wood ground strips. Continuous weight or pressure after years of service throw blackboards out of alignment.

Austral "Griptite" All-Metal Frames eliminate these difficulties. The grounds, continuous 16 gauge steel, are bolted, toggled or screwed to the bare walls before plastering. The adjustable clamps insure perfect and permanent alignment of slate to an even surface. Variations in thickness and curvature of blackboard material present no difficulties.

Trim and chalk rails are of aluminum or steel and are of the snap-on type, eliminating unsightly screws or other fasteners.

Display rail, as part of the finished trim, completes the assembly for practical teaching methods.

Advantages

(1) A neat, sanitary and durable installation.
(2) Keeps blackboards permanently tight.
(3) Repairs and maintenance are entirely eliminated.
(4) Variation in thickness and curvature of blackboard material present no difficulties.
(5) Simplicity of construction and ease of installation.
(6) Display rail, with sliding map hooks, an integral part of the upper trim member.

Specifications:—

METAL BLACKBOARD AND BULLETIN BOARD FRAMES

The following are specifications covering the use of Austral "Griptite" Metal Blackboard Assembly for blackboards and bulletin boards with additional specifications to be incorporated under "Blackboards," "Bulletin Boards," "Painting" and "Plastering."

All Metal Blackboard and Bulletin Board Frames are to be "Griptite" Type, as manufactured by Austral Sales Corporation, 101 Park Avenue, New York City, as detailed, or approved equal.

Grounds—Erect continuous steel grounds of 16 gauge galvanized steel where blackboard and bulletin board spaces are shown. These grounds to be securely fastened by means of toggle bolts, expansion bolts or straight bolts with 1 in. washers, as conditions may require. Grounds on Gypsum walls to be bolted through Gypsum blocks with straight bolts reinforced with 1 in. washers. Fastenings to be made through holes provided in grounds, and are to be spaced not over 15 in. Walls other than those to be plastered shall have channel ground of same material as chalk rail and trim, and to be mitered at corners forming a part of completed trim. Space inside grounds to be 5/8 in. greater than size of slate to be installed.

Clips and Clamps—Trim and chalk rail clips to be 2 in. wide, 14 gauge Cadmium plated steel, formed so as to receive clip-on trim and to lap edges of slate not less than 1/4 in. Clamps are to be 2 in. wide made of 14 gauge Cadmium plated steel and shall be mechanically fastened to ground in such a manner as to provide permanent alignment of blackboard face.

Attaching Clips and Clamps—Clips and clamps are fastened to grounds by Blackboard Erector at time of setting slate. Clips and clamps shall be placed adjacent to all joints and corners on vertical and horizontal grounds and at intermediate points not over 15 in. on centers. For additional information see Blackboard Specifications.

Display Rail—Intermediate (or top) trim of frames on front (and corridor) walls shall be of the display type for card, paper and map display, with 4 map hooks per 10 ft. of rail.

Chalk Rail and Trim—*(Here specify either Aluminum or Steel.)*

Aluminum—Chalk rail 3/32 in. thick, trim 1/16 in. thick, size as detailed Finish—"Dull Alumilite" or "Natural as extruded."

Steel—Chalk rail and trim to be 20 gauge cold rolled steel as detailed. Finish to be baked prime coat *(unless otherwise specified)*.

Trim and Chalk Rail Installation—After installation of slate and bulletin boards, snap chalk rail and trim over clips. Trim to be mitered at all outside corners and to butt at all other points. Where Bulletin Boards occur, trim is substituted for chalk rail. Ends of chalk rail are closed by attaching metal end castings.

BLACKBOARDS: *(Here specify quality of materials, etc.)*

Slate blackboards shall be installed in all metal frames in accordance with the following requirements.

Clips and clamps provided by others shall be used to support blackboards around all outside edges and spaced as called for under *Metal Blackboard and Bulletin Board Frames.*

Adjustment at center of joints to be made by means of well dried wood wedges set in plastic cement. Adjustment at top and bottom is taken care of by clamps. (Blackboards shall be spotted with plastic cement at approximately 18 in. intervals throughout entire length of space, for sound deadening.) Joint cement shall be waterproof and as recommended by the blackboard manufacturers. Joints to be rubbed down and finished to the satisfaction of the Architect.

Blackboard setter shall familiarize himself with the frame construction, and exercise care in having face of blackboards even with face of plaster.

BULLETIN BOARDS: *(Here specify materials, etc.)*

Display boards 1/2 in. thick shall be placed in steel grounds with flange arranged to receive 1/2 in. materials. Notch over possible screw heads in steel grounds. Joints allowed as follows:

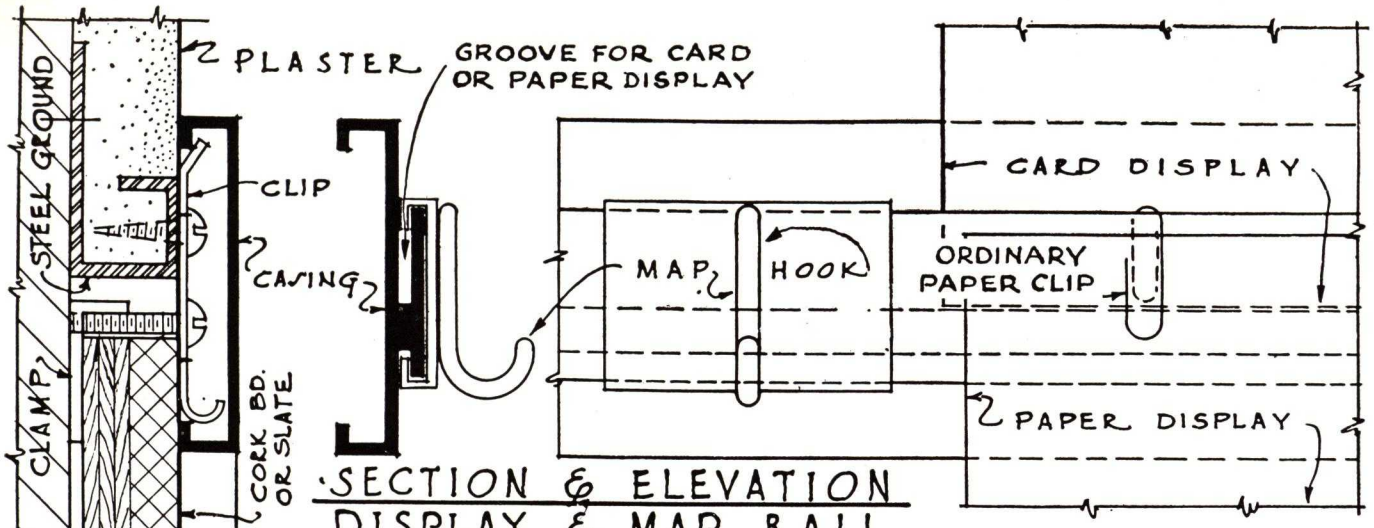
PAINTING SPECIFICATIONS: No painting required if Aluminum Trim is used.

If Primed Steel is used the Painter shall finish in the following manner:

PLASTER SPECIFICATIONS: No plaster required in back of Blackboards or Bulletin Boards. Plaster outside of Blackboard and Bulletin Boards to finish flush with face of steel ground.

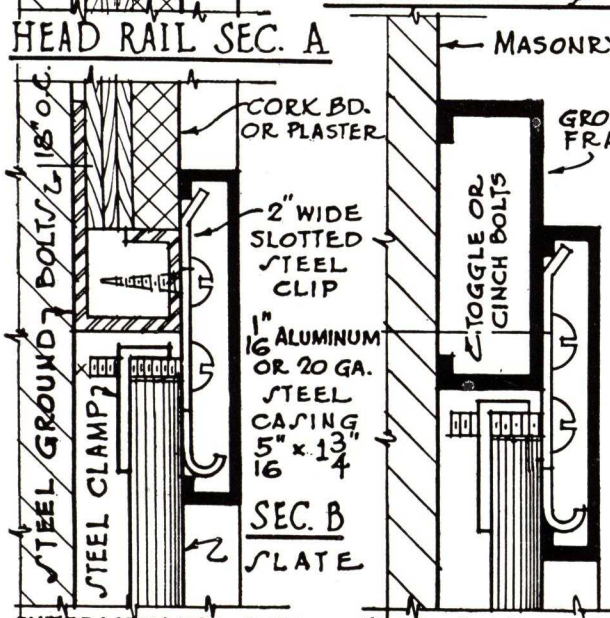
MOVABLE BLACKBOARDS

Austral counterbalanced or counterweighted blackboards, with all metal frames, ball bearing sheaves and guide wheels at four corners of each panel, are used extensively in College and High School lecture rooms. Detailed information on request.



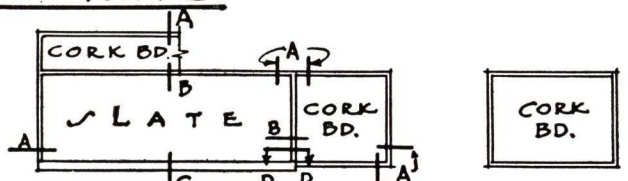
SECTION & ELEVATION DISPLAY & MAP RAIL

HEAD RAIL SEC. A

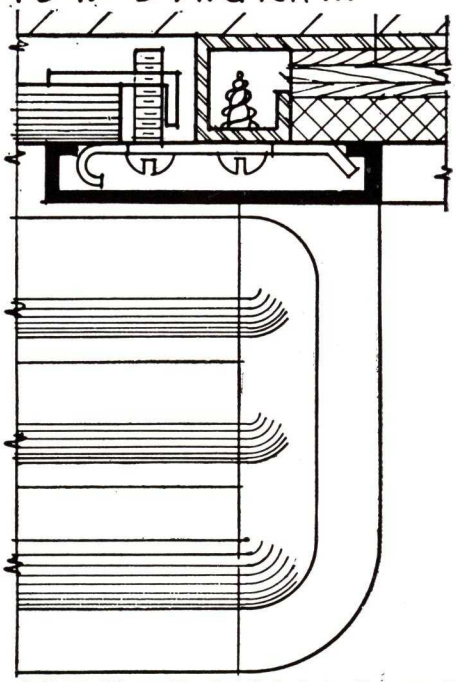


INTERMEDIATE RAIL · SEC. B

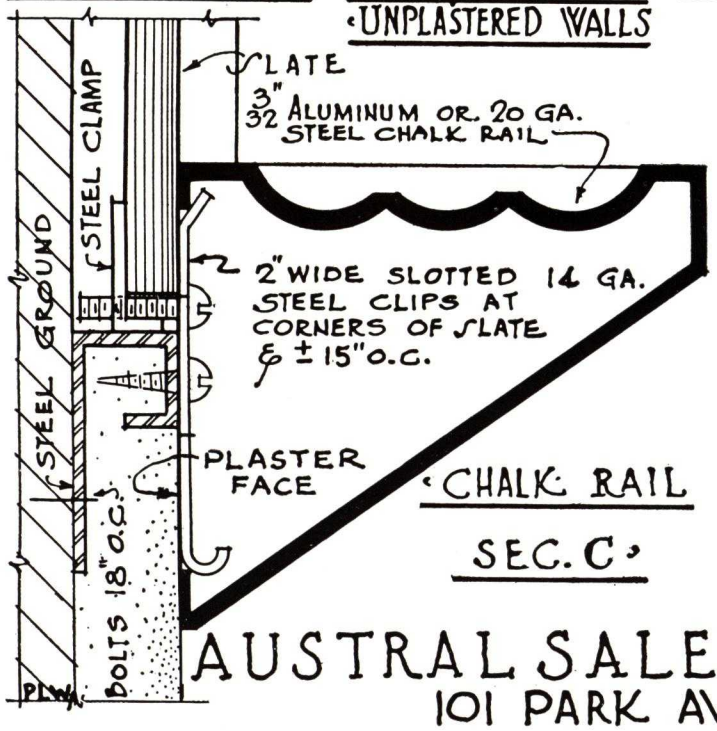
HEAD & JAMB SEC. · UNPLASTERED WALLS



BLACKBOARD · DISPLAY BOARD · ELEVATION DIAGRAM ·



F.S. PLAN OF END CAP OF CHALK RAIL AT D-D ·



CHALK RAIL SEC. C ·

FULL SIZE DETAILS OF

GRIPTITE

METAL TRIM ASSEMBLY FOR BLACKBOARDS & DISPLAY BOARDS

MASTER'S PATENTS.

AUSTRAL SALES CORPORATION

101 PARK AVE · NEW YORK N.Y.

Over Three Thousand Five Hundred Schools in Thirty-six States Contain Austral Equipment

The widespread popularity and use of the Austral Windows, Wardrobes, Partitions, "Griptite" All-Metal Blackboard Assembly, Movable Blackboards and Multi-Use Blackboards by Architects and Educational Departments is demonstrated by their installation over such a large section of the country.

A large percentage of these installations are repeat orders, having been established as standard equipment by many architects who specialize in designing schools. Austral Equipment has stood the test of Time.

A list of installations local to your office and a list of architects who have specified Austral products will be gladly sent on request.

A Catalog containing over Four Hundred fine illustrations of modern schools in which Austral Equipment has been used may be obtained by addressing our New York office.

Austral

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GRANT PULLEY AND HARDWARE COMPANY

Sash Pulleys and Casement Window Hardware

TELEPHONE CONNECTION

33-36 Fifty-seventh Street
WOODSIDE, LONG ISLAND, N. Y.

CALIFORNIA REPRESENTATIVE: Grant Products & Hardware Co., 443 South San Pedro Street, LOS ANGELES, CAL.

Agents in all the principal cities of the United States and Canada, and our Name will be found listed in the Telephone Directories

PRODUCTS

Grant Overhead Sash Pulleys.
Grant Show Case Pulleys.
Grant Ball Bearing Door Sheaves.
Lee Cast Iron Sash Pulleys.
Gem Cast Iron Sash Pulleys.
Star Cast Iron Sash Pulleys.
Ace Cast Iron Sash Pulleys (steel wheels).
Grant All Steel Sash Pulleys.
Grant Pulleys for Interior Sash and Grilles.
Grant Friction Sash Centers.
Queen Anti-friction Casement Hardware.
Queen Friction Casement Adjusters.
Grant Sliding Casement Window Hardware.
Grant Anti-friction Vertical Pivot Lifts.
Morewood Window Cleaning Devices.
Grant Revolving Window Strips and Fixtures.
Turner Anti-friction Drawer Slides.
Gem Anti-friction Drawer Slides.
Grant Improved Ball Bearing Drawer Slides.
Grant Under Carriage Ball Bearing Drawer Slides.
Queen Ball Bearing Drawer Slides.
Grant Ball Bearing Bench Slides.
Grant Heavy Duty Ball Bearing Drawer Slides.
Grant Ball Bearing Garment Carriers.

For Door Hangers, and Bar Locks, see page of Grant Elevator Equipment Corp., as listed in File Index

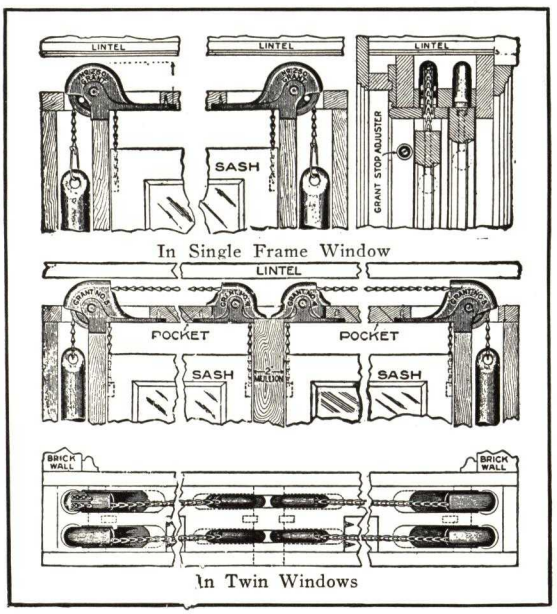
Selling Agents for

"Gem" Ball Bearing Door Hangers.

Grant Overhead Pulleys

On account of additional pocket room gained by the use of Grant pulleys, iron instead of lead weights can be used for the heaviest plate glass windows, thus materially reducing cost. Frames are cut for Grant pulleys by a regular pulley machine.

Grant overhead pulleys are also made for triple, quadruple and quintuple windows.



Grant Anti-friction Vertical Pivot Lifts

The Grant anti-friction pivot lift, when applied to sash pivoted top and bottom, can be quickly and easily opened for ventilation.

Anti-friction Drawer Slides

We offer a variety of anti-friction easily-installed drawer slides for light, medium and heavy duty. Types are available for mounting on the sides of the drawer or between the bottom of the drawer and case. Further information on request.

Tabor Reversible Window Hardware

Tabor Reversible Hardware is made for double hung windows, weightless windows, transom bar windows and pivoted sash. Style "A" equipment in illustration makes it possible to pivot an ordinary double hung window, thus giving 100% ventilation when needed; also eliminating the danger and use of window cleaning equipment. All cleaning is done from the inside of the building.

Send for catalog, full size details, specification data and prices.

INCORPORATED 1904

THE WILLIAMS PIVOT SASH CO.

Reversible, Pivoted and Casement Window Equipment

CLEVELAND, OHIO

BRANCH OFFICES

ALBANY, N. Y., Cassius J. Logan, 271 Washington Avenue
BINGHAMTON, N. Y., Babcock, Hinds & Underwood
BOSTON, MASS., C. N. Eaton, 37 Foxcroft Road, Winchester, Mass.
BUFFALO, N. Y., Hawkins & Howlett, 243 Capen Boulevard
CHICAGO, ILL., M. R. Duffy, Tribune Tower
CINCINNATI, OHIO, Richard F. Strong, 130 Kinsey Avenue
DETROIT, MICH., The Rayl Co., 1233 Griswold Street and
STATE OF MICHIGAN, Mark C. Stebbins, 8859 Birwood Avenue
KANSAS CITY, MO., Paul R. McCollem, 1016 Baltimore Avenue
MILWAUKEE, WIS., Philip Gross Hardware Co., 174 W. Wisconsin Avenue
NEW YORK, N. Y., Walter T. Voege, 111 Murray Street
PHILADELPHIA, PA., J. H. Windell, 1505 Race Street
ROCHESTER, N. Y., Henry Lester Hardware Co., Inc.
ST. LOUIS, MO., P. C. Baerveldt, 1458 Graham Avenue
SCRANTON, PA., Harvey R. Allen, 711 Linden Street
SYRACUSE, N. Y., Alexander Grant's Sons, 134 E. Genesee Street

CANADA, Aikenhead Hardware Limited, 17-21 Temperance Street, TORONTO

WILLIAMS REVERSIBLE WINDOW EQUIPMENT—DOUBLE HUNG AND PLANK FRAME TYPES

Williams Reversible Windows are windows which can be turned around so that the outside of the sash can be cleaned from the inside of the building. They can also be tilted for overhead ventilation and can be turned at right angles to the window frame to give 100% opening.

Adaptability

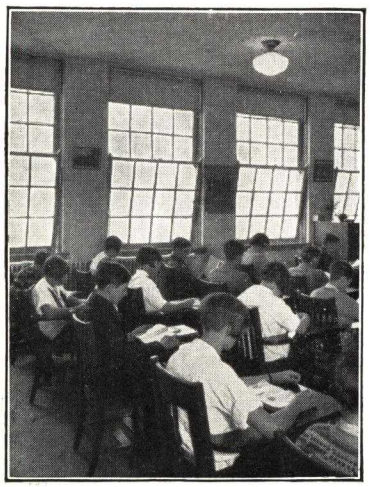
Williams Double Hung Reversible Window Equipment is adaptable for use in office buildings, hospitals, hotels, schools—in fact in any place where good double hung wood windows are used.

The plank frame equipment (not sliding) is especially adaptable for schools. It eliminates weights, cords and pulleys as well as provides more weathertight windows than the ordinary double hung window which is not weatherstripped. This type provides greater light area and is more economical in construction.

Advantages

Cleaning—Outside of both sash may be cleaned from inside the room with the window practically closed. With the double hung type, all cleaning is done from the floor level. Much less time is required and cheaper help can be obtained than on outside cleaning. This reduces the window cleaning cost enough to pay for the entire equipment in a few years and is an economic factor throughout the life of the building.

In Hospitals—Williams Reversible Window Equipment is particularly adapted for use in hospitals where draftless ventilation is of the utmost importance, and where patients must not be annoyed by cleaners climbing in and out of windows.



Draftless Ventilation

No Air Leakage—Tests for air leakage between sash and reversible strip prove conclusively that passage of air at this point is negligible. These tests were thorough and comprehensive—a copy will gladly be sent on request.

Weatherstrips—On all work where our double hung equipment is to be used we get in touch with the successful weatherstrip contractor to arrange with him for the proper grooving of the back of our reversible strips to accommodate his particular type of weatherstripping. We cut this groove exactly to his detail at our factory.

Hospital Window Being Cleaned from the Inside

Screens— For double hung windows we recommend full length top hinged or roll screens. The leading screen manufacturers accommodate their screens to our equipment so that the windows are cleaned without removing the screens.

Half length screens also can be used.

Eliminates Rattling—To eliminate the objectionable rattling of ordinary windows, the Williams equipment includes a roller spring feature which maintains constant contact with both sides of the window. This not only prevents the sash from rattling but also serves to make the sash slide up and down with greater ease.

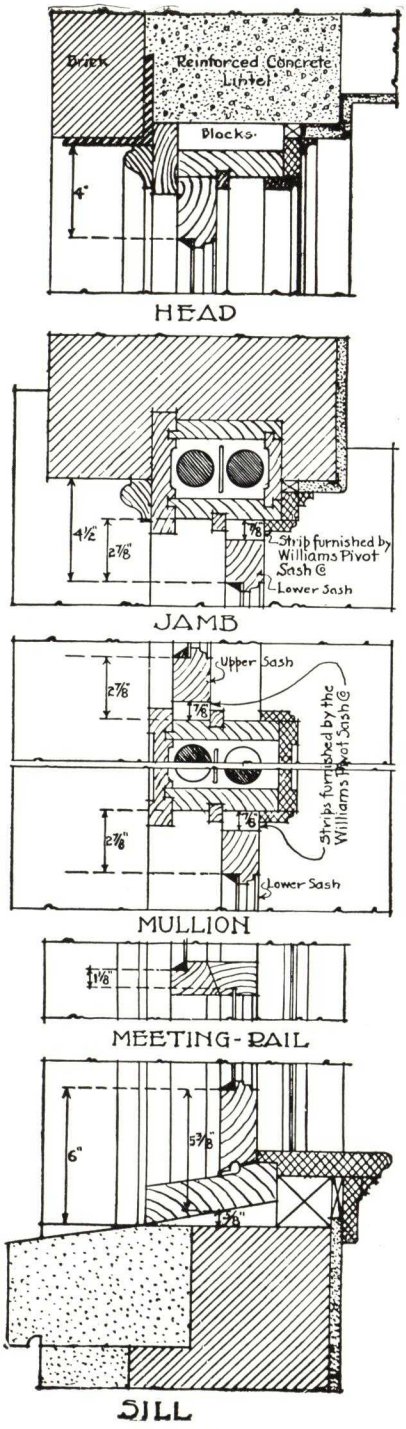
Installation and Responsibility

A staff of expert mechanics is maintained to install Williams equipment. This service also includes the fitting and hanging of sash.

Because the home office controls the installation, we can and do assume responsibility for the proper operation of Williams equipment. This policy has been a strong factor in establishing this product for more than 30 years.

Acceptance

Many of the most prominent architects throughout the country have repeatedly used this equipment in several thousand buildings. Owners likewise have indorsed its satisfactory service and reduced maintenance cost by continued and extended use.



Double Hung
Scale Details sent on request

Construction Details Williams Reversible Window Equipment

No special frame or sash construction is required for Williams Reversible Window Equipment, the sash merely being made 1¾ in. narrower than the inside width of the frame. In the plank frame type, a plank frame is substituted for a box frame.

The double hung equipment retains all the features of a sliding window with the added advantage of permitting either sash to be completely reversed or tilted to any position. The plank frame equipment does not have the sliding feature.

The Williams equipment consists of:

Williams Corrugated Side Strip—A strip made of well seasoned hard maple, ⅞ in. thick, of width equal to the thickness of the sash, and corrugated on the sash side. The sash is corrugated (by our mechanics) to meet the corrugations on the strip. The strip is attached to the sash by means of the:

Williams Truncated Cone Pivot—A reliable and effective pivot by which the weight of the sash is automatically used to draw the reversible strip and sash tightly together. The corrugations in the strip and sash are thereby firmly meshed and make a dependable weather-tight joint. This pivot also holds the sash in position when tilted.

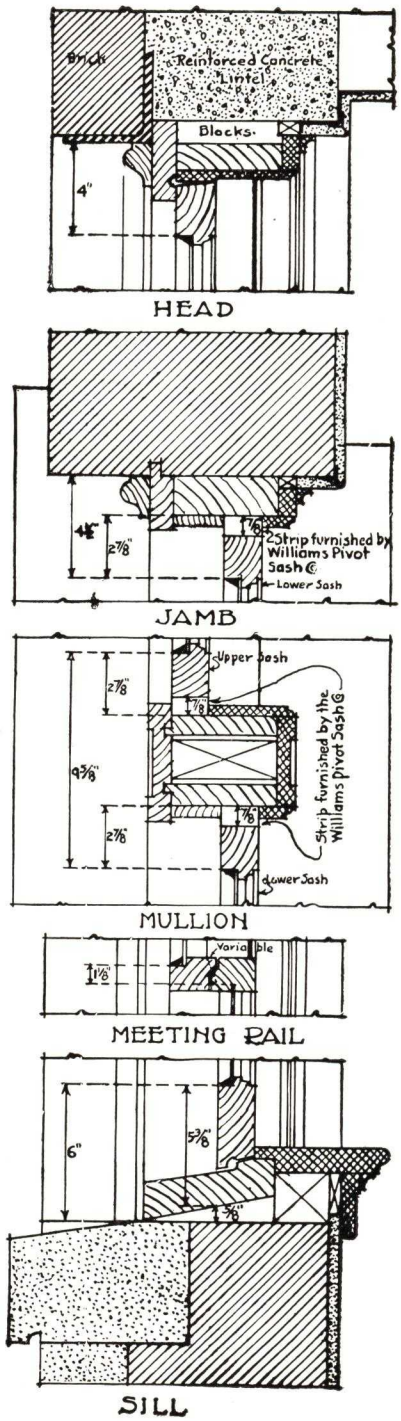
Spring Rollers—In the back of the reversible strip is embedded a series of roller and spring devices. Acting against the jamb when the window is closed, these help keep the strip in snug contact with the sash, preventing the window from rattling and allowing the sash to slide freely.

Finishing Hardware—Standard locks, handles, sockets, and poles may be used with the double hung equipment. We do, however, recommend the use of our finishing hardware especially designed for the plank frame equipment.

Specifications

Double Hung—All double hung wood sash to be equipped with reversible fixtures as manufactured and installed by THE WILLIAMS PIVOT SASH CO., Cleveland, Ohio. Said Company to fit and install all sash on which their fixtures are to be used.

Plank Frame—All window sash to be of the plank frame type and equipped with reversible fixtures as manufactured by THE WILLIAMS PIVOT SASH CO., Cleveland, Ohio. The contractor shall furnish all frames and sash. THE WILLIAMS PIVOT SASH CO. shall apply their strips to the sash, and they shall fit and place these sash in their respective openings. The hardware (locks, lifts, sockets, and poles) for all windows equipped with Williams Fixtures shall be furnished and installed by them, and shall conform with the other hardware in metal and style of finish.



Plank Frame
Scale Details sent on request

Installations Typical of Several Thousand Williams Equipped Buildings

Double Hung—Banks, Office Buildings, Corporations

First National Bank, Detroit, Mich.
Central Depositors Bank Bldg., Akron, Ohio
First National Bank, Youngstown, Ohio
Geo. D. Harter Bank, Canton, Ohio
Ford Motor Co., Detroit, Mich.
Detroit Edison Co., Detroit, Mich.
The Hoover Co., North Canton, Ohio
Canadian Westinghouse Bldg., Hamilton, Ont.
Penton Publishing Co., Cleveland, Ohio
McKinney Steel Co., Cleveland, Ohio
Ohio Edison Bldg., Akron, Ohio
Fisher Body Plant, Cleveland, Ohio
Republic Iron & Steel Co., Youngstown, Ohio
Carnegie Steel Co., Youngstown, Ohio
B. F. Goodrich Co., Akron, Ohio
Monongahela R. R. Station, Brownsville, Pa.
Cleveland Hotel, Cleveland, Ohio
Statler Hotel, St. Louis, Mo.
Statler Hotel Addition, Detroit, Mich.

Double Hung—Hospitals

University Hospital Group, Cleveland, Ohio
St. Luke's Hospital, Cleveland, Ohio
Huron Road Hospital, Cleveland, Ohio
St. Anne's Hospital, Chicago, Ill.
Children's Memorial Hospital, Nurses' Home, Chicago, Ill.
Lying-In Hospital, Philadelphia, Pa.
Woman's Hospital, Philadelphia, Pa.
Jeanes Hospital, Philadelphia, Pa.
General Hospital, York, Pa.
St. Francis Nurses' Home, Pittsburgh, Pa.
Grace Hospital, Detroit, Mich.
City Hospital Bldgs., St. Louis, Mo.
St. Francis Hospital, LaCrosse, Wis.
St. Joseph's Hospital, Milwaukee, Wis.
Provident Hospital, Beaver Falls, Pa.
Akron City Hospital, Akron, Ohio
Children's Hospital, Akron, Ohio
Columbus Hospital, Great Falls, Mont.
Evangelical Deaconess Hospital, Brooklyn, N. Y.

Plank Frame—Schools

McKinley High School, Canton, Ohio
Senior High School, York, Pa.
Girls Catholic High School, Philadelphia, Pa.
Tippecanoe School, Milwaukee, Wis.
Mt. Washington School, Cincinnati, Ohio
High School, Dumont, N. J.
Liberty High School, Bethlehem, Pa.
Public Grade and High Schools, New York, N. Y.

Double Hung—Schools and Institutions

Laurel School, Shaker Heights, Ohio
Monticello School, Cleveland Heights, Ohio
Maine Twp. High School, Des Plaines, Ill.
Sacred Heart Seminary, Detroit, Mich.
St. Mary's Academy, Monroe, Mich.
Holy Name Rectory, Chicago, Ill.
Bishop Loughlin Memorial High School, Brooklyn, N. Y.

MEMORANDA

Win-Dor

THE CASEMENT HARDWARE COMPANY

★

Win-Dor

THE CASEMENT HARDWARE COMPANY

Factory and General Offices: 406 N. Wood St., Chicago, Ill. U. S. A.

PRODUCTS { A complete correlated line of tested devices for installing, operating, and controlling wood and metal casement windows.

THE COMPANY: Originators and pioneer manufacturers of American casement hardware, the Company has been closely identified with the growing popularity of casement windows during the past thirty-one years. During this period Win-Dor developments have accounted for the major improvements in the art of casement operation and control.

EXPERIENCE: Over 200 thousand buildings equipped with Win-Dor devices serve as the greatest experience base in this field. The benefits of this wide and diversified experience contribute greatly to the superior performance and greater life characteristic of Win-Dor products.

SAFETY FACTOR CONSTRUCTION: Design and standards being based on ample experience rather than theoretical calculation accounts for the ability of Win-Dor devices to operate satisfactorily under severe conditions and stand up against abuse. (To withstand strains frequently encountered in actual use, casement operators require 100% more strength than indicated necessary for "normal" function of such devices.)

MANUFACTURING FACILITIES: A modern plant located in the convenient west side manufacturing district of Chicago gives facilities for efficient manufacture and prompt service for all territories.

COST: Specialization and volume permit manufacturing efficiencies which largely absorb the cost of more expensive materials. Important further savings in final costs to users are made by "fool-proof" simplification of installation features (reversibility-attaching tolerances, etc.).

DISTRIBUTION: **Products for Wood Sash:** Distributed nationally through builders' hardware dealers in all major market centers. Most of these maintain stocks and all receive direct service from the factory on contract requirements. In smaller towns, through retail hardware and lumber dealers served by strategically located jobbers stocks.

Devices for Steel Sash: Win-Dor Series 28 operators (page 9) are applicable to most American light section casements and to all intermediate types. Win-Dor Series 32 operators (Page 10) are for all oversize and heavy casements. Several manufacturers will supply Win-Dor on specification at a very slight extra over their own production standard equipment.

NOTE: The Company **does not** duplicate Win-Dor devices for sale under private marks of sash manufacturers or distributors.

IDENTIFICATION: For protection of specifiers and users, the mark Win-Dor is stamped on all products and labeled on all containers.

WARRANTY: Specific warranties are given for each Win-Dor device on the following pages. Written warranty is gladly furnished for any project on request.

REPRESENTATIVES

Branch: 101 Park Avenue, New York, N. Y.

C. E. Harris Co.
99 Bedford St.
Boston, Mass.

Franks-North Co.
4171 Flad Ave.
St. Louis, Mo.

W. H. Steele Co.
443 S. San Pedro St.
Los Angeles, Cal.

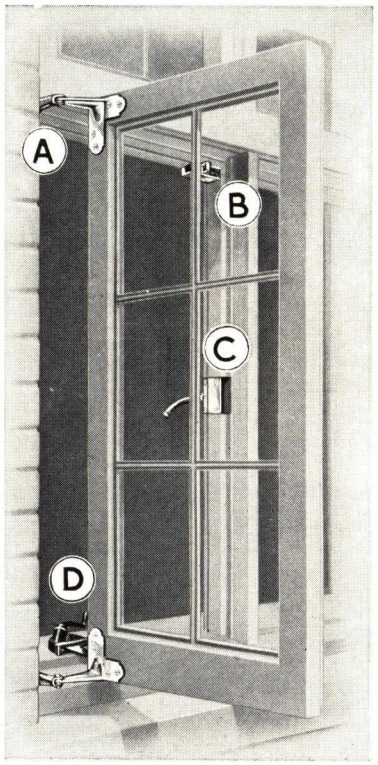
C. I. Yates
7 Front St.
San Francisco, Cal.

C. A. King
Terminal Sales Bldg.
Seattle, Wash.

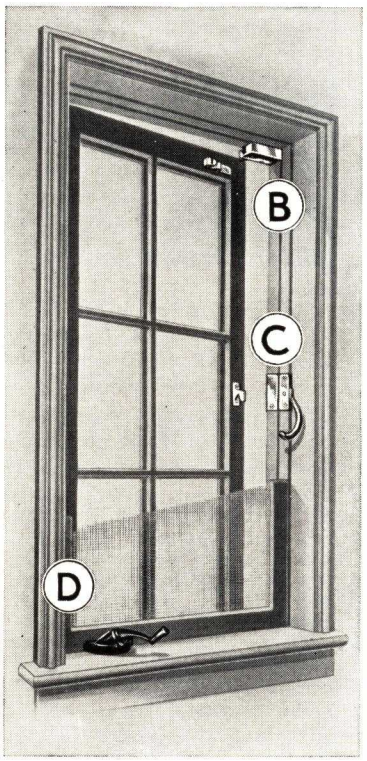
Member: Producers' Council

Exhibits: Arch. Sample Corp., New York, and at the factory, 406 N. Wood Street, Chicago, Ill.

CORRELATED HARDWARE FOR WOOD CASEMENT WINDOWS



Satisfactory wood casement window installation depends almost entirely upon the hardware used to install, operate, and control the sash. Hinges, handles, closing and locking devices should be a combination of efficient units designed for smooth, trouble-free usage. Such an arrangement of correlated hardware may be obtained by the use of Win-Dor hardware as illustrated in the accompanying pictures. They show inside and outside views of Win-Dor hardware installed.
(See page 10 for Win-Dor matched hardware set).



BY Win-Dor TRADE MARK

A The left hand illustration above shows Win-Dor Series 75 extension cleaning hinges for installing outswung wood casement windows. Extension hinges provide space between the frame and the sash for washing the outside of the window from the inside. Casement window hinges are described on Page 7.

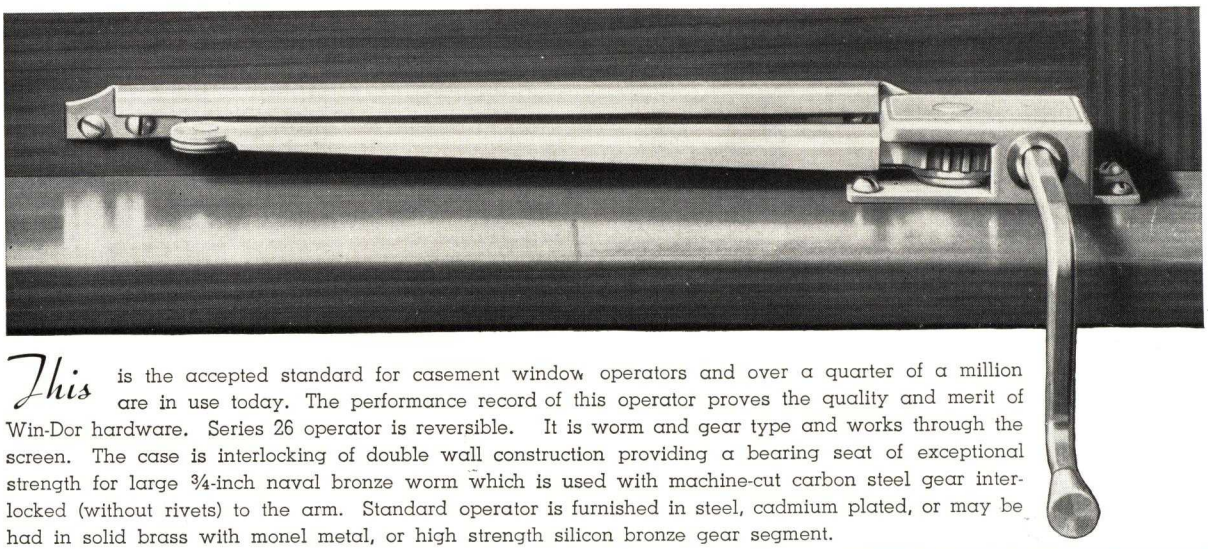
B This is Win-Dor Series 45 top-closer. It is shown on both inside and outside views above and described on page 8. It is used for tight closing of the casement at the top opposite the hinge side. The top-closer does this automatically in conjunction with the operator used on the sill at the bottom of the window.

C Both the inside and outside views of the window show this Win-Dor Series 800 locking handle installed at the center of the casement. For manual locking, this handle is practical and convenient, as it works around the screen, permitting the casement to be locked without removing the screen. Series 800 handle is illustrated and described on page 8.

D For the actual operation of the casement several types of Win-Dor operators are shown in this catalog. They work through-the-screen and automatically lock, open and close casements with the minimum effort. Win-Dor operators are illustrated with description and recommendations on pages 3, 4, 5, 6, 9 and 10.

THE CASEMENT HARDWARE CO.

SERIES 26 OPERATOR



This is the accepted standard for casement window operators and over a quarter of a million are in use today. The performance record of this operator proves the quality and merit of Win-Dor hardware. Series 26 operator is reversible. It is worm and gear type and works through the screen. The case is interlocking of double wall construction providing a bearing seat of exceptional strength for large ¾-inch naval bronze worm which is used with machine-cut carbon steel gear interlocked (without rivets) to the arm. Standard operator is furnished in steel, cadmium plated, or may be had in solid brass with monel metal, or high strength silicon bronze gear segment.

A Here is one of two critical parts in an operator. It is where the greatest strain occurs and, therefore, where the strongest construction should be. We anticipate far greater stress than will ever be applied by using a large ¾ inch naval bronze self-cleaning and anti-freezing worm strongly held in the housing.

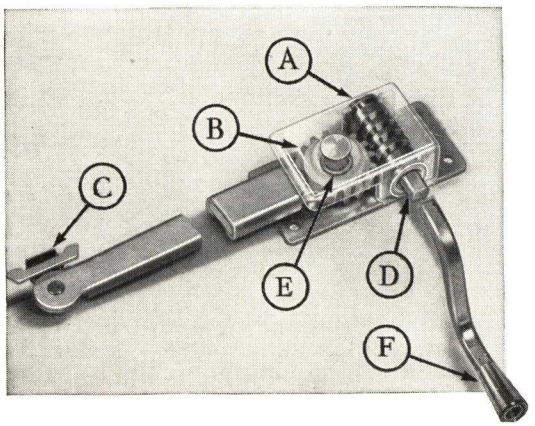
B Another critical part. As the full pressure of the sash is applied to the arm, the gear must be capable of abuse, so Win-Dor uses a machine cut, heat treated gear of ¼ inch thickness interlocked (without rivets) to the arm.

C Neither rust nor other atmospheric conditions will attack and destroy this tension spring (which slides in the operator channel) because it is made of bronze.

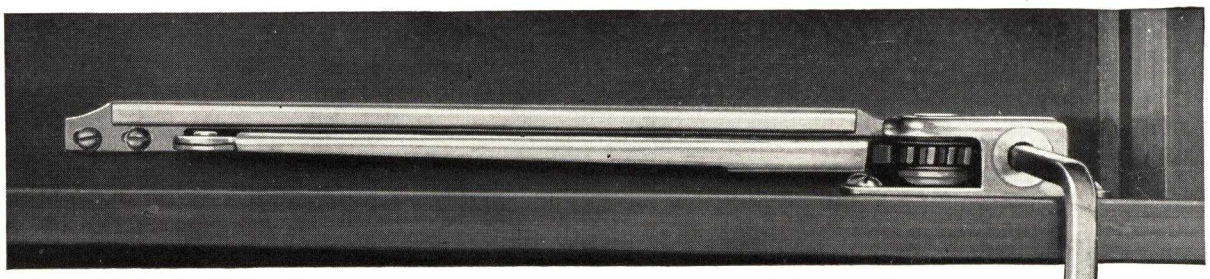
D Handle stock is of 5/16 inch rounded special section cold rolled steel, fitting snugly in the worm seat with a bearing length of ¾ inch.

E At this point, we use bronze again for a bushing through which the rivet is placed that holds the operator arm solidly in the housing.

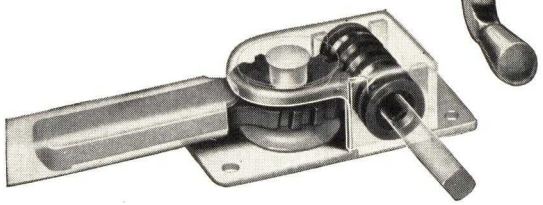
F Handles for Series 26 and Series 30 operators are all equipped with accurately machined roller knobs.



SERIES 30 OPERATOR

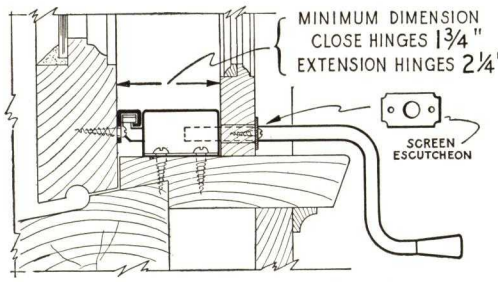


Similar in construction to Series 26 illustrated above, this operator is designed for narrow frames. It is reversible. It is made with ¾-inch naval bronze worm, machine-cut gear segment, interlocked to arm, as illustrated on the right. Patented Win-Dor sash channel is part of the operator, together with extruded handle and solid brass roller grip. See details on page 4 for clearances for the Series 30 operator as well as recommendations for installation and catalog data.



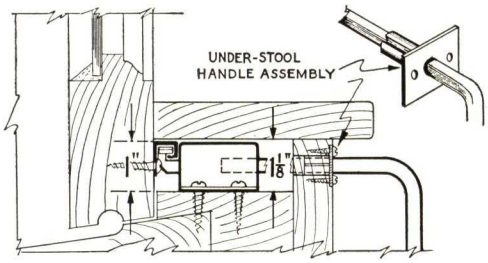
THE CASEMENT HARDWARE CO.

SERIES 26 RECOMMENDATIONS



VERTICAL SECTION SCALE 3"=1'

The above detail shows typical installation of Series 26 operator with removable handle in place through wood frame screen.



This detail shows understool construction with operator concealed and handle projecting through apron under the stool.

This operator is recommended for any casement installation demanding long life and trouble-free operation. It fits all outswung casement windows 15 inches wide or wider. It may be used on either right or left hand sash without any change whatever. It may be installed with either close or extension hinges. It is applicable for casement control above the stool or concealed below it, as illustrated on the left. Win-Dor construction of Series 26 operator is tolerant to the hardest usage which devices of this kind may be expected to receive. Worm and gear, and arm and channel action is smooth, self-cleaning and anti-freezing.

When casement window operator selection is based on comparative construction features and a recognition of quality in materials and workmanship, Series 26 operator may be specified with complete assurance of satisfactory performance and investment value. For seacoast installation and places where atmospheric conditions have a corrosive influence on metals, Series 26 all brass operator with monel metal or silicon bronze gear is recommended.

CATALOG DATA

No. 26, steel arm, channel, and housing; bronze worm and bushing; reversible; with No. 251 steel handle or No. 251B solid brass handle, 8 inches standard length.

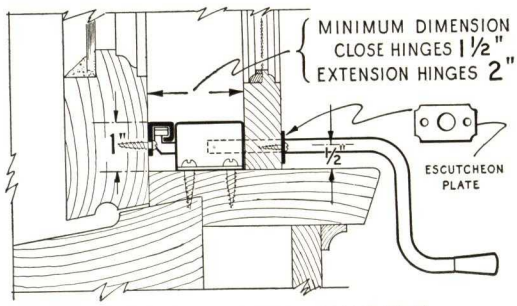
No. 26B, all brass except steel gear segment.

No. 26BM, all brass with monel metal gear segment.

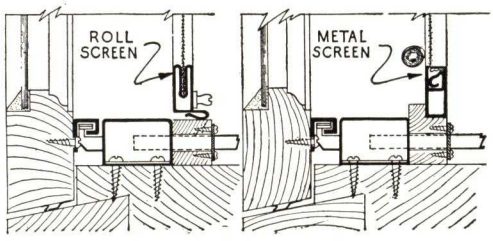
No. 26BX, all brass with silicon bronze gear segment; brass handles as above.

NOTE: *Where handle supports are required for all handles exceeding 8 inches, No. 253B support brackets should be ordered.*

SERIES 30 RECOMMENDATIONS



VERTICAL SECTION SCALE 3"=1'



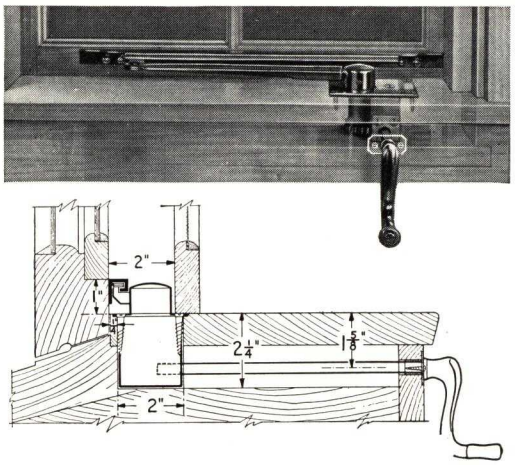
Above at the top is detail of typical installation for Series 30 operator, and below, the diagram illustrates use of wood filler strip where roll or metal screens are installed.

This operator is made to fit any casement window 15 inches or wider and is especially designed for narrow sills where clearances between screen and sash are required to be as little as possible. It can be used with either Win-Dor Series 76 close hinges or Win-Dor Series 75 extension hinges, or plain butts. When extension or cleaning hinges are employed, however, minimum of 2 inches is required between the sash and the outside surface of the screen. The 1½-inch clearance referred to in the detail on the left requires the sash channel to be placed 2¾ inches from the jamb on the hinge side. In this position the case of the operator fits tightly against the attaching flange of the channel instead of in front of the channel, as shown.

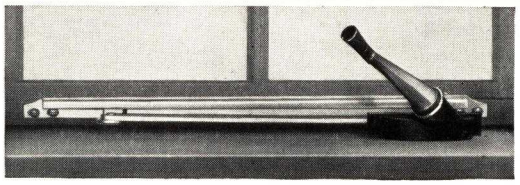
CATALOG DATA

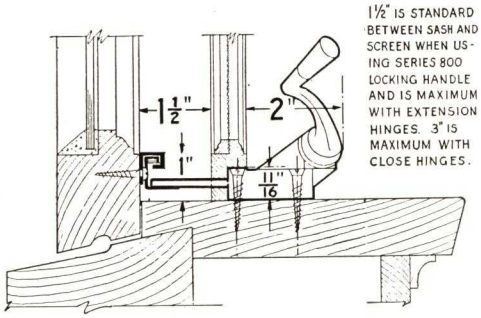
No. 30, steel arm, channel and housing; bronze worm and bushing; reversible; standard handle 8 inches for sills up to 9 inches wide. No. 251, steel, No. 251B, solid brass.

SERIES 35 OPERATOR



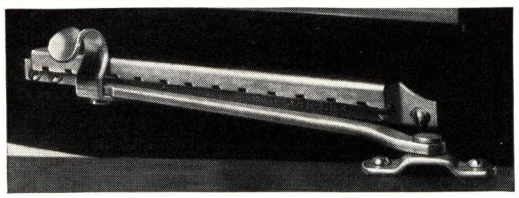
SERIES 29 OPERATOR

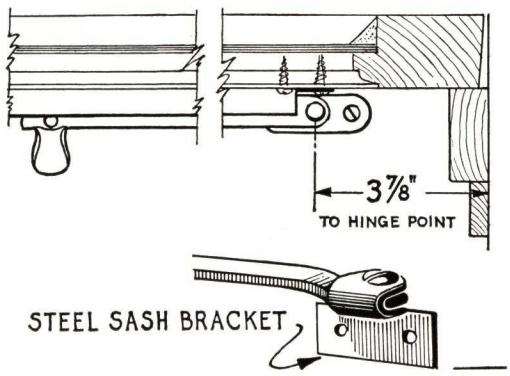




VERTICAL SECTION SCALE 3"=1'

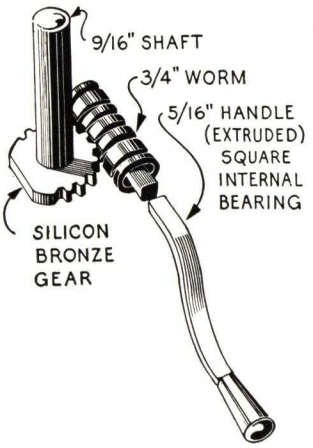
SERIES 61-65 STAY



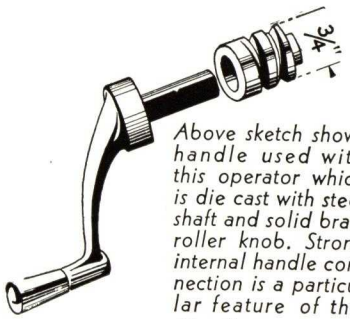


CONSTRUCTION FEATURES

HALF-SURFACE OPERATOR
One of the finest operators available of this type. As illustrated, the mechanism is concealed below the window stool. For appearance and convenience this is an ideal arrangement because any type of screening may be used without interference and yet the operator itself is, at all times, accessible. Exposed parts are bronze with naval bronze worm acting on machined gear cut from silicon bronze. Extruded handles of desired length have square internal worm bearing, as illustrated on the right.



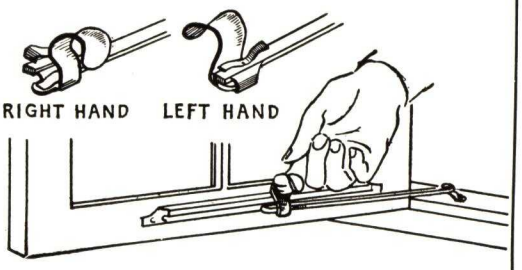
ANGLE DRIVE OPERATOR
This operator is constructed with housing and handle of die-cast zinc or cast bronze and arm and channel of steel. The driving worm of naval bronze operates against machine cut gear. Square steel handle shaft has strong internal worm connection. The arm and patented Win-Dor channel are similar to other Win-Dor operators but this type is **not reversible.** Detail on the left shows installation dimensions and clearances with either close or extension hinges.



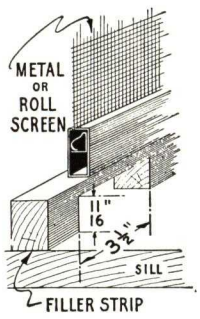
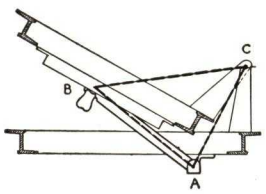
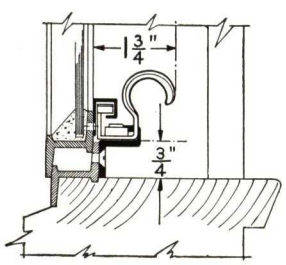
Above sketch shows handle used with this operator which is die cast with steel shaft and solid brass roller knob. Strong internal handle connection is a particular feature of this operator.

CASEMENT STAY This is a simple, positive, automatic, **non-friction** device affording one-hand operation at low cost. The Series 65 Stay is reversible and applicable to either right or left hand windows by simply taking off the finger lift and turning it around on the arm. Operation is obtained by lifting the arm up into the channel and when it is released, the window is positively locked by arm being held in channel notches. The stay may be used on either wood or steel sash as indicated.

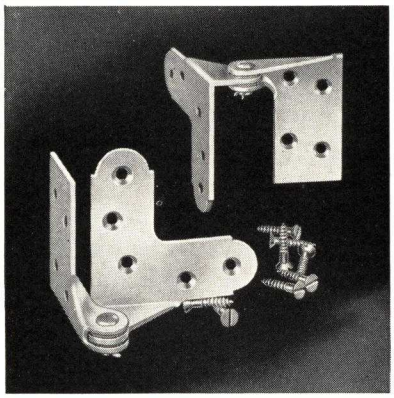
Illustration on the right shows operation and reversibility of finger lifts. On the left is bracket used for steel sash installation.



THE CASEMENT HARDWARE CO.

RECOMMENDATIONS	CATALOG DATA
• For monumental buildings, for government and institutional work, and for the finest residences where quality is the first consideration in specifying hardware, Series 35 operator will meet all requirements. As the mechanism is concealed below the stool, Series 35 operator is the choice of many architects where unobtrusive hardware installation is desired to conform with carefully detailed window trim. Series 35 operator is especially recommended for building locations which are exposed to seacoast atmospheric conditions where the attack of salt air would be disastrous to hardware of this type made from other than non-ferrous metals.	**No. 35B,** all brass and bronze operator with silicon bronze gear segment; reversible. Standard handles, **No. 251B,** all brass, 8 inches as in drawing or **No. 252B,** ornamental cast bronze as in operator illustration.
 • While this operator will provide casement control on a wide range of installation details, it is primarily designed for wide stools. When used with metal or roller screens a strip is employed, notched as indicated on the left. This fills in the space on each side of the operator below the top of the case upon which the screen may rest. Series 29 operator is also made with a base plate or case adaptable for easy installation on stools of marble, tile, slate, etc. Win-Dor Series 29 operator is recommended where removable handle extending over the stool is not desirable.	**No. N-29Z,** die cast zinc housing and handle. Steel arm and channel. Bronze worm. Not reversible, specify right and left from inside. Fixed handle. **No. N-29B,** all brass housing and handle. Bronze worm, steel arm and gear. **No. N-29BM.** Same as N-29B except monel metal arm and gear.
  • The Win-Dor casement stay is recommended for use on all wood or steel casements 12 inches wide or wider hung with standard butts. It is not a substitute for through-screen geared operators, but is a convenient locking and holding device where screening is unimportant. Being non-friction, one-hand operation is a convenient feature. The diagram (upper left) shows the Win-Dor truss, the principle on which the casement stay is built. The lock takes hold at "B" and forms with the pivot "A" and the hinge "C" a rigid truss support to hold the casement in position against practically any wind force. Below is a typical detail of Series 61 steel casement installation.	**No. 61C,** for steel sash. Steel arm and channel, cadmium plated. Not reversible. **No. 61B,** for steel sash. Solid brass. Not reversible. **No. W61C,** for wood sash. Same as No. 61C except wood sash bracket is supplied. See installed view on page 5. Not reversible. **No. W61B,** for wood sash. Solid brass with bracket same as No. W61C. Not reversible. **No. 65,** steel arm and channel cadmium plated. Reversible. For wood sash only.

SERIES 76 HINGE



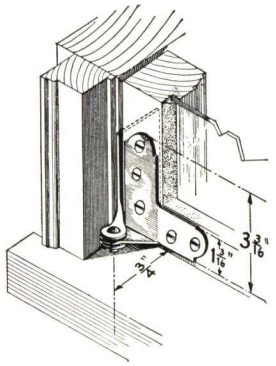
DESCRIPTION AND CATALOG DATA

CLOSE HINGE A universal casement hinge featuring corner reinforcement on the sash as illustrated. Projection only ¾ inch from sash surface. Frame leaf mortised. Strong rigid construction withstanding 200 pounds downward pressure per pair with 12 inches of reinforcing surface (see installation details below).

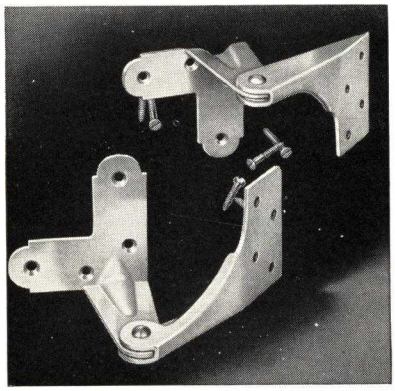
No. 762, steel, (double cadmium plated) corner reinforcing close type with brass washers, bronze bushings and loose pin, one pair to sash.

No. 762B—All brass.

No. 763, steel, (double cadmium plated) corner reinforcing close type friction hinge with adjustable friction knuckle.



SERIES 75 HINGE



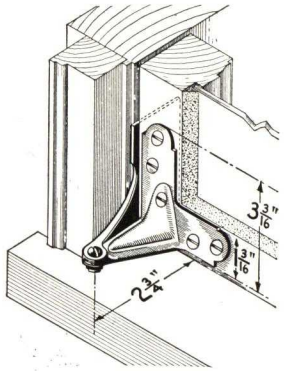
EXTENSION HINGE For purposes of cleaning this hinge throws the sash away from the frame sufficiently for 4 inches of cleaning space. Corner reinforcing type, (12 square inches bearing surface on sash per pair). Furnished for straight or beveled frames with loose pin or friction knuckles. Hinge projection 2¾ inches beyond frame.

No. 752 extension hinge, steel, double cadmium plated, bronze bushing, brass washers and loose pin.

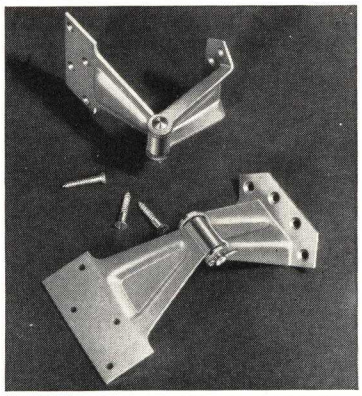
No. 752B extension hinge, silicon bronze with bronze bushing.

No. 753 extension hinge, steel double cadmium plated with adjustable friction knuckle.

(See installation details below.)



SERIES 70 HINGE



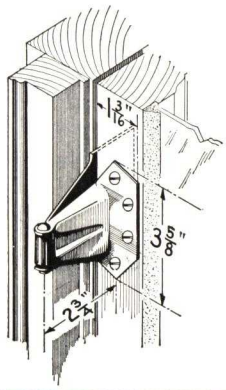
EXTENSION HINGE These hinges are also of the cleaning type. Have the same projection as Series 75 and are half-surface, the frame leaf being mortised and the sash leaf attached to the outside of the window stile. This hinge is especially recommended where extra center hinge is desired on exceptionally high and heavy casements as an auxiliary hinge to Series 75 corner reinforcing hinges. (See installation details below.)

No. 70 steel extension hinges, loose pin, bronze bushing.

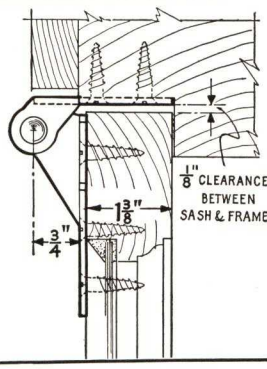
No. 70B—All brass.

No. 701 steel center hinge for sash over 5 feet in height.

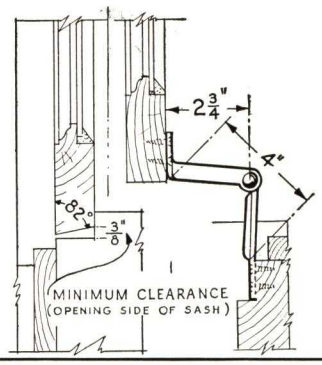
No. 701B—All brass.



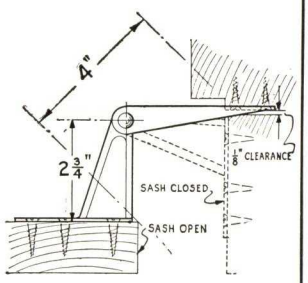
WIN-DOR HINGE INSTALLATION DETAILS



These drawings are installation details of Win-Dor hinges. On the left is a horizontal cross section showing attachment of Series 76 close hinges. Note minimum projection from sash.

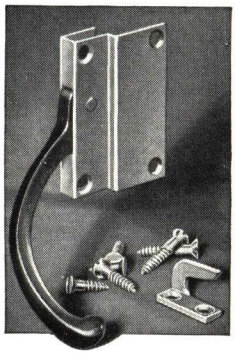


On the left are installation details for Series 70 hinges, showing sash bevel required. On the right is detail for Series 75 hinges. Both of these hinges provide 4 in. of cleaning space as indicated.



THE CASEMENT HARDWARE CO.

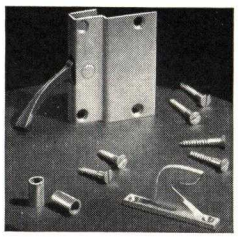
SERIES 800 LOCKING HANDLE



This is a simple, well designed manual locking handle for wood casement windows. Illustration shows the case of steel, cadmium plated, bronze handle and keeper.

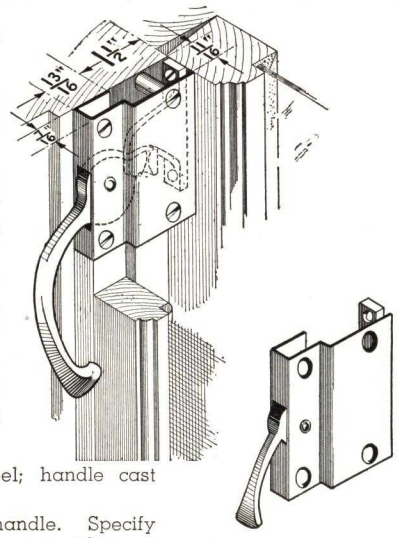
•

Where Venetian Blinds or other sun shades are used, this locking handle can be furnished in special design to avoid interference—as illustrated on the left.



DESCRIPTION AND CATALOG DATA

Wherever manual locking of screened wood sash is desired this handle offers complete convenience as it is mortised into the window stop and works around the screen, closing the window for tight weathering without the inconvenience of screen removal. The drawing on the right illustrates the method of installing Series 800 locking handle. This device can be used wherever the dimensions of the screen (or window stop) conforms with the measurement shown. This type of stop is standard and generally milled out in one piece.



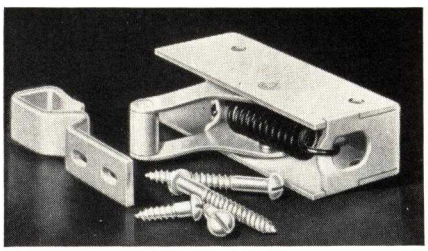
No. 800A housing and keeper, steel; handle cast bronze. Specify hand.

No. 800B all brass, cast bronze handle. Specify hand; housing steel; handle and keeper cast bronze.

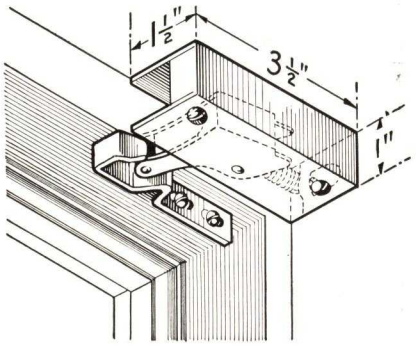
No. 803A—same as 800A (short handle).

No. 803B, all brass (short handle).

SERIES 45 TOP CLOSER



This easily installed device, which fits unobtrusively on the top corner of the window frame, engages the casement about 1 inch away from the window stop and pulls in the top of the sash automatically. It is a simple spring device for use on casement windows, screen and storm doors, closet and cupboard doors (eliminating narrow lock sets and catches) astragal doors, etc.

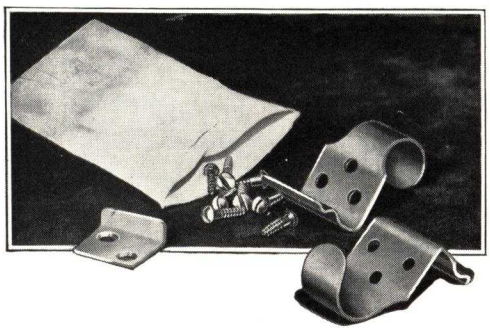


On the right is a diagram showing installation dimensions of Series 45 top closer. The case of the unit is attached to the upper corner opposite the hinge side of the sash. The window or screen stop is not indicated but it is usually cut and fitted to butt the case on the bottom and at the end, making an unobtrusive and neat installation. When sash are thrown open the keeper fastened to it automatically throws pulling lever over dead center tensing spring. In closing the full strength of the spring is, therefore, utilized to bring sash snugly into the opening.

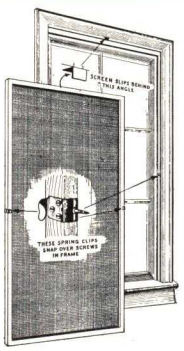
No. 45, steel, cadmium plated case and keeper.

No. 45B, all brass with steel spring.

SERIES 81 SCREEN HARDWARE



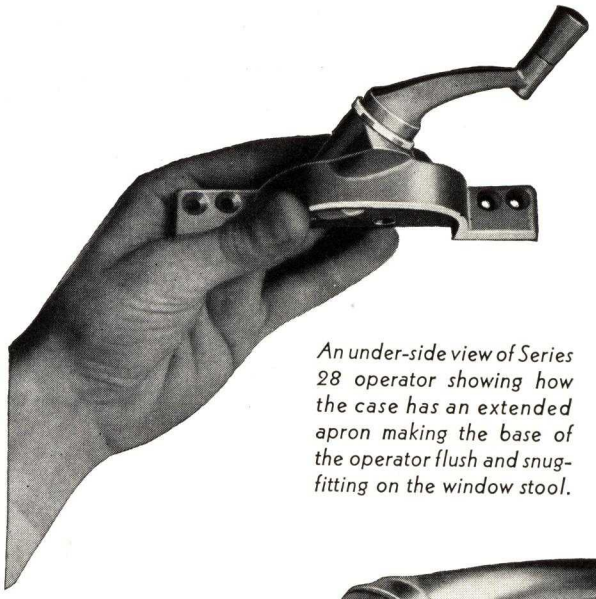
As illustrated on the right, Series 81 screen hardware is a simple arrangement of spring clips and a holding plate used for holding inside wood frame screens for outswung casement windows. The screen frame is mortised 3/16 inch deep about half way up from the bottom to receive the two spring clips. One of these is screwed to each side of the frame. Opposite them in the window frame, are driven round head screws. At the top of the frame the angle plate is fastened. The screen is slipped in behind it and snapped over the side screws which hold it firmly in place.



Series 81B, all brass screen hardware. One set to a screen.

THE CASEMENT HARDWARE CO.

SERIES 28 OPERATOR



An under-side view of Series 28 operator showing how the case has an extended apron making the base of the operator flush and snug-fitting on the window stool.

FOR LIGHT AND INTERMEDIATE STEEL CASEMENTS

Fine materials, fine workmanship, and fine appearance combine to make the Win-Dor Series 28 the quality operator for steel sash. It is adaptable to all makes of steel windows and may be obtained from any window manufacturer upon specification, assuring architect, builder, and owner trouble-free casement operation.

On the left is an enlarged illustration of the exclusive Win-Dor arm bearing. Note reinforced case at point of contact providing minimum friction area on both top and bottom surfaces of arm within the case.

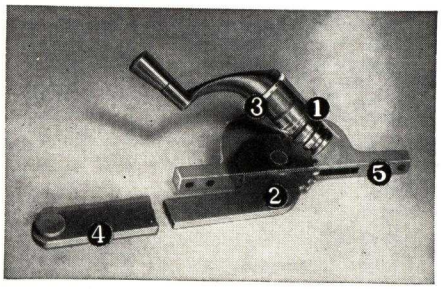
1. *Here is shown the big rustless over-sized ¾-inch naval bronze precision worm gear.*

2. *Rigidly reinforced arm pivot. In the Win-Dor operator the arm moves between bearing projections in the housing. At his critical point extra strength is needed.*

3. *Oversized square handle seat. The operator handle has a 5/16-inch squared steel shaft internal worm connection.*

4. *Extra strong to stand overrated strains. The arm of the Win-Dor operator will withstand a straight pull equal to a weight of over 150 lbs. at the end of the arm.*

5. *Flush base hugs the sill. No projection, no dirt pocket, no notching.*



MATERIALS AND FINISHES

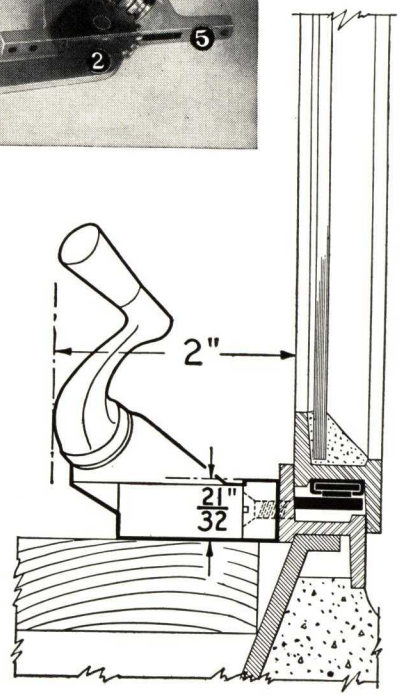
Win-Dor Series 28 operators are made in an unusually complete range of materials and finishes which may be used to maximum advantage in every climate and to fit any appropriation. Thus in every case individual preference in decorative effect may be obtained to secure harmonious and attractive installation whether in standard hardware finishes or combinations in colorful enamels.

No. 28Z operator—Die-cast housing and handle from virgin zinc alloy (A.S.T.M. XXIII) under high moulding pressure according to proven technique. Steel arm and channel heavily cadmium plated. Housing and handle enamel, plated or combination.

No. 28B—Same as No. 28Z except cast bronze housing and crank. Sheet brass channel. Standard finish statuary bronze or finished to specification.

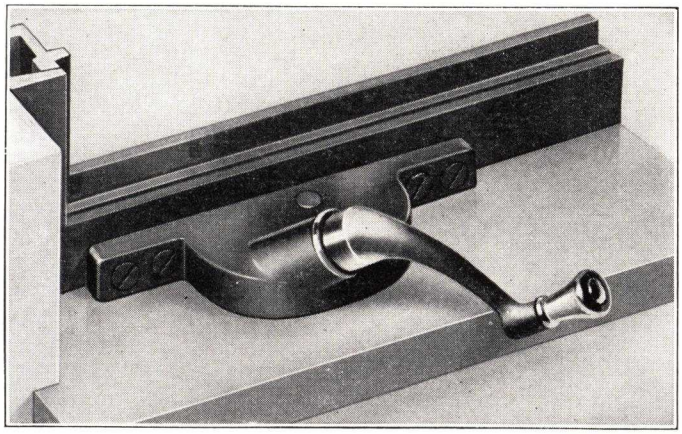
No. 28BM—Same as No. 28B except monel arm and gear. Finished to specification.

At the right is a diagram showing installation measurements for Series 28 steel casement operator. The case is adjustable for attachment to all standard makes of steel casement windows.



THE CASEMENT HARDWARE CO.

SERIES 32-33 OPERATOR



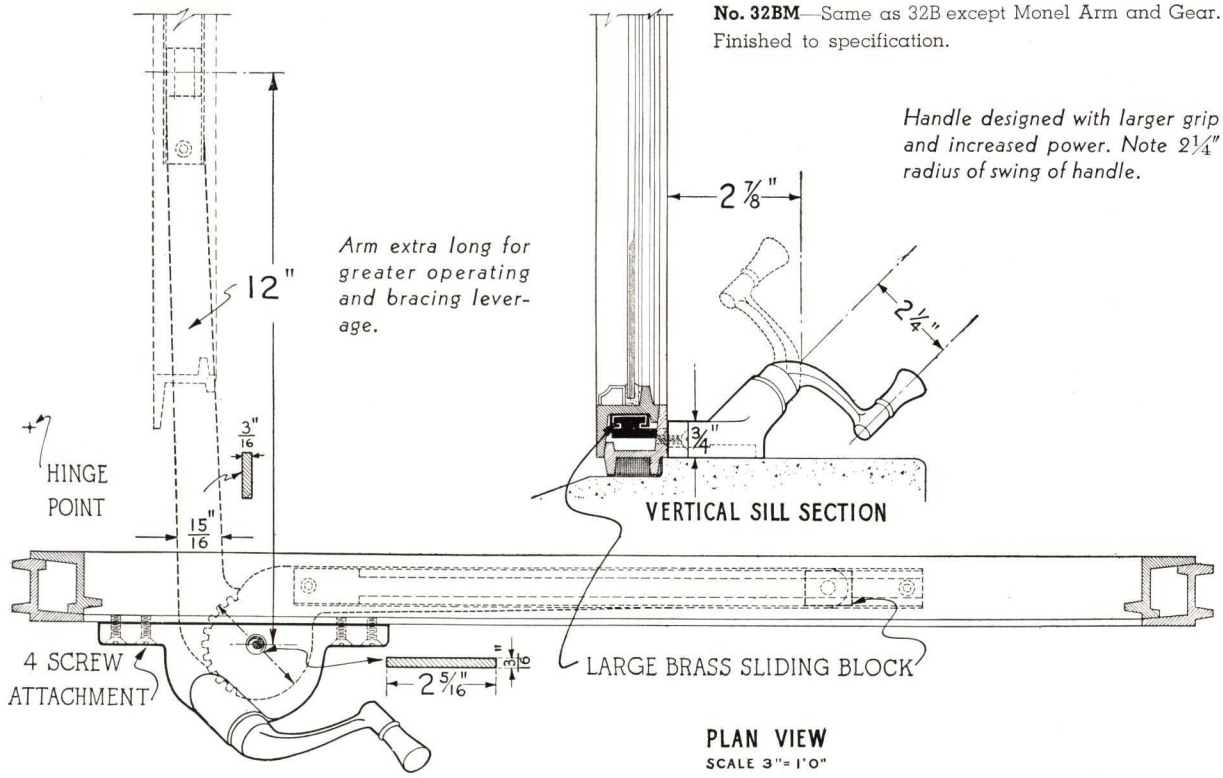
FOR OVERSIZE AND HEAVY STEEL CASEMENTS

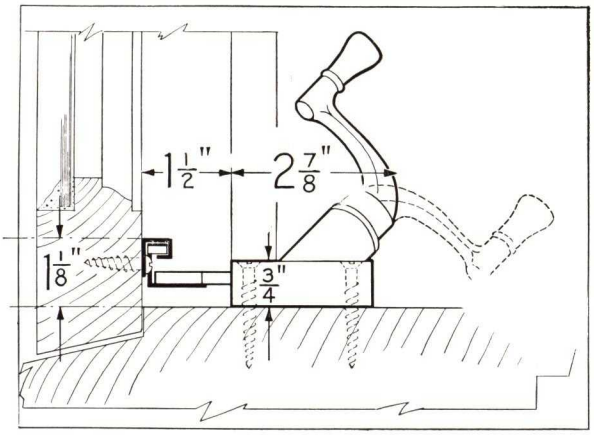
This solid brass heavy duty steel casement operator is adaptable to intermediate and heavy section casements of any size where strong operating hardware is essential. Larger throughout, this new heavy operator has nearly twice the strength and power of standard operators.

Recommended for all heavy casements and intermediates beyond standard size limits.

No. 32B—Operator for steel sash. Solid brass case and handle. Hardened steel arm with extruded brass sliding lock end piece. Finished to specification.

No. 32BM—Same as 32B except Monel Arm and Gear. Finished to specification.





FOR LARGE SIZE WOOD CASEMENTS

This operator having the same construction feature as Win-Dor No. 32B described above, is for large size wood casements where hardware is subject to particularly heavy use and abuse. Like Series 29 operator described on page 5, the case is made with flush base. It is provided with four screw attachment on stool.

No. 33B Operator—Operator for Wood Sash. Finished to specification.

No. 33BM—Same as 33B except Monel Arm and Gear. Finished to specification.

WinDor

CASEMENT HARDWARE COMPANY

★

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SECTION 16

CONTINUED ⟶

H. S. GETTY & CO., INC.

Manufacturers of Hardware for Casement Windows; Hardware for Metal Doors and Windows; and Hardware Specialties

MAIN OFFICE AND FACTORY
3348 North 10th Street, PHILADELPHIA, PA.

REPRESENTATIVES
NEW YORK, N. Y., C. Byerley, 101 Park Avenue—Telephone, Caledonia 5-5556
DETROIT, MICH., Roy C. Gitschlag, 2640 Crane Avenue—Telephone, Lenox 4508
CHICAGO, ILL., S. P. Gilbert, 311 W. Lake Street—Telephone, State 6817
MILWAUKEE, WIS., C. C. Banholzer, 728 No. Jefferson Street—Telephone, Marquette 7562
SAN FRANCISCO, CALIF., George S. Lacy, 16 California Street—Telephone, Sutter 7672
TAMPA, FLA., J. E. Wood Co., 310½ Franklin Street—Telephone, 2661

THE GETTY INTERNAL GEAR OPERATOR FOR CASEMENT WINDOWS

The Getty Internal Gear Operator for Casement Windows represents the latest development in casement window controlling devices. Proved reliable through years of exacting service, this compact, modern device is superior in design, performance, and construction.

The Getty Operator possesses all the efficiency, dependability, and endurance necessary for lifelong service.

This Operator is being used on both metal and wood casement windows. It is standard equipment with the leading metal sash manufacturers, and is used on residence (light), intermediate, and heavy section windows. Leading architects throughout the country are specifying it for all types of construction.

Advantages

Facilitates screening of casement windows. Non-screened installations equipped with this Operator can readily be converted to the screened type window.

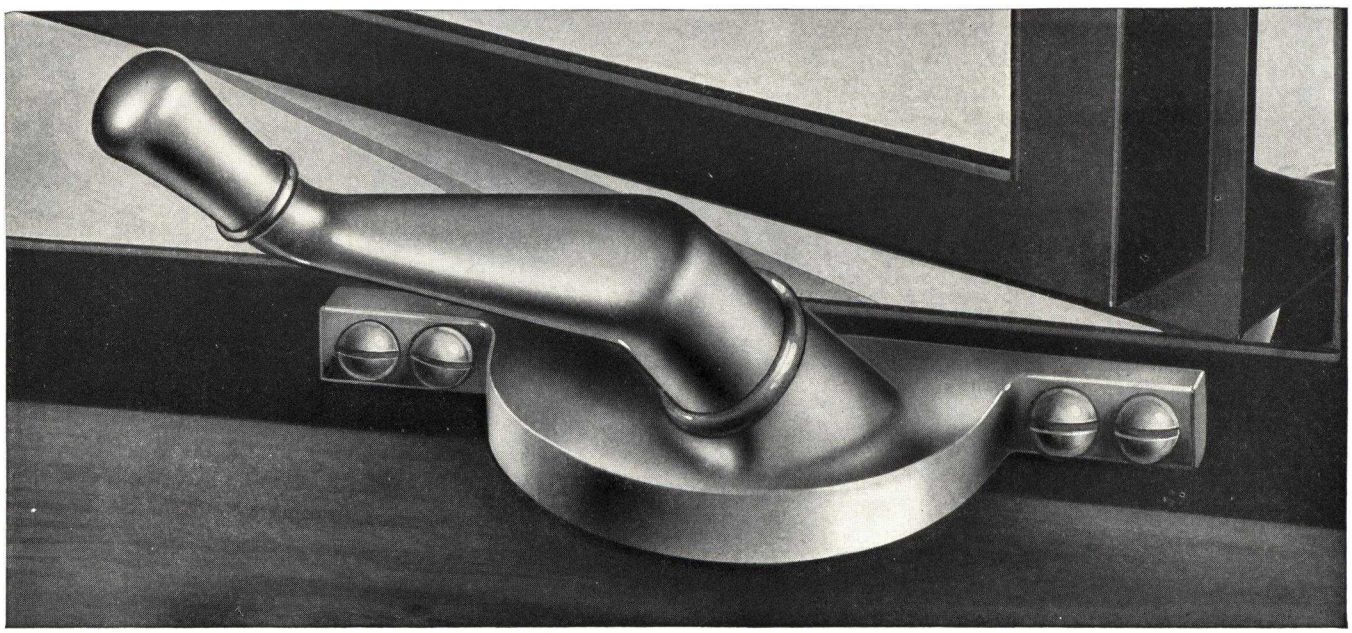
Flat type screens (metal and wood) are usually used with this Operator. However, roll screens and other types are being used.

This Operator leaves the majority of sill space free for use as desired. Drapes, shades, and Venetian blinds can be used to advantage.

Operator can be used with either deep or narrow stools, and is especially advantageous for use with deep stools.

Materials and Finishes

This Operator is furnished in various metals and combinations of finishes. It is generally made of solid bronze, white bronze (20% nickel), zinc die casting, and combinations of metals in the natural (polished or dull), statuary, plated, enameled, or lacquered finishes. It is also supplied in special finishes to correspond with any decorative effect or other hardware.



SECTIONAL VIEW OF THE GETTY OPERATOR, SHOWING EVERY FEATURE OF CONSTRUCTION

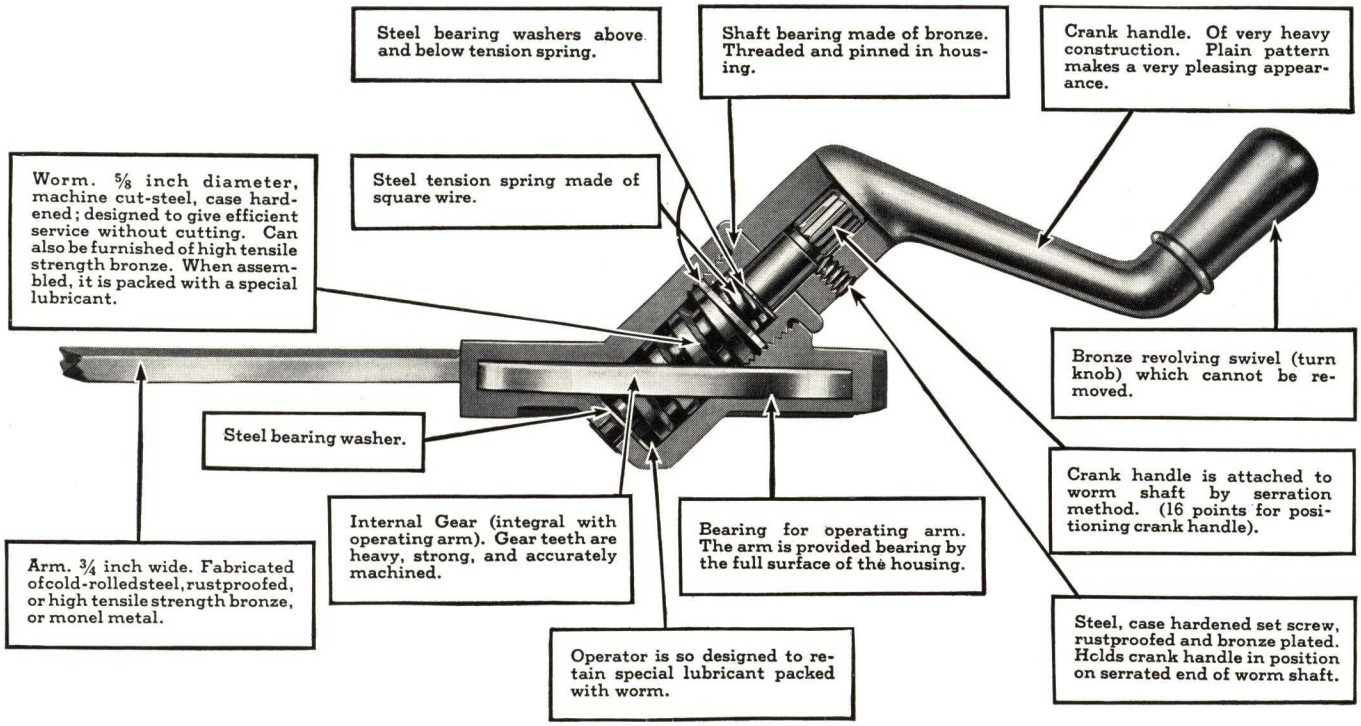
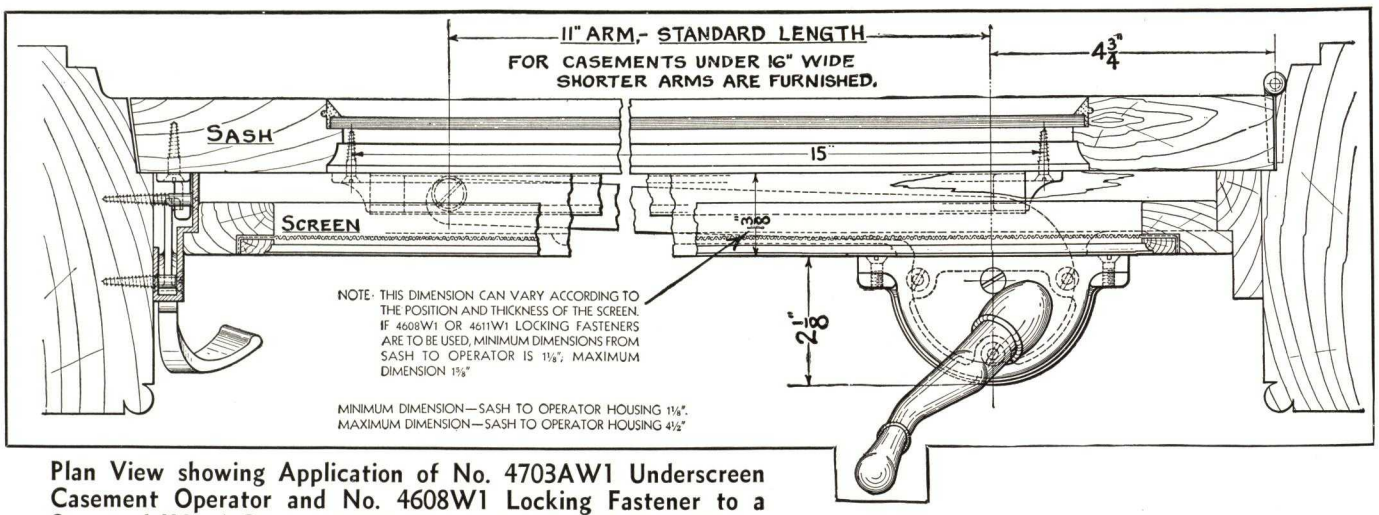


Illustration approximately three-quarter size

SPECIFICATION (For Metal Windows)

All outswinging metal casement windows shall be equipped with the GETTY No. 4703A Internal Gear Underscreen Operator and No. 4608 Locking Fastener (No. 4609 for casements over five feet high; No. 4611 if Venetian blinds are to be used); as manufactured by H. S. GETTY & Co., INC., 3348 N. 10th Street, Philadelphia, Pa.

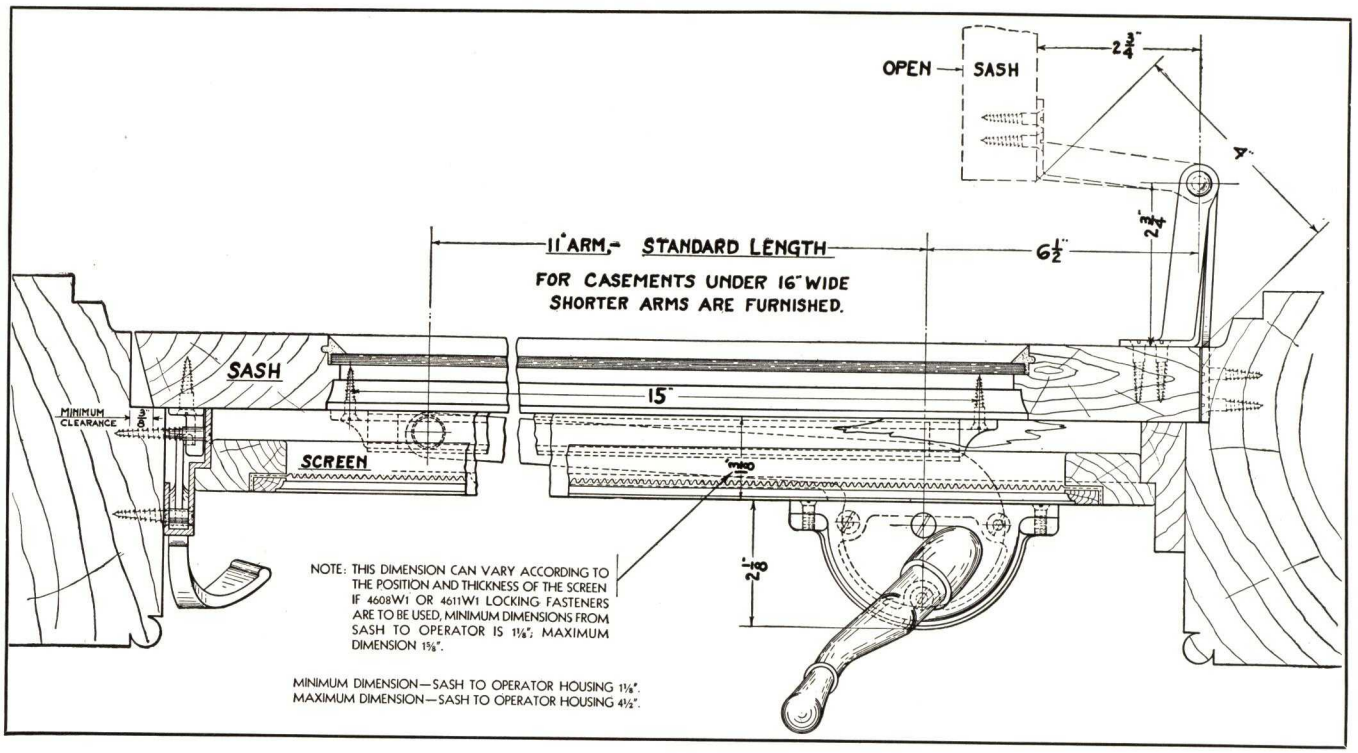
FOR WOOD CASEMENT WINDOWS



Plan View showing Application of No. 4703AW1 Underscreen Casement Operator and No. 4608W1 Locking Fastener to a Screened Wood Casement Window equipped with Butt Hinges

H. S. GETTY & CO., INC.

FOR WOOD CASEMENT WINDOWS (Continued)



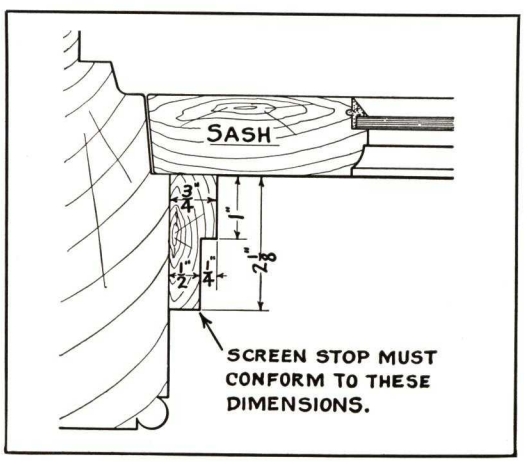
Plan View showing Application of No. 4703AW1 Underscreen Casement Operator and No. 4608W1 Locking Fastener to a Screened Wood Casement Window equipped with Extension Cleaning Hinges

Although this hardware was designed for use with flat type screens (metal and wood) it can also be used with roll screens and hinged screens (see page 4)

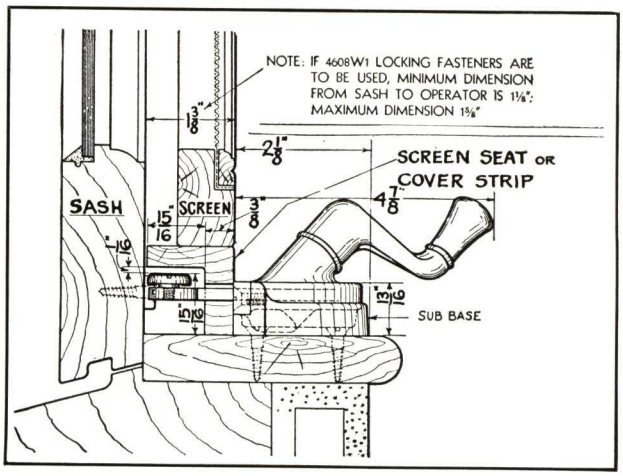
Detail shows a right hand Operator and Locking Fastener. When ordering, specify hand required, metal and finish, and width of casement.

SPECIFICATION

All outswinging casement windows shall be equipped with the Getty No. 4703AW1 Internal Gear Underscreen Operator and No. 4608W1 Locking Fastener (No. 4611W1 if Venetian Blinds are used) as manufactured by H. S. Getty & Co., Inc., 3348 N. 10th St., Philadelphia, Pa.

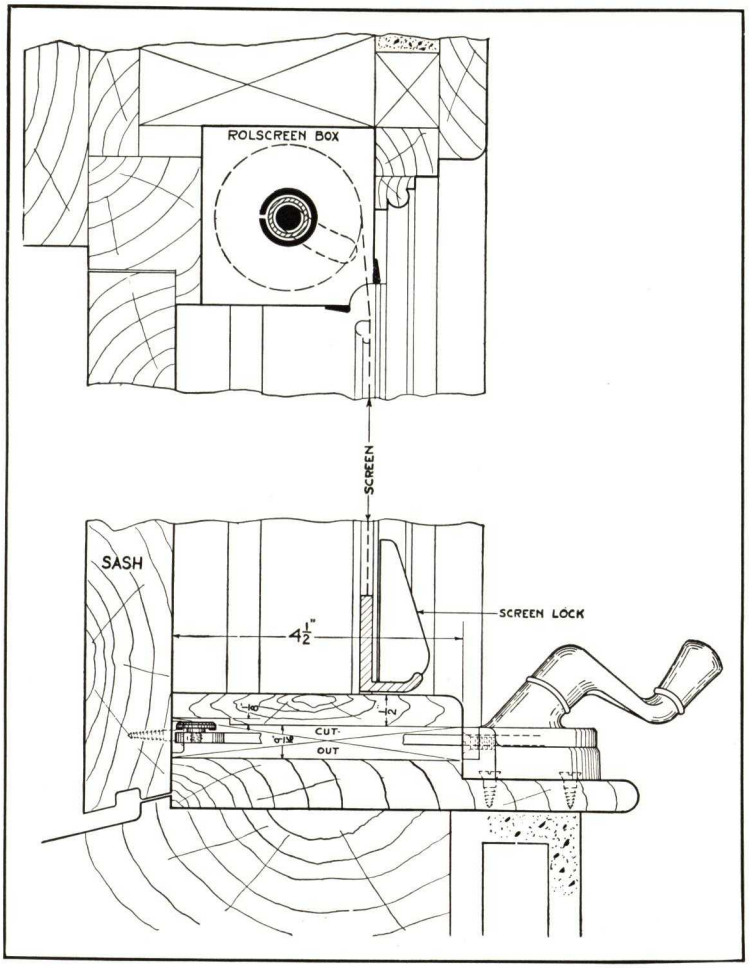


Detail Shows the Screen Stop Preparation Required for Proper Application of Either No. 4608W1 Locking Fastener or No. 4611W1 Locking Fastener



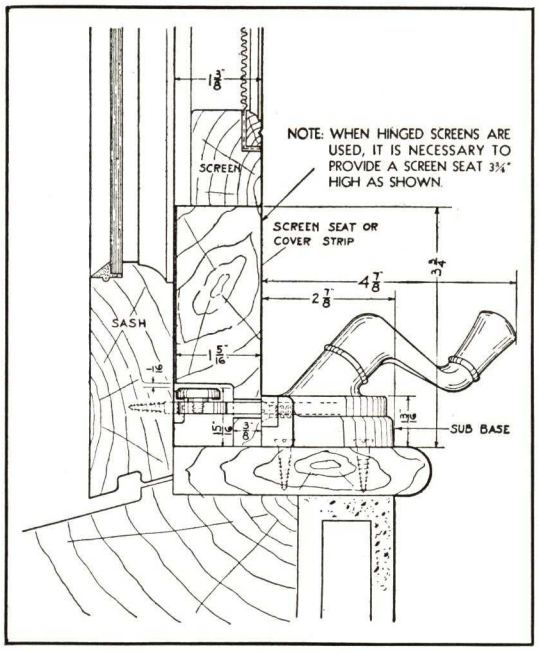
Detail Showing Side View of Application of No. 4703AW1 Operator to Wood Casement

This detail incorporates the use of a seat for the screen. This could be eliminated and the screen mortised to meet the same condition



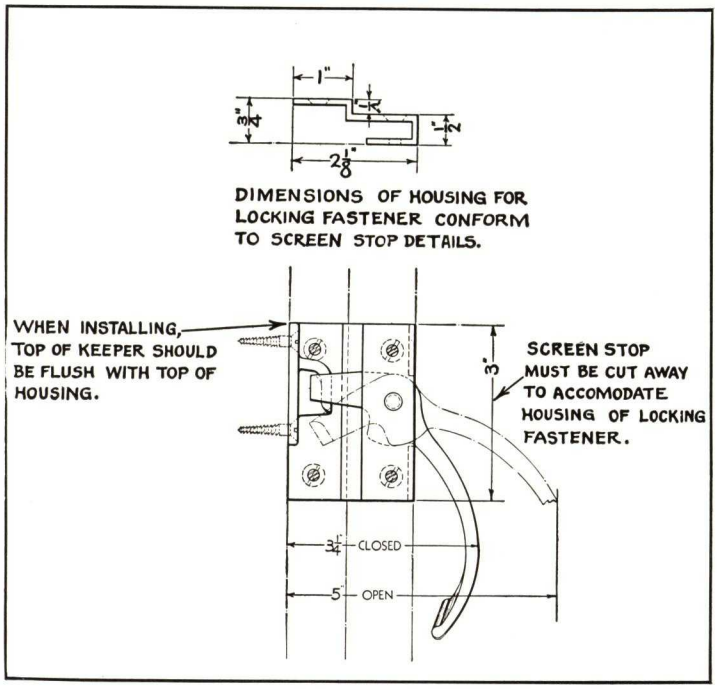
Detail Shows No. 4703AW1 Operator Used with Roll Screen

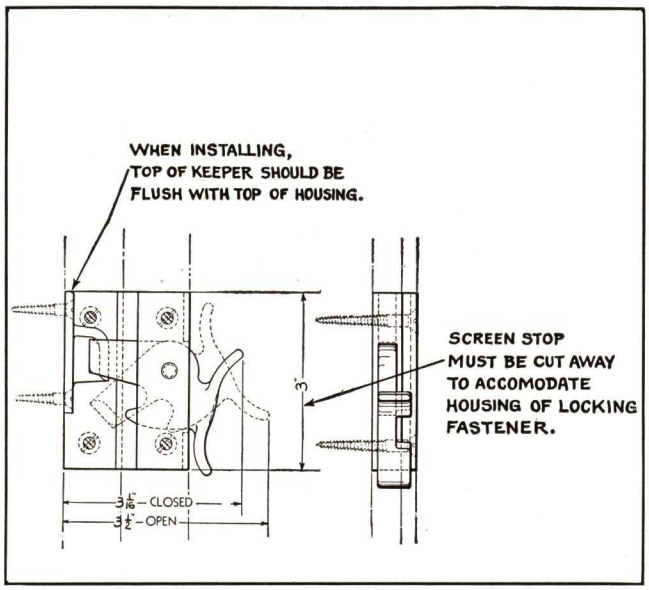
Operator is placed 4½ in. from face of sash, and arm and channel are concealed by cover up on which roll screen seats



Detail Shows No. 4703AW1 Operator with Side-hinged Screen

The screen seat has to be built up to a point sufficiently high (3¾ in.) to permit the screen to clear the operator crank handle





These locking fasteners were especially designed for use with wood casement windows. By their use it is possible (in combination with the No. 4703AW1 Casement Operator), to obtain the same practical, convenient type of screening that is offered by the use of the metal casement, and which, prior to the development of this hardware, it was not possible to obtain with wood casement windows.

ANDREW HOFFMAN

Casement Window Hardware

5034-5038 State Street, CHICAGO, ILL.

DISTRIBUTORS IN ALL LARGE CITIES

For Ideal Map and Display Rail, see File Index

COMBINATION CREMONE BOLT

For Hoffman Sliding Casement Windows—Used in Outswinging Only

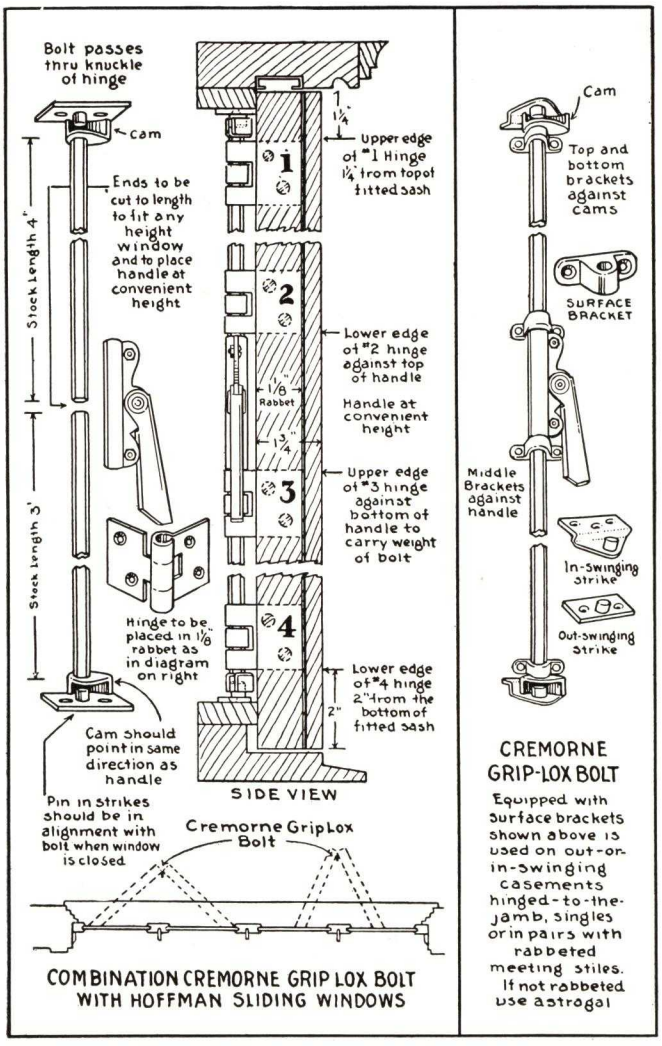
The Hoffman Combination Cremone Bolt combines the functions of hinges, fasteners, and pull handle, and is especially designed for use with outswinging Hoffman Sliding Casement Windows. It makes use of the GripLox principle.

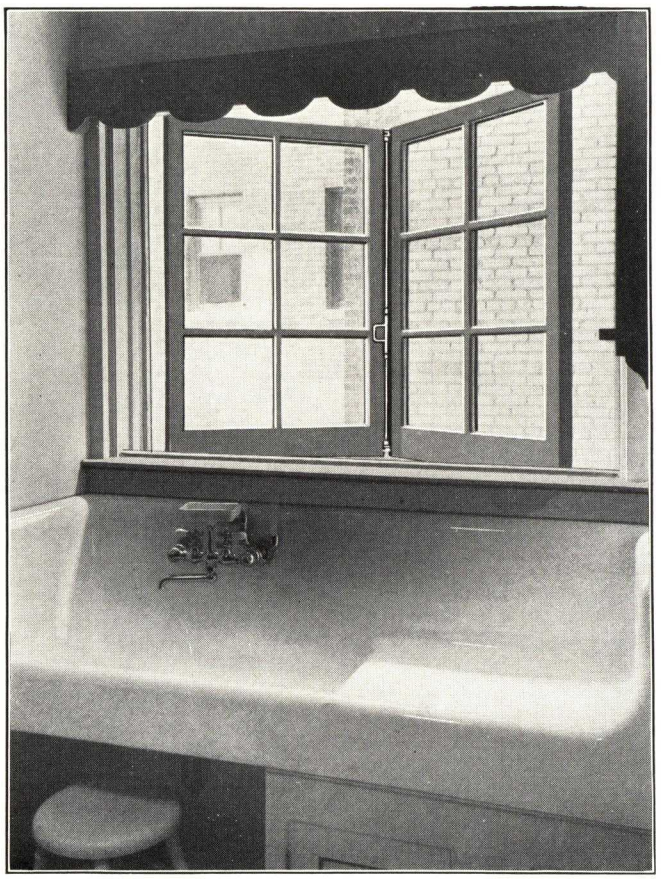
The Hoffman Sliding Casement Windows, when equipped with this combination cremone bolt, are drawn in tightly and locked top and bottom in one operation by a quarter turn on a handle located at a convenient height above the floor.

This combination bolt consists of cams, operating on the Grip Lox principle, at the top and bottom of rods which are joined in a cast bronze handle, the whole assembly being supported by brackets which also act as hinges for the casements.

The use of this full length bolt makes the window easy to open or close, simplifies ventilation control, and closes the window so tightly as to make it weatherproof even in exposed positions.

Especially when windows are difficult to reach, as over a sink (see illustration) or over a radiator, is the unique ease of operation of the Hoffman Sliding Casement Window and combination bolt appreciated.





A Pair of Outswinging Casement Windows

(This window is now being developed in steel)

Advantages

The advantages realized by the use of the Hoffman Combination Cremone Bolt are summed up in these points:

(1) A positive horizontal force is applied to the sash, drawing them in tightly, even though they may be warped or heavily weather-stripped.

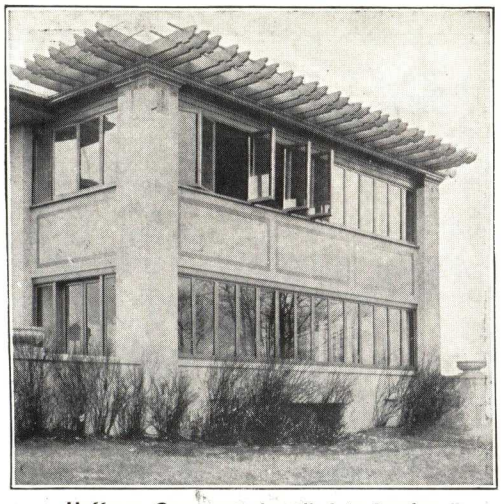
(2) The mechanism is simple and positive with no gears to wear or get out of order.

(3) There is no disfiguring wear on visible surfaces due to the fact that the bolt does not slide vertically through sleeves.

(4) The bolt is stocked in 7-ft. lengths and may be cut down on the job to any size, to fit even the shortest windows. The installation is very simple and the hack-sawed ends of the rods are concealed within the handle.

(5) The price is very moderate; steel plated $3.00, solid bronze $5.00.

The Hoffman Combination Cremone Bolt is made of solid brass or plated steel. The bolts are stocked with a 4-ft. upper section and a 3-ft. lower section. The stock bolt therefore may be used on casements up to 7 ft. high, and the handle may be placed as much as 4 ft. below the top of the sash.



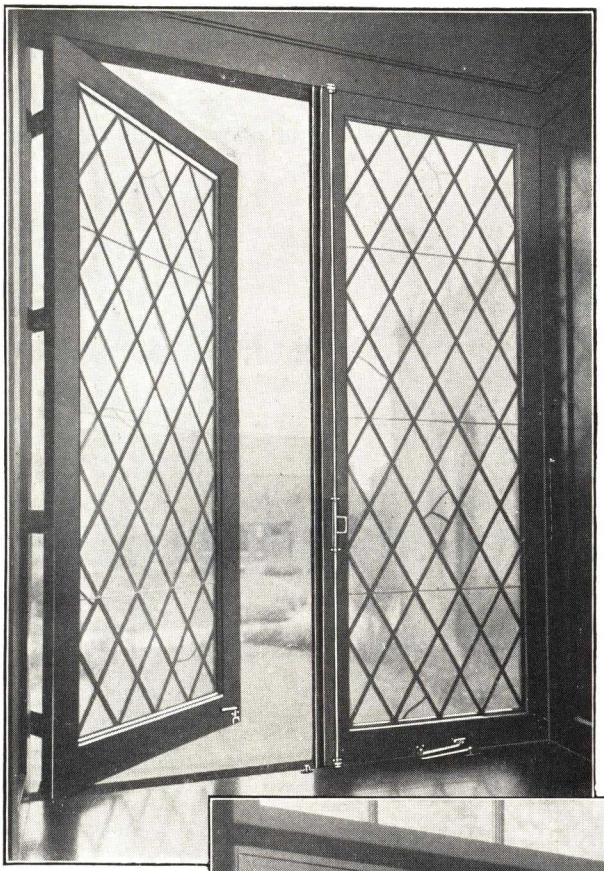
Hoffman Casements Installed in Porches

GRIPLOX CREMONE BOLTS

For Single and Double Casements

Hoffman Cremone Bolts overcome the usual obstacles to easy closing and secure locking of inswinging or outswinging casements by use of the Grip-Lox principle.

Steel plated bolt, $3.00 each; solid bronze bolt, $5.00 each.



Above Right:

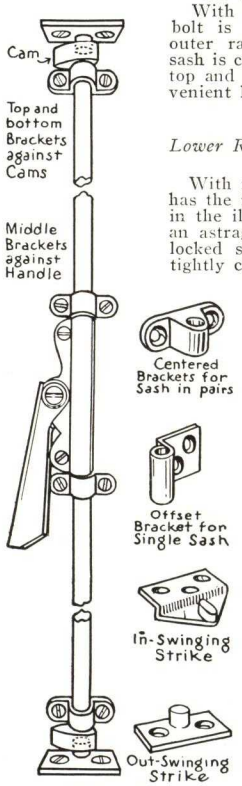
On Double Outswinging Casements

With rabbeted meeting stiles the cremone bolt is applied to the sash that has the outer rabbet projection. When the other sash is closed first, the cremone bolt draws both sash tightly shut, top and bottom at once, by a quarter turn of a handle at a convenient height above the floor

Lower Right:

On Double Inswinging Casements

With rabbeted meeting stiles, one bolt applied to the sash that has the inner rabbet projection will clamp both sash shut. If, as in the illustration, meeting stiles are not rabbeted or fitted with an astragal, a bolt is applied to each sash. Notice that the unlocked sash is warped at top. This warped sash is easily and tightly closed with Hoffman Cremone Bolt



CREMONE GRIP LOX BOLT

The stock length of the bolt is 7 ft. It is easily cut down on the job to fit any window. Installation is simple and no mortising is required

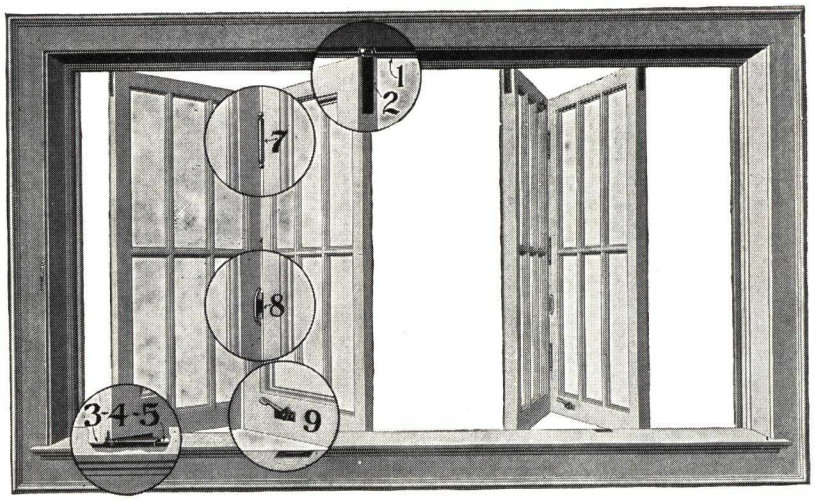
Left:

On Single Casements

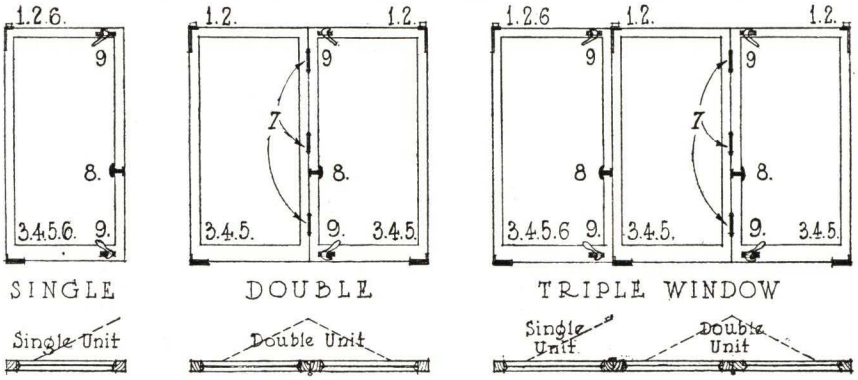
Inswinging or outswinging. By attaching the Hoffman Cremone Bolt with offset brackets, handle is placed far enough from the side jamb to give generous clearance for the fingers

This type of window is now being developed in steel for 1938

ANDREW HOFFMAN

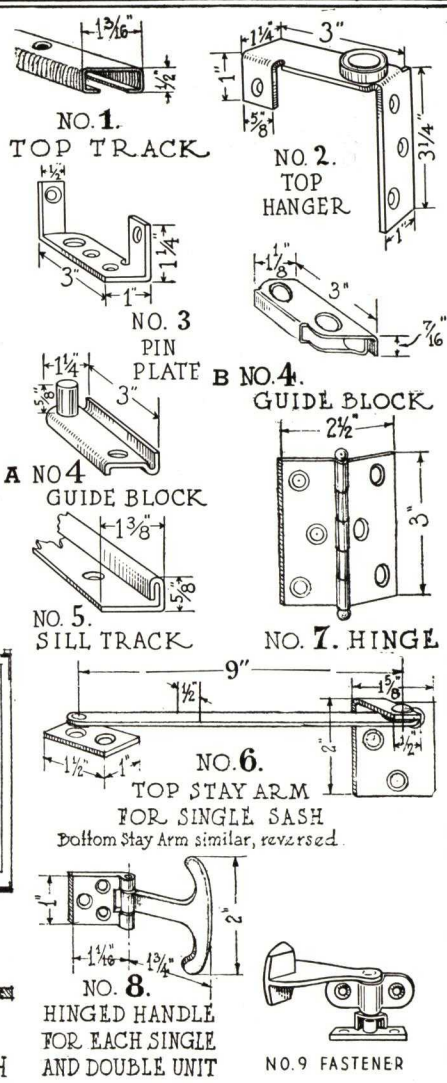


PERSPECTIVE SHOWING HARDWARE APPLIED

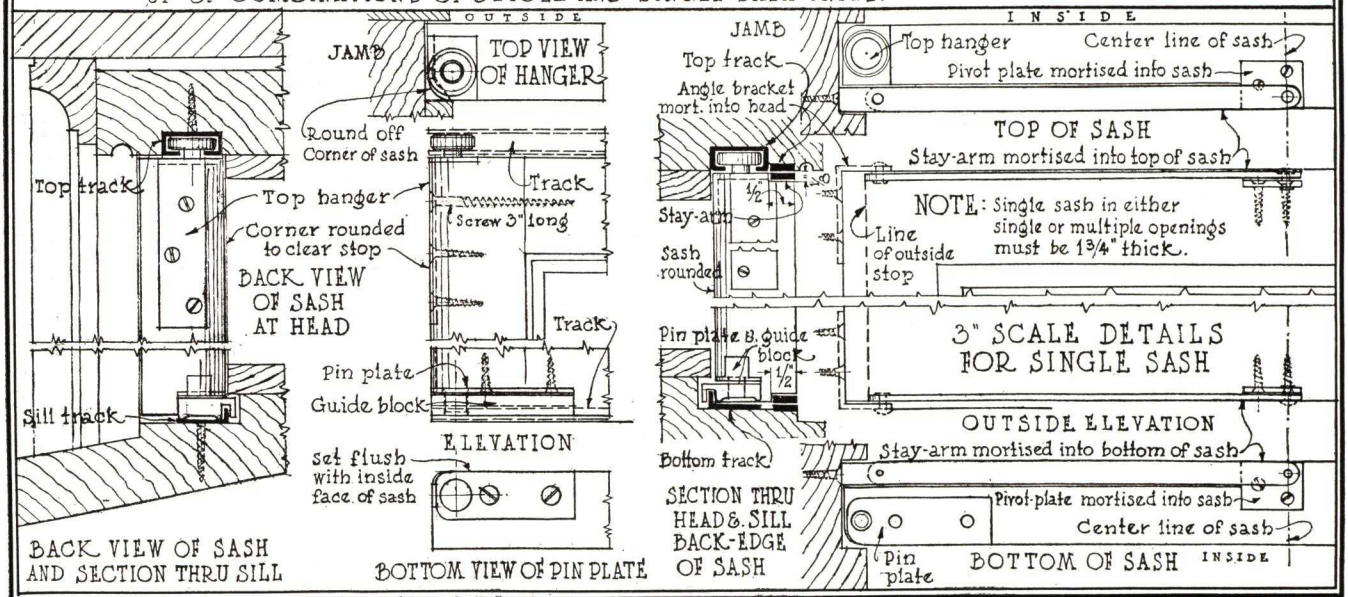


KEY PLANS AND ELEVATIONS
SHOWING OPERATION OF VARIOUS COMBINATIONS OF SASH

NOTE: WHEN THERE ARE MORE THAN THREE SASH, THEY ARE MADE UP OF COMBINATIONS OF DOUBLE AND SINGLE SASH UNITS.



DETAILS OF HARDWARE



DRAWN BY SWEETS CATALOGUE SERVICE, INC.	DETAILS OF HOFFMAN CASEMENT HARDWARE ANDREW HOFFMAN MFG. CO.	SCALE 3"&1/4" EQUALS 1'-0" DATE-AUG.27	DRWG 1

THE H. B. IVES COMPANY

Quality Hardware Since 1876

NEW HAVEN, CONN.

PRODUCTS

THE H. B. IVES COMPANY manufactures a quality line of Double Hung and Casement Window, Transom, Door, Cupboard and other Miscellaneous Builders' Hardware.

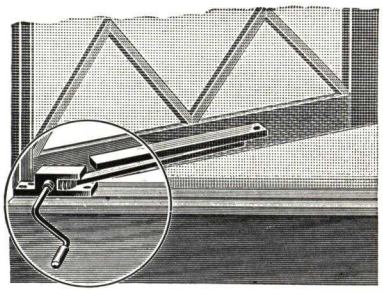
IMPROVED CASEMENT WINDOW CONTROL

The result of over sixty years' specialization in window hardware, the following devices combine distinct advantages for conveniently operating—through the screen—outswinging casements.

THE IVES AUTOMATIC TOP CLOSER

Tightly seals the sash and prevents warping when placed at top of sash and used with 38700 casement window operator.

No. 35070, wrought steel, cadmium plated.



THE IVES CASEMENT WINDOW OPERATOR

Strong—The worm gear is made of manganese bronze for rugged toughness and resistance to wear and corrosion.

Universal—It is reversible for right or left-hand windows; is adaptable to any width stool; and only requires 1-in. space between sash and screen.

Durable—The possibility of wear at any point is minimized as the bearing surface of the worm and gear is much greater than the conventional type.

Attractive—Being very compact, the device has an unusually neat and attractive appearance.

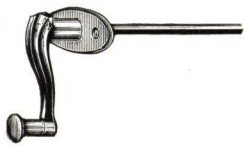
Easy to Install—Its pleasing appearance makes false stools unnecessary. As a result, it is easy to install and is always accessible. Thus, reasonable final cost is assured.

Crank Handles—Always specify type desired and length when sill is over 8 in. wide.

Finishes—Always specify finish required on 38700 operator, 38000 and 38200 crank handles, which are supplied in all standard finishes. 38137 crank handle supplied in dull brass plated finish only.

38000

For permanent handle installation on top of stool



38200

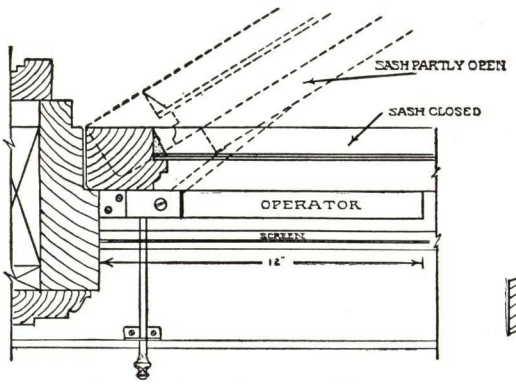
For permanent handle installation under stool

38137

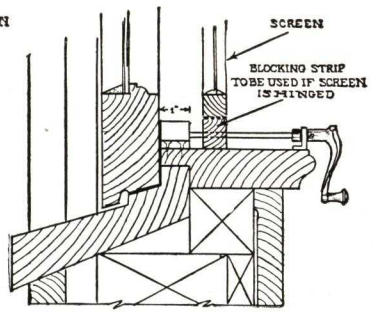
For use when permanent handle installation is not desired

38700

Installed on Top of Stool

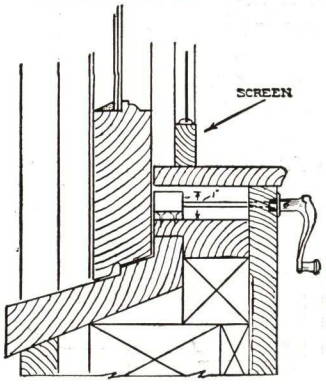


View Looking Down on Sill



Vertical Section Through Sill

Installed Under the Stool



Vertical Section Through Sill

DETAILS SHOWING METHOD OF INSTALLATION

VINCENT WHITNEY CO.

Whitco Casement and Transom Hardware

130 Tenth Street, SAN FRANCISCO, CALIF.

SALES REPRESENTATIVES

NEW YORK, N. Y., Geo. H. Fisher, 416 Broadway
PHILADELPHIA, PA., H. S. Hendrickson, 1015 Chestnut St.
CINCINNATI, OHIO, L. W. Stewart Sales Co., 704 Race St.
BOSTON, MASS., H. E. Holbrook Co., 49 Federal St.
SEATTLE, WASH., R. F. Bevers, 521 30th Ave. So.
LOS ANGELES, CALIF., H. W. Brittain, 3644 Revere Ave.
ST. LOUIS, MO., Herbert Golterman, 423 Louderman Bldg.
SALT LAKE CITY, UTAH, W. L. GLADE, 1421 Sherman Ave.

CASEMENT WHITCO HARDWARE

TRADE MARK
Registered U. S. Patent Office

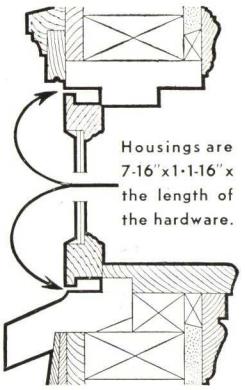
WHITCO CASEMENT HARDWARE

WHITCO allows the sash to swing and reverse, so that the outside is conveniently available for washing.

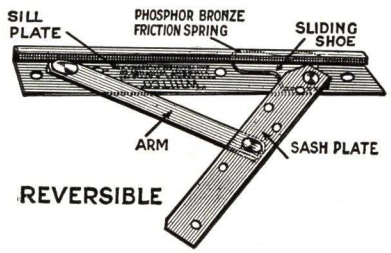
The design of this utility fixture is such that it combines the functions of a hinge and a friction casement adjuster. It makes such effective use of the principles of leverage and friction that it not only assures a perfect operation of the sash at all times, but it holds the sash in any position without rattle.

A set of WHITCO is the equipment required for one sash (either casement or transom). It consists of two pieces, identical, except that one is the reverse of the other. The swing of the sash determines the side of the sash to which these respective pieces are attached.

WHITCO hardware is attached to the sash by means of a sash plate which extends across the joint between the stile and the rail of the sash, thus reinforcing the weakest point against sagging. All screws are set at right angles to the strain with the result that the installation is strong and dependable.



Typical Detail of Casement Head or Transom Jamb and Casement Sill



Types and Sizes

WHITCO is made in Solid Brass, Steel (rustproofed) and Semi (Brass track, steel arms and sash plate).

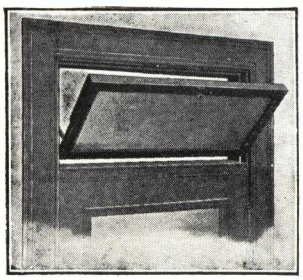
For 1⅜-in. Sash —

8X WHITCO maximum sash width 18 in.
10X WHITCO maximum sash width 24 in.
12X WHITCO maximum sash width 27 in.
14X WHITCO maximum sash width 30 in.
16X WHITCO maximum sash width 33 in.

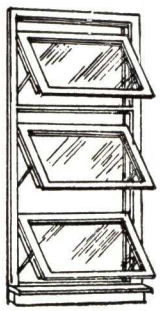
For 1¾-in. Sash —

JUMBO WHITCO is much heavier than the standard and was designed for use on large heavy sash.

JUMBO 16 in. WHITCO maximum sash width 36 in.



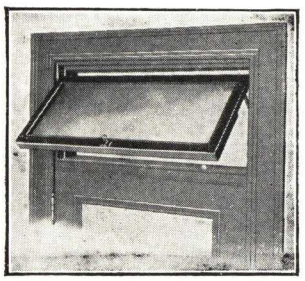
AWNING TYPE WHITCO



Reversible sash hardware for large windows. This type of hardware is largely used on schoolhouses and public buildings. It is of heavy construction and has an additional adjustable friction built into the arm pivot. It is made in the following sizes:

A.W 24 in.
A.W 30 in.
A.W 36 in.
A.W 42 in.
A.W 48 in.

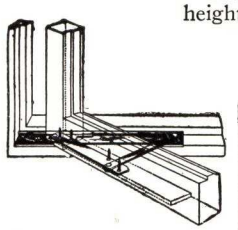
} In choosing the proper size to use, take the largest size shorter than the height of the sash on which it is to be used.



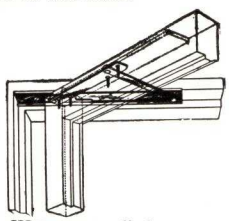
WHITCO TRANSOMS

Transom sash when equipped with WHITCO hardware are held in balance at any angle to which they may be opened. They are easily and noiselessly operated. For wood or metal trim.

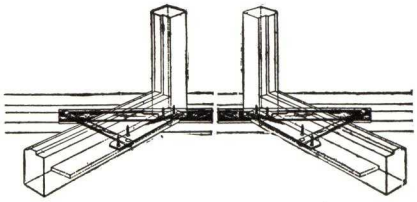
The length of WHITCO hardware recommended for transoms is two thirds the height of the sash.



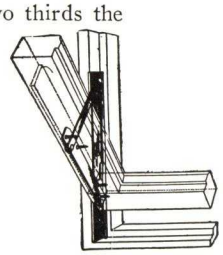
WHITCO applied at bottom of casement swinging out.



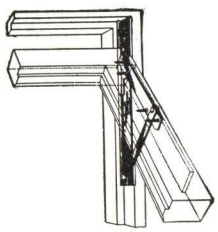
WHITCO applied at top of casement swinging in.



WHITCO applied at bottom of adjoining pair of multiple sash.



WHITCO at left end of transom swinging in from top.



WHITCO at right end of transom swinging in from bottom.

G. F. S. ZIMMERMAN CO., INC.

Manufacturers of Fasteners for Shutters and Casements

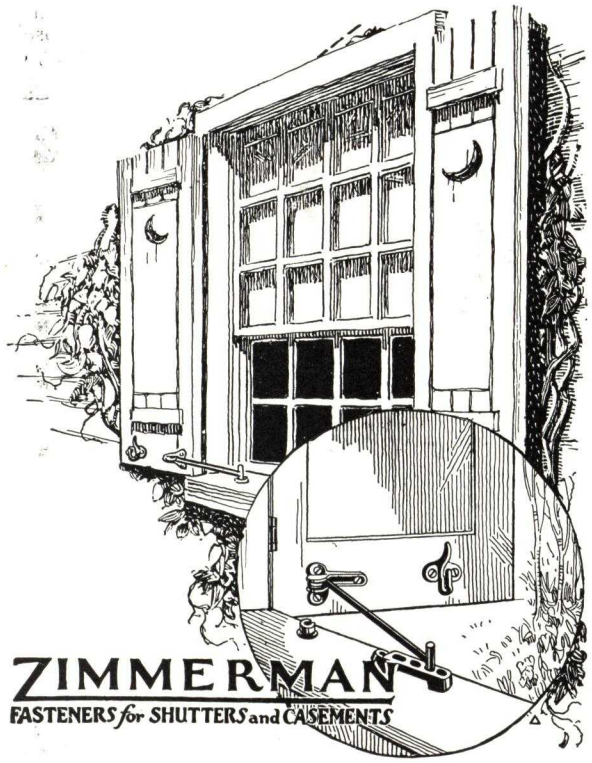
FREDERICK, MARYLAND

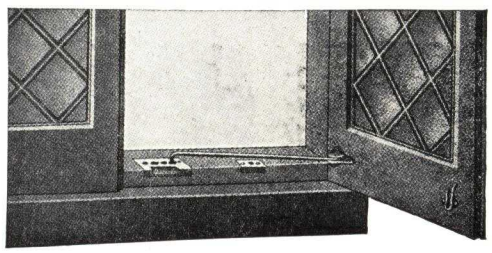
ZIMMERMAN FASTENERS MAKE SHUTTERS USEFUL AS WELL AS ORNAMENTAL

Zimmerman Fasteners make shutters conveniently useful by locking them positively, without rattle, in the closed position as well as wide open back against the wall, and in various intermediate positions. And they can be changed from one position to another quickly and conveniently.

With the head of the adjusting bar in the single hole sill cup, the shutter is held back against the wall with no possible rattle. The holes of the sill plate permit holding the shutter in various bowed positions. Placing the adjusting bar through the C-loop on the shutter with the head of the bar in one of the holes in the sill plate locks the shutter closed so that it can not be opened from without.

Made of iron and steel, they do their work efficiently for the lifetime of the house.





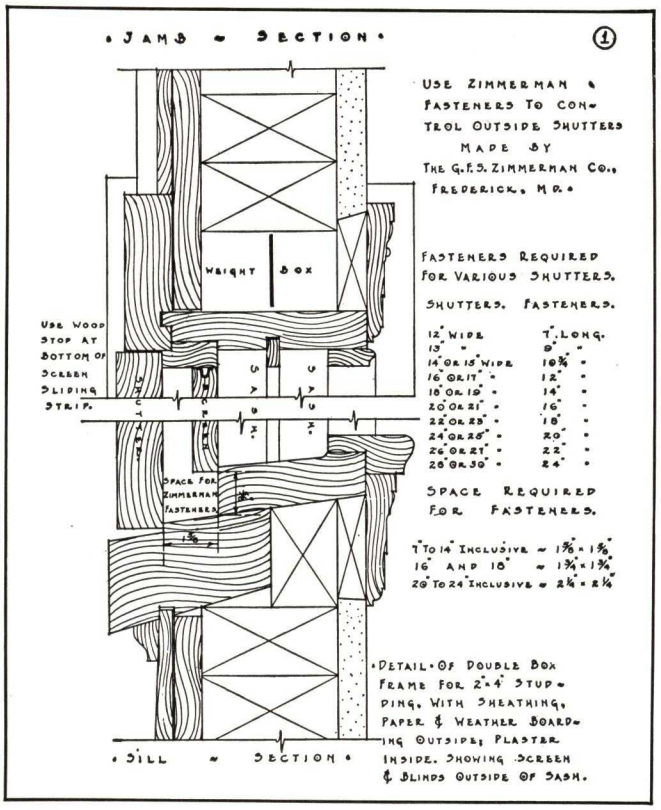
Furnished either galvanized or in black enamel. They are often painted to match the shutters.

Simple in construction and operation.

Inexpensive, strong and efficient.

Zimmerman Fasteners are often used as casement operators. Sill fixtures to mortise flush into the sill are supplied specially for this purpose when specified.

Zimmerman Shutter Fasteners, by a special detail, can be used with full length outside screen or storm sash. Full-size detail will be sent upon request.

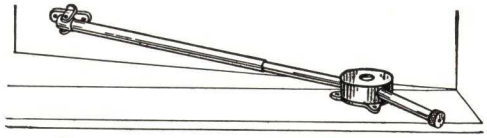


RETAIL PRICE LIST, ZIMMERMAN FASTENERS, PER DOZEN PAIRS

Width of shutter, in.	Size of bar length required, in.	Shutter fasteners	
		Black	Galvanized
12 or less	7	$ 9.00	$12.00
13	9	10.00	13.00
14 or 15	10¾	11.00	14.00
16 or 17	12	12.00	15.00
18 or 19	14	13.00	16.00
20 or 21	16	14.00	17.00
22 or 23	18	16.00	20.00
24 or 25	20	17.00	21.00
26 or 27	22	19.00	23.00
28 or 30	24	20.00	24.00

ZIMMERMAN IMPROVED CASEMENT ADJUSTORS

Zimmerman Improved Casement Adjustors, made of strong brass tubing and brass castings, operate on the sill, through inside screens where desired. A slight turn of the locking nut on the end of the handle releases or engages the friction cap and permits movement of the window by swinging the handle.



Zimmerman Improved Casement Adjustor
Retail price, $2.00 each. Solid brass

THE DAYTON GREENHOUSE MFG. COMPANY

Manufacturers of

Dayton Direct-Action Window Operators

DAYTON, OHIO

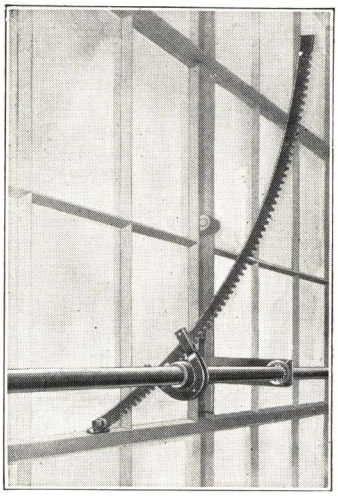
SALES OFFICES

ATLANTA, GA. CLEVELAND, OHIO NEW YORK, N. Y. ROCHESTER, N. Y. SAN FRANCISCO, CALIF.

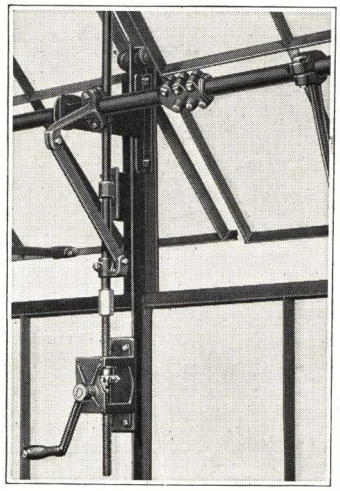
Product

WINDOW OPERATING APPARATUS, hand and electrically controlled, for steel or wood sash in factories, foundries, machine-shops, central stations, powerhouses, theaters, churches, gymnasia, exhibition buildings, etc.

Also special types for greenhouses and sludge bed covers. Also manufacturers of Greenhouses and Conservatories.



Dayton Direct-Action Operator
Showing the convex rack and pinion operating arm



Dayton (Screw Type) No. 1203 Light Duty Operator

Types

The 1600 Series comprises manually operated open type powers handling shorter runs of windows. Easily adapted to average conditions.

The 700 Series has manually operated powers, chain or shaft drive, for long runs of either top hung or center pivoted windows. Gears enclosed in case packed with grease.

The 800 Series consists of manually operated powers using endless chain drive. Powers operate tension shaft for top hung continuous sash.

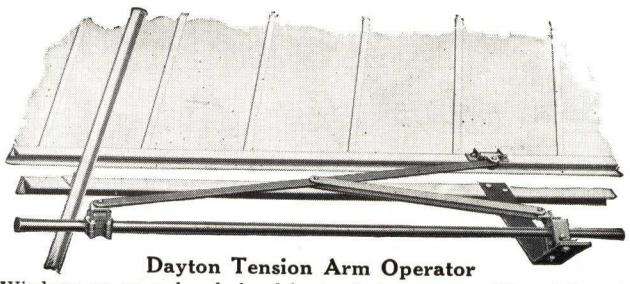
The 900 Series of motorized drives is the ideal sash control providing easy and convenient ventilation over large areas of floor space.

Large runs of sash are operated at the touch of a button from one central control station.

No. 1200 Series Screw Type Operator

The No. 1200 screw type window operator is small yet sturdy. It is equipped with a steel and bronze mitre gear and machine cut ¾-in. diameter double thread screw, thrust bearing automatic stop and detachable crank handle or chain wheel as required. All lever arms are of malleable iron with steel connecting rods.

The Dayton screw type operator is guaranteed and it is recommended for short multiple bay installations because it provides the utmost in a neat, convenient and durable window operator.

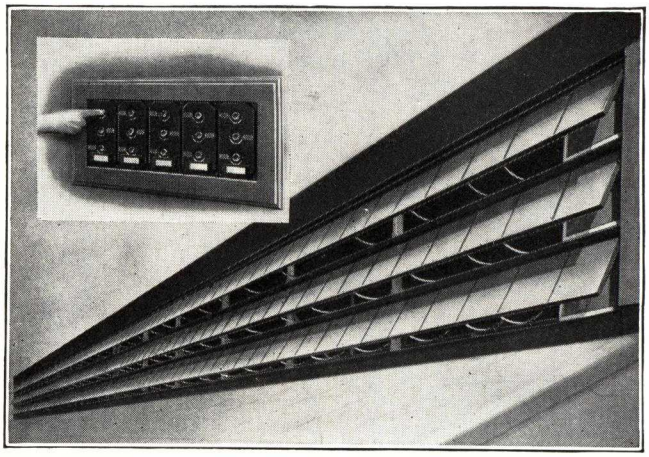


Dayton Tension Arm Operator
Windows are opened and closed by toggle lever arms. Manual force is applied by endless chain

Dayton Direct-Action Principle

The principle employed by these operators consists of a pinion gear fixed to the line shaft in a self-aligning yoke or housing opposite the hinged sash. The teeth of the pinion engage a circular cut steel arm or rack of any length needed. The distance from the center of the line shaft to pitch line of the rack is only 1¼ in., and this distance is always constant. Torque in line shaft is thus reduced to an absolute minimum.

The short leverage permits operating stations to be located most conveniently in the building. All sash operate to the same height (as much as 90° opening) without any variation along the line and are pulled down easily, yet firmly. An absolutely tight close-down is always assured, preventing dripping, drafts and loss of heat.

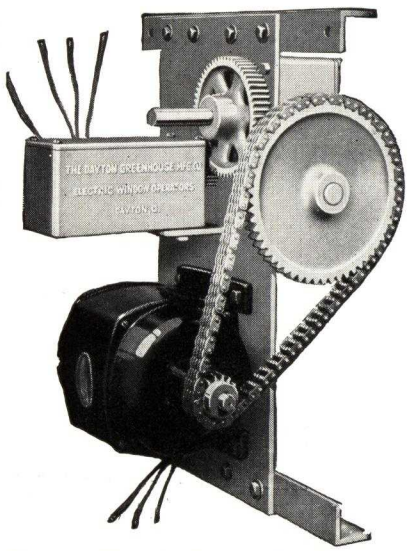


Monitor Sash with 3 Runs of Top Hung Continuous Sash Showing Dayton Direct-Action Operators Easily Controlled by Dayton Electric Power
Insert—Panel of push buttons operating all sash in this building

Long runs of top hung or heavy center pivoted sash may be operated with a minimum of operating stations, centralizing the control and substantially lowering cost of installation.

All Dayton equipment is painted in gray enamel. Only the best materials are used. Properly tempered steel shafting of large diameter and analyzed castings are used throughout to withstand the necessary loads.

Installations for center pivoted sash can be arranged to reverse up to 120°, for top hung sash up to 90°, and for bottom hung sash up to 60° from the closed position. This gives convenient accessibility for washing or cleaning the glass.



Dayton Electric Power for Dayton Direct-Action Window Operators

Engineering Service

The range of types offered in Dayton operators is such as to meet all demands. Our new catalogue gives complete information. Send for it.

Our Engineering Department will gladly co-operate and advise with you or your contractors. Your inquiry is solicited.

THE GIBSON & KIRK COMPANY

Manufacturers of Special Hardware and Window Operators

Warner and Bayard Streets, BALTIMORE, MD.

SASH OPERATING MECHANISM

Highly Suitable for Office and Bank Buildings, Theatres, and Other Places Where an Attractive and Well Designed Operator Is Required

The various types of operators are furnished in three distinct sizes: the midget for transom-size sash; the standard for practically all size sash and conditions of loading; heavy duty for extremely heavy conditions of loading.

Types of Operators

Lever Type with Rising Vertical Rod—*(See detail (1) below.)*—This operator is supplied in malleable iron and steel or any non-ferrous metal with any U. S. Standard finish. Design of this operator follows conventional lines with many refinements of component parts, making it vastly superior to the average operator. This style is subject to many modifications as to the location of various parts and may be used in unique combinations in order to obtain best operating results. The illustration shown below demonstrates the arrangement as normally required for top hung open-out sash. This same design with slight alterations is also used for bottom hung open-in and center-pivoted vents.

Lever Type with Rising Vertical Rod for Concealed Work—*(See detail (2) below.)* All malleable iron and steel operator. The design is the same as provided with exposed operators. We call your attention, however, to the method of mounting the parts of the vertical rod assembly on a standard steel angle in order to insure correct alignment of these vertical parts, as well as to materially assist in the installation of this assembly, as a unit, on the job. Considerable difficulty is usually experienced in properly installing the supporting brackets on the rough brick facing generally provided in a chase for the concealed portion of the operator equipment. The installation is rather tedious and correct alignment is never obtained. This introduces additional friction of the moving parts and generally leads to a very unsatisfactory installation. We have overcome this trouble by the adoption of an angle iron support to carry the entire vertical rod assembly, assembled in our plant before shipment and installed on the job as a unit. We do not recommend the use of galvanized steel covers over these working parts which are concealed. The use of access plates at the horizontal rod and over the gear box should, however, be provided in all instances.

Lever Type Chain Power—This operator is of conventional type with fully enclosed machined gears mounted in ball bearings; very free in its action and neat in appearance. Used quite often where vents are to be opened in a clear story and the chain is permitted to hang in the exposed portion of the room below. All parts are of steel or malleable iron.

Lever Type Direct Power—This type is often used where the power sets close to the wall and where the use of a chain is not satisfactory. Instead of using a chain to drive the power (which is mounted direct to the horizontal rod) a vertical rod extends down to a handwheel mounted in a horizontal plane. The power has machined cut gears, fully enclosed, and is of a neat and compact design. All parts are of steel or malleable iron.

Duplex Type Operator—The Duplex operator is provided to fulfill the need for an operator which does not extend very far from the sash. Where insect screens, Venetian blinds, or draperies are used this operator is generally required. Adjustable window links are standard with this style. All parts are of steel or malleable iron, unless otherwise specified. Control at the operation level is by a standard mitre gear box and revolving vertical rod. A more economical method of operation is provided for single vents in the substitution of pulleys and an endless woven cord for the series of gear boxes.

General Details

We do not manufacture operators of industrial or factory types. Our operators are manufactured to fulfill the need for sturdy and compact operators for public buildings and all places where appearance is an asset. Due to mechanical difficulties in designing operators to meet many conditions of operation, appearance is often overlooked. Our standard design of parts is made as inconspicuous as possible. Re-design of all the mechanism is continually being made toward this end. Ease of installation is also of primary importance. We call attention to many features incorporated in our operators to help in their installation, such as adjustable wall brackets where needed, adjustable window links (only when specified), standard method of mounting gear boxes by the use of a detachable bottom plate, and a number of other important points.

Material

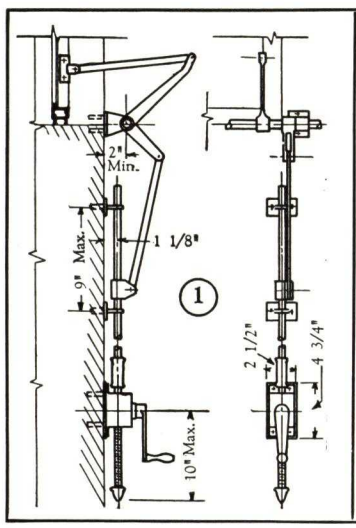
We specialize in furnishing any special metal and finish in the working mechanism. Component parts of the iron and steel operator may be supplied in cast bronze, when specified. Operators are furnished in standard finishes of commercial or hardware bronze, white bronze or nickel silver and aluminum. Stainless steel shafting supplied on request.

Special Services

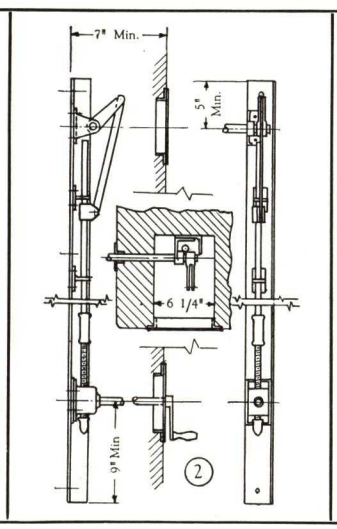
We offer the services of our Engineering Department in solving your difficulties incidental to proper operation of windows.

We are prepared to submit drawings to architects for preliminary design and quote or furnish layouts as required. Our facilities and service are at the disposal of any interested architect, window manufacturer or sales agent.

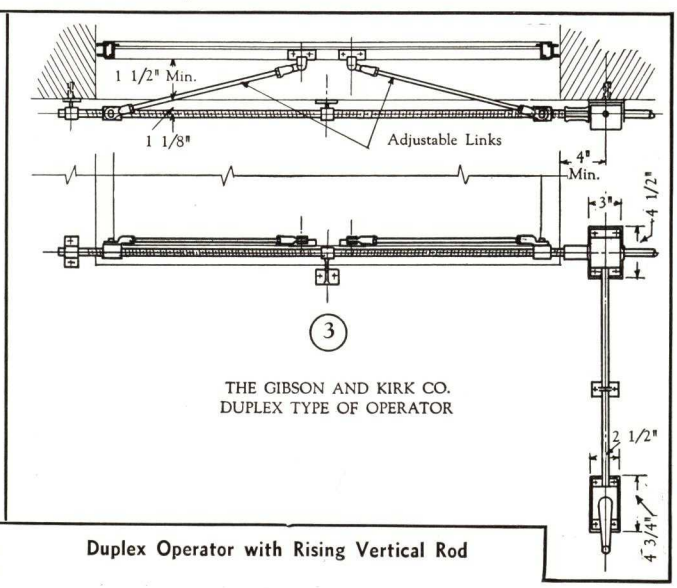
Complete catalog available on request.



Lever Type Operator with Rising Vertical Rod



Lever Type Operator with Rising Vertical Rod for Concealed Work



Duplex Operator with Rising Vertical Rod

VONNEGUT HARDWARE CO.

Von Duprin Self-releasing Fire Exit Devices

INDIANAPOLIS, IND.

VON DUPRIN SALES AND SERVICE REPRESENTATIVES

ATLANTA, GA., Thos. G. Perry, 501 Bona Allen Bldg., Tel. Walnut 3123
BINGHAMTON, N. Y., Bliss Vance, 108 Grand Blvd., Tel. 6-3344
BOSTON, MASS., Kenneth H. Bullard, 751 Little Bldg., Tel. Liberty 7171
CHICAGO, ILL., John C. Bold & Co., Great Lakes Bldg., 184 No. Wacker Drive, Tel. Franklin 4888
CLEVELAND, OHIO, Ben G. Gesing, 750 Prospect Ave., Tel. Cherry 0078
DALLAS, TEX., Karl Hormann, 3609 Southwestern Blvd., Tel. 58-2951
DENVER, COLO., Hendrie & Bolthoff Mfg. & Supply Co., 1635 Seventeenth St.
DETROIT, MICH., Mark C. Stebbins, 8859 Birwood Ave., Tel. Hogarth 6562
EL PASO, TEX., C. C. Gaines Co., 902 Mills Bldg., Tel. M-5900
EVANSTON, ILL., G. A. Silvers, 2200 Grant St., Tel. University 9511
INDIANAPOLIS, IND., H. G. Nutt, 626 Architects' Bldg., Tel. Riley 3873
JOHNSTOWN, PA., C. W. Tilley, Alma Hall, Main St., Room 12, Tel. 5186J
LOS ANGELES, CAL., W. H. Steele Co., Calo Bldg., 443 So. San Pedro St., Room 201, Tel. Mutual 8455
MINNEAPOLIS, MINN., A. N. Stark, 205 Lumber Exchange, Tel. Geneva 0280
NEW YORK, N. Y., H. B. Fenn, 370 Seventh Ave., Tel. PEnnsylvania 6-0111
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SAN FRANCISCO, CAL., Chas. I. Yates, 7 Front St., Tel. Sutter 8854
ST. LOUIS, MO., W. E. Way, 825 Chemical Bldg., Tel. Chestnut 5640
SEATTLE, WASH., Robert F. Bevers, 521 30th Ave. So., Tel. Prospect 8187
WASHINGTON, D. C., W. I. Peak, 2755 Macomb St., N. W., Tel. Metropolitan 6100
AUSTRALIA, Universal Hdwe. Co., Ltd., 16 Spring St., Sydney
HAWAII, Lewers & Cooke, Ltd., Honolulu
PORTO RICO, Dario Nuin, Mayaquez
CHILI, Morris Rosen, P. O. Box 3187, Santiago

WHEN YOU BUY THE GENUINE NEW SERIES TYPE "B2" VON DUPRIN, THIS IS WHAT YOU GET

Von Duprin
TRADE-MARK
(Registered U. S. Pat. Off.)

Drop Forged Brass or Bronze

Protected by numerous United States and Foreign Patents and Trade-mark registration

A highest grade, most reliable, strong, extra heavy mortise lock type panic device, a device embodying every refinement known in panic device construction—a device listed as standard by the Underwriters' Laboratories, Inc.

All interior parts are made of special bearing metal, bars and exterior members are made of brass or bronze only.

The cross bar is double acting, to or from the door, and is made of 1-inch, 16-gauge seamless brass or bronze tube.

The ball compensating vertical rod construction permits rods to compensate with the winding or warping of doors and positively prevents the binding of the rods.

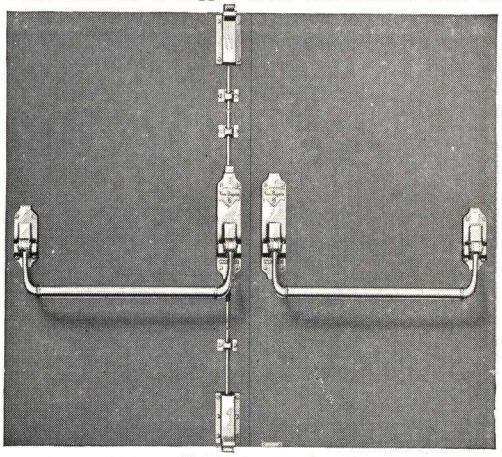
The cross bar is dogged down with a direct drive into the lever arms at both ends of the cross bar, insuring absolute rigidity. The dogging action is controlled by a key each end of bar.

Cross bar axles are so constructed that they can not drop out or be easily removed.

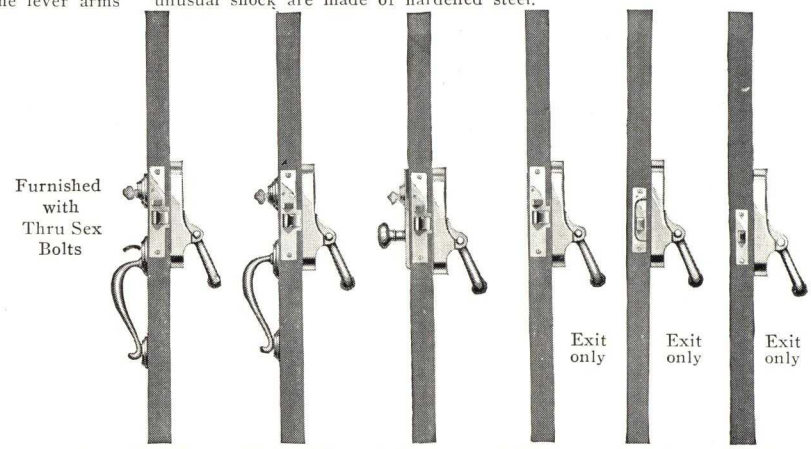
The vertical latches are of easy spring Pullman type, with a long swing, and operate entirely independent of each other.

All springs are of the compression type and are made, to our specifications, of phosphor bronze.

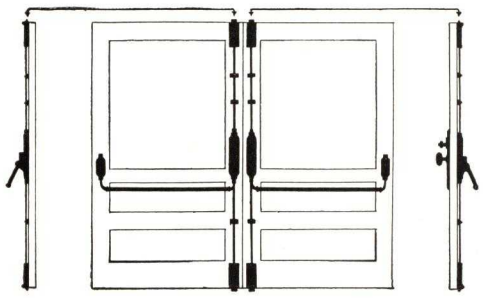
Heavy wearing parts are covered with case hardened steel sleeves, reducing friction to a minimum. The cylinder locks are made specially for panic bolt service and have remarkably long life. All stumps receiving unusual shock are made of hardened steel.



A Typical Type "B2" Von Duprin Combination



Single Door	1124B2	NL1124B2	1122B2	1130B2	1129½B2	1129B2
Active Door	1724B2	NL1724B2	1722B2	1730B2		



Vertical Rod Combinations for Double Entrance Doors Opening Outward

**Where Threshold Is Used*

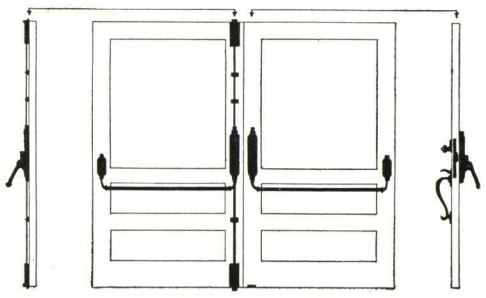
Combination No. 11B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1123B2, Type "B2" Von Duprin.

Combination No. 011B2 Ittner—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1123B2x2660 Ittner Type "B2" Von Duprin.

Combination No. 15B2 for Double Exit Doors Both doors equipped with No. 1127B2, Type "B2" Von Duprin.

Inactive	Active	1123B2x2660
1127B2	1123B2	Ittner

*In all Combinations Prefix LR where no threshold is used



Mortise Lock Combinations for Double Entrance Doors Opening Outward

**Where Threshold Is Used*

Combination No. 12B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1724B2, Type "B2" Von Duprin.

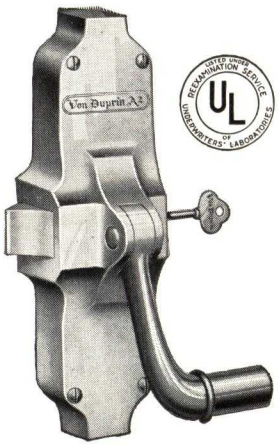
Combination No. 13B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. NL1724B2, Type "B2" Von Duprin (grip and cylinder, no thumbpiece, on outside of door).

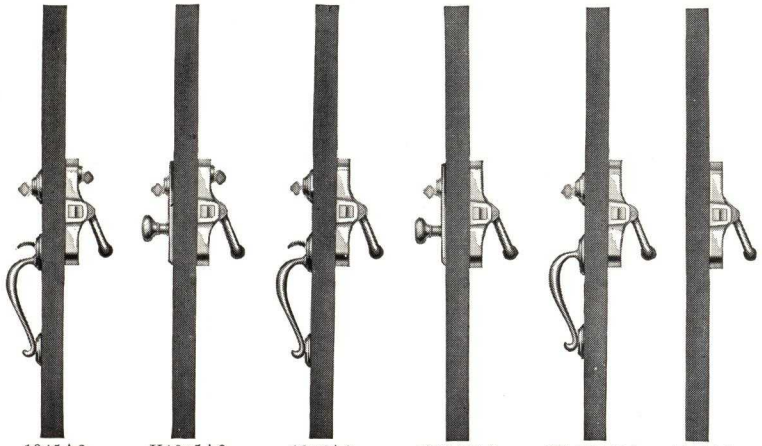
Combination No. 14B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1722B2, Type "B2" Von Duprin.

Ask us for complete specifications covering our highest grade devices

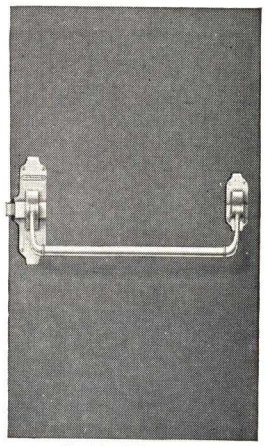
THE NEW VON DUPRIN TYPE "A2" MASTER RIM DEVICE

All Drop Forged Brass or Bronze





1045A2 K1045A2 1046A2 K1046A2 NL1046A2 1048A2



Inside Elevation

The highest quality self-releasing exit device with rim latch and lock. For single doors and double doors with mullions—opening outward. Designed to give the balanced appearance heretofore obtainable only in mortise lock devices and engineered to include every desirable feature required in exit device operation—with backsets so as to center outside trim on stiles of various widths.

Features—Double acting: a slight pressure against, or pull up, on the crossbar will withdraw the latch-bolt from its housing. Heavy Pullman latch-bolt has ¾-in. throw and easy spring action, pivots on monel metal axle. (Extra quick release eliminating binding in jamb strike.) Adjustable roller strike has anti-friction bronze roller. Double compression concealed springs. Lever arms supported by ½-in. diameter *floating axles*. Dogging feature at each end of the crossbar with a *direct drive* into the lever arms makes the crossbar a solid unit with the lock-case and the hinged end case. Sex bolts furnished regularly for wood, kalamein or tin clad doors.

Operation—*No. 1045A2*—Latch-bolt is operable from inside by crossbar at all times—from outside by thumbpiece (except when same is set by key through inside cylinder), then by key through outside cylinder.

No. K1045A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by knob (except when same is set by key through inside cylinder), then operated by key through outside cylinder.

No. 1046A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by thumbpiece (except when same is set by key through outside cylinder).

No. K1046A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by knob (except when same is set by key through outside cylinder).

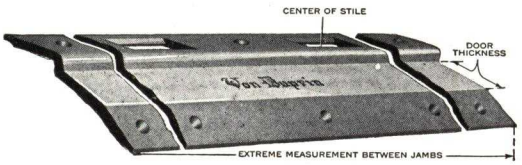
No. NL0146A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by key only.

No. 1048A2—Latch-bolt is operable only from inside by crossbar.

Von Duprin All-Weather Thresholds—Series 12390

Extruded Bronze or Aluminum

Continuous Rabbet Makes Desirable Windbreak and Watershed
Patented June 27, 1933—No. 1916116



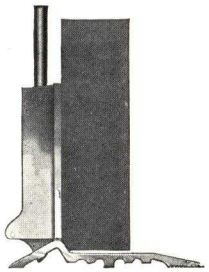
Width, 5 in. Height, ⅜ in. Height of buffer, ⅝ in. For 1¾ to 2¼ in. doors.

By specifying Von Duprin Thresholds with buffers, strikes and integral parts, you automatically eliminate practically all chance of an unsatisfactory installation and consequent condemnation of the panic bolts.

These thresholds are made of architectural bronze to your order, are shipped with the devices so that they may be installed at the same time, and are ready for installation with screwholes drilled, complete with $1\frac{1}{4} \times \frac{5}{16}$-in.—18 brass machine screws and A. J. Type expansion shields.

These thresholds cost very little, if any, more than the ordinary brass or bronze threshold and do very much to assure a highly satisfactory installation.

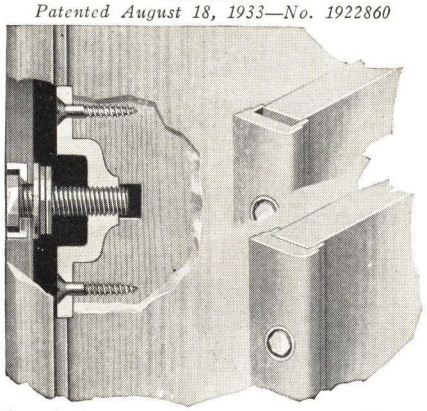
Patented June 27, 1933 No. 1916116



Section Through Threshold Showing Latch in Position

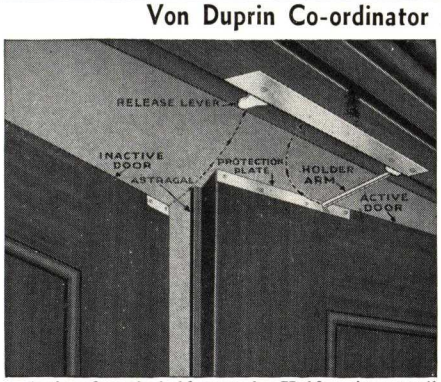
Von Duprin Compensating Astragal Hardware

Patented August 18, 1933—No. 1922860



When double doors have astragals applied with this hardware, clearance is quickly adjusted with special wrench—no skilled labor required—prevents loss of heat, picking of lock, and permits perfect closing of doors.

Von Duprin Co-ordinator No. 1243



Active door is held open by Holder Arm until inactive door engages the Release Lever. This causes Holder Arm to travel into the case of the device and permits the active door to close only after the inactive door has first closed.

Pat. Oct. 1, 1935—No. 2015996

Co-ordinating, Interference or Controlling Device for double doors with overlapping astragal or rabbeted face doors to insure the closing of the inactive door before the active door closes.

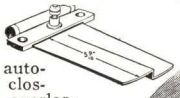
Cast Brass or Bronze

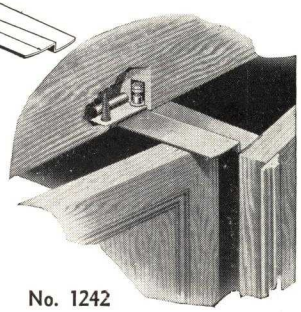
Applied to Soffit: Inside of doors—can be mortised flush into stop, or surface mounted. *Reversible:* Will fit regardless of which door is active. *Size of Case:* 1½ in. wide, 13 in. long, ⅝ in. thick. *Holder Arm:* 7½ in. long—can be cut to proper length on job. In cutting arm make same ½ in. shorter than required length, then drive in the special bullet nosed tip.

Von Duprin Co-ordinating Devices

Cast Brass or Bronze

Patented January 22, 1929—No. 1699758





No. 1242

These devices automatically control closing of doors with overlapping astragals, as well as rabbeted face doors. By simply holding the active door until inactive door has closed, they frustrate any attempt to close the active door first.

No. 1242 type will be found very satisfactory where some adjustment may be necessary at time of installation, since it is a simple matter to shorten the arm of this type by cutting with a hack saw.

ESTABLISHED 1898

GARDEN CITY PLATING & MFG. CO., INC.

Showcase and Store Fixture Hardware

Corner Ogden Boulevard and South Talman Avenue

CHICAGO, ILLINOIS

NEW YORK OFFICE and WAREHOUSE, 133 Wooster Street

REPRESENTATIVES IN PRINCIPAL CITIES

For our pages on Lighting Equipment and Special Metal Work, Showcase Frames, Metal Letters, see File Index

Hardware for Adjustable Shelving

Shelves are easily and quickly moved up or down. Brackets snap in and out easily, yet cannot be budged by load. They are tested up to 600 lbs. Slots in pilaster strips are numbered, making it easy to line up shelves.

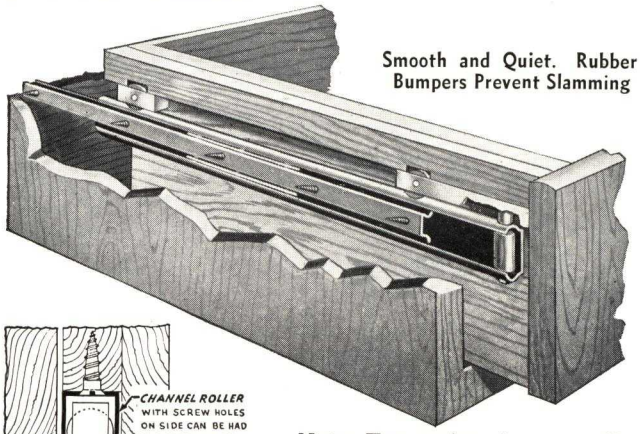
No. K-73 Pilaster strips are 7/8 in. wide with slots every 1/2 in. Stock lengths, 3, 4, 6 and 12 ft. Also available for 1/4 in. adjustment; 1 1/8 in. wide for 1/2 in. adjustment. Free samples upon request.

NEW STANDARD for flush mounting. Makes neat installation can be painted or finished to match woodwork. No. C73 pilaster standard is 3/4 in. wide, slots every 1/2 in. and standard lengths up to 12 ft.

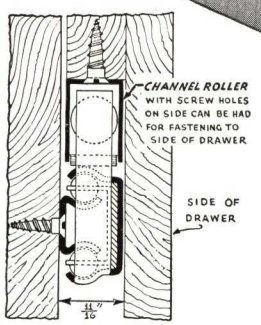
Full Size Section of C73 Standard

Ball Bearing Drawer Slides

Heavily laden drawers slide easily. Drawers pull out full length—all contents may be easily reached. Drawers are moved with ease. Easily installed—blue prints explaining installations sent on request. Slides furnished completely assembled ready for fastening to framework. Screws are included.



Smooth and Quiet. Rubber Bumpers Prevent Slamming



No. 361 Rollers contained in channel which is fastened to side of drawer. *1/2 size section*

Note: Two styles of upper rollers. We recommend No. 361 (section at left) to fasten upward to wooden drawer strip. Also furnished to screw directly to side of drawer if ordered. No. 363 arranged to screw directly to side of drawer. Stock sizes every inch 12 to 36 in. Other sizes made to order.

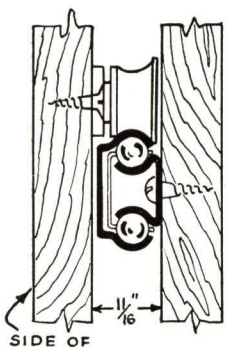
Length of slides must not exceed depth of drawer, as measured on outside from back of front panel to rear end of drawer.

"Ball-Kary" Hardware for Sliding Glass Doors

Also made for wood frame doors (No. 2001) with shoe that will fit any thickness of door.

New, smooth, frictionless ball bearing track for sliding doors. Easy to install. Durable and troubleproof. Dirt and other accumulations cannot interfere with its operation. It is safe, strong, noiseless—operates on feather touch and cannot jump tracks. Heavy steel balls spaced 3 1/2 in. apart. Safe for heaviest doors.

Made of steel or bronze any finish. Steel statuary bronze is standard.



No. 363 Rollers directly fastened to side of drawer *1/2 size section*

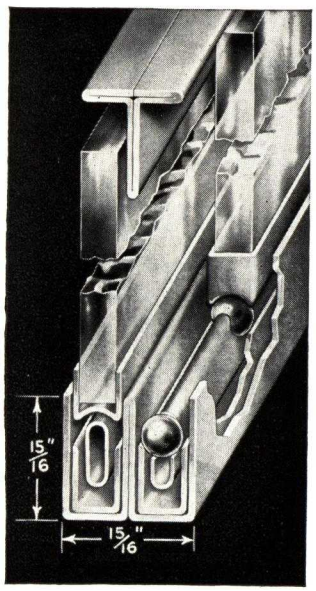


Illustration 2/3 size No. 2000 Assembly for all glass doors. Shoes furnished for 1/4-in. glass

KASON HARDWARE CORPORATION

MAIN OFFICE AND FACTORY

TELEPHONE
EVergreen 7-1173

127-137 Wallabout Street, BROOKLYN, N. Y.

SALES REPRESENTATIVES IN PRINCIPAL CITIES

For Kason Refrigerator Hardware, Pilaster Standards, Etc. See File Index

KASON SHOWCASE AND STORE FIXTURE HARDWARE

Adjustable Shelf Supports; Counter Brackets; Ball Bearing Sheaves; Sliding Door Tracks; Tracks and Carriers for Frameless, Sliding Glass Doors; Drawer Pulls and Handles; Showcase Fittings; Hinges and Latches; Wardrobe Hooks; Mirror Hinges; Garment Carriers; and Display Stands.

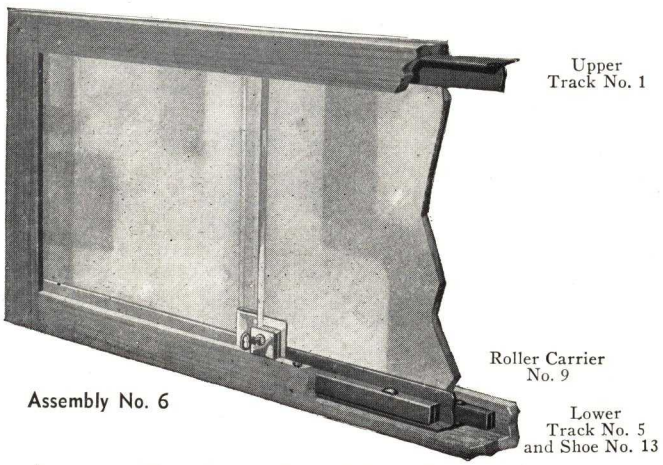
KASON BALL-BEARING SHEAVES

No. 25
Illustration actual size. Case is 11/32 in. thick. Ball bearings and bushings are employed.

Kason Ball-Bearing Sheaves are smooth running, accurate and true. The frames are made of finest quality wrought steel and are electric welded. Two styles are illustrated. See catalog for comprehensive line of sheaves.

No. 21
Illustration actual size. Case is 1/2 in. thick.

KASON FRAMELESS, SLIDING GLASS DOOR ASSEMBLY



Assembly No. 6

An easy-rolling, frictionless, sliding glass door is assured in the above assembly. The roller carrier employed is a Kason patented product employing no pins and assuring noiseless, everlasting service. The shoe is carefully fashioned to hold the glass firmly forming a positive protection against breaking and rattle.

Made in the following metals and finishes:

Brass: Dull brass, statuary bronze, dull nickel, polished nickel, and chromium plated.

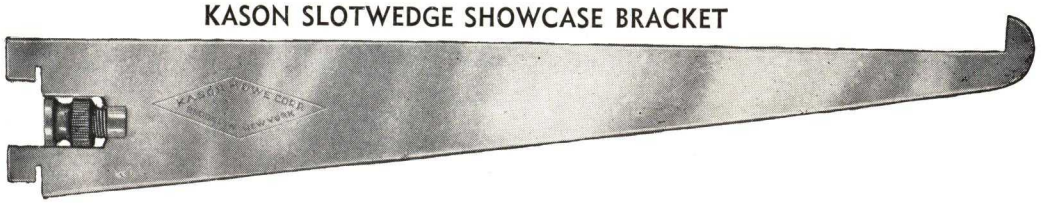
Steel: Statuary bronze, brass plated, dull nickel, polished nickel, and chromium plated.

Stocked in 12-ft. lengths or cut to size.

See catalog for other sliding door tracks and showcase hardware.

KASON SLOTWEDGE SHOWCASE BRACKET

Slotwedge Standard K-121



A note of beautiful modernism and a sturdy shelf support are provided in the Kason Slotwedge Brackets. The two notched projections on the bracket fit into the slotted standard. The bracket is firmly fastened into the standard by means of the adjustable locking wedge provided.

Made in the following metals and finishes:

Brass: Polished brass, nickel plated, dull nickel, chromium plated in bright or satin finish.

Steel: Statuary bronze, cadmium plated, nickel plated and chromium plated in bright or satin finish.

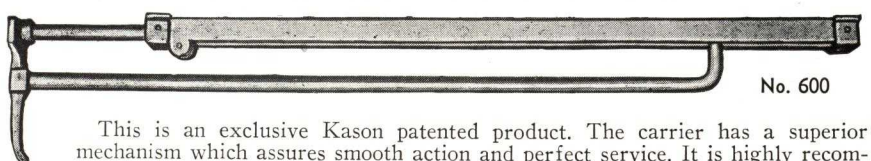
Sizes: 4, 6, 8, 10, 12, 14, 16, 18 and 20 inches.

Slotwedge Standards are made of the same metals and in the same finishes as the brackets. Stocked in all standard lengths.

ADJUSTABLE SHELF SUPPORTS

Kason Pilaster Standards are described in Kason Refrigerator Hardware presentation in this edition. Please refer to File Index for page number. A comprehensive line of showcase brackets, counter brackets and showcase hardware is presented in our catalog No. 38, a copy of which will be cheerfully mailed to the profession.

KASON PATENTED GARMENT CARRIER



No. 600

This is an exclusive Kason patented product. The carrier has a superior mechanism which assures smooth action and perfect service. It is highly recommended for every type of garment case. Made of steel in either statuary bronze or nickel plated.

Stocked in the following sizes: 12, 14, 16, 18, 20, 22 and 24 inches.

KNAPE & VOGT MFG. CO.

MAIN OFFICE AND FACTORY
GRAND RAPIDS, MICH.

BRANCH SALES OFFICES

BOSTON, MASS., 104 Hanover St.
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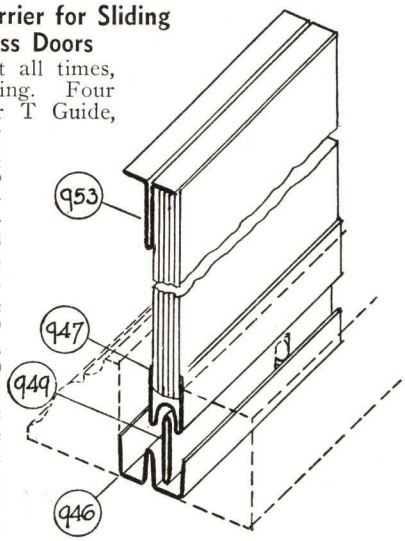
Products

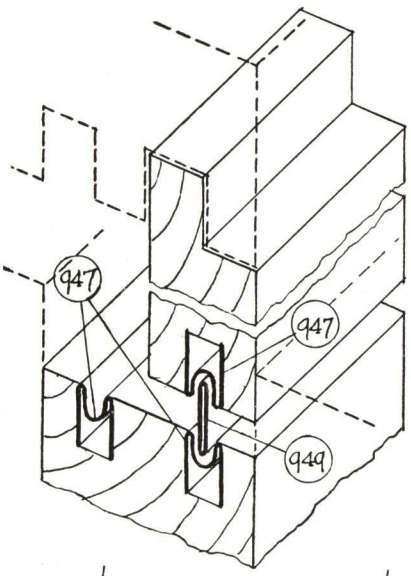
ADJUSTABLE SHELF STANDARDS and SUPPORTS.
EUSTIS TRACK for Sliding Frameless Glass Doors.
EUSTIS TRACK for Sliding Wood Frame Doors.
LOCKS for Sliding Glass or Wood Doors.
BALL BEARING SHEAVES and TRACK for Sliding Doors.
K-VENIENCES—CLOTHING CARRIERS and CLOTHES CLOSET CONVENIENCES.

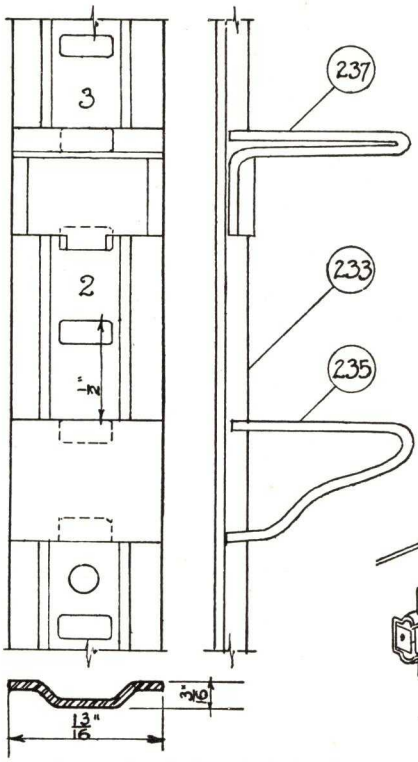
Eustis Track and Carrier for Sliding Frameless Glass Doors

Positive in operation at all times, smooth and silent running. Four members—No. 953 Upper T Guide, No. 947 Shoe to take ¼ or $\frac{5}{16}$-in. glass, No. 949 ball bearing carrier, No. 946 Lower Track. Specifications—Eustis track set consisting of 1 piece No. 953 —length of opening, 1 piece No. 946—length of opening, 2 No. 947—each piece length of glass, 2 No. 949 —each piece three-quarters length of opening. No. 949 ball bearing carrier rolls with door half distance covered by door. Balls have four-point bearing between No. 946 and 947. Finishes: Statuary Bronze or Nickel Plated. Use No. 961 lock.



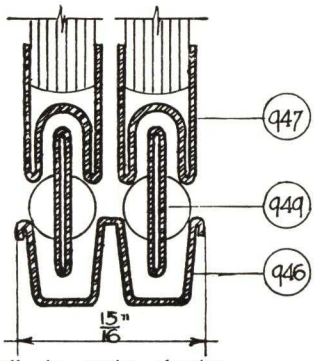
At Right: Half full size section showing Eustis track used with wood frame doors. Silent, frictionless, cannot jump the track. No. 947 grooved into base and bottom of door. No. 953 can be used at top instead of rabbeting the doors. Specifications—2 pieces No. 947 at bottom—each piece the length of opening, 2 pieces No. 947—each piece the length of door, 1 piece No. 953 Upper T Guide—the length of opening, 2 pieces No. 949 ball bearing carrier, each piece three-quarters the length of opening. Use No. 980 lock.



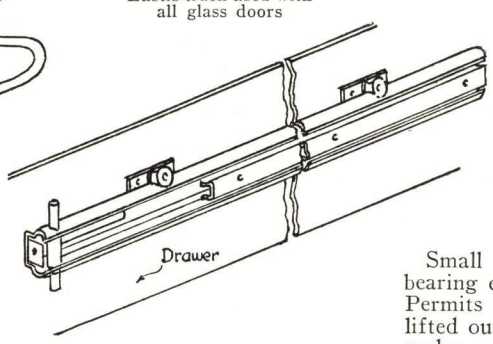


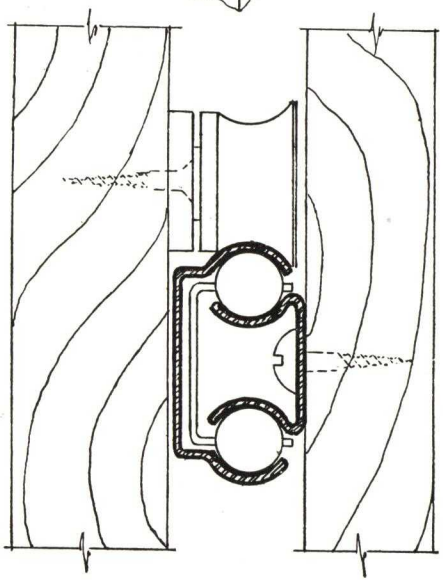
Full Size Detail Adjustable Shelf Standards and Supports

No. 233 supplied in stock lengths every 6 ins. from 18 to 72 ins., longer lengths to 12 ft. or cut to exact size. Used with or without grooving the wood. Numbered every inch to insure alignment. No. 235—No. 237 tested to 700 lb. weight. Made of steel, brass or bronze. Finishes: Nickel, Statuary Bronze, Cadmium, Chromium or any other

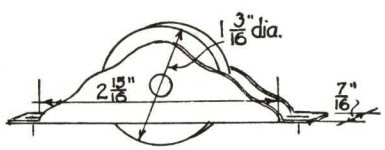


Full size section showing Eustis track used with all glass doors





Small detail and full size section of No. 1400K ball bearing extension drawer slide. No mortising required. Permits opening drawer to full depth. Drawer can be lifted out without removing hardware. Operates easily under great weight. Made in all sizes—give distance from back of drawer front to back of drawer.



No. 427 Ball Bearing Sliding Door Sheave for Use with No. 458C or No. 452X Track

No. 458C Track, Drawn Steel, Copper Plated

No. 452X Track, Wrought Brass

Stock lengths—6 ft., 8 ft., 10 ft. and 12 ft. Any finish can be had

K-VENIENCE CLOSET FIXTURES

Double Closet Capacity

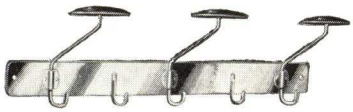
No. 550—Swinging Trouser Hanger

Holds 4 pairs trousers, full length, by the cuffs; always in press, easily accessible. Also women's skirts. Each arm swings individually. Fastens anywhere. 13½ ins. long.

Bring System into the Clothes Closet

No. 3—Garment Bracket

Extra long and strong for as many as 8 coats or a dozen less bulky garments. Allows hanging more clothes in less space. 10 ins. long.



No. No. 786—Hook Strip and Hat Rack

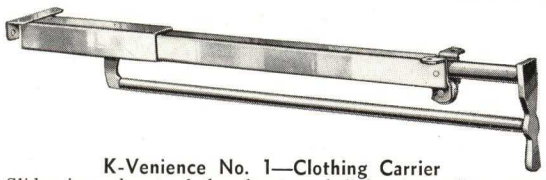
Has hooks for clothing, and swinging hat holders for hats. More attractive than other wall hooks and better for hats. Easily mounted on any wall or closet door. 24 ins. long.

No. 1182—Shoe Rack

18 ins. long closed, 32 ins. extended full length. Holds any size adult shoe firmly in place by toe guard. Keeps each pair of shoes in perfect condition up off the floor.

No. 4—Shoe Rack

Keeps shoes off the floor in neat and orderly arrangement. Adjustable from 18 ins. to 32 ins. in length to fit available space. Toe guard prevents shoes falling off swinging door.



K-Venience No. 1—Clothing Carrier

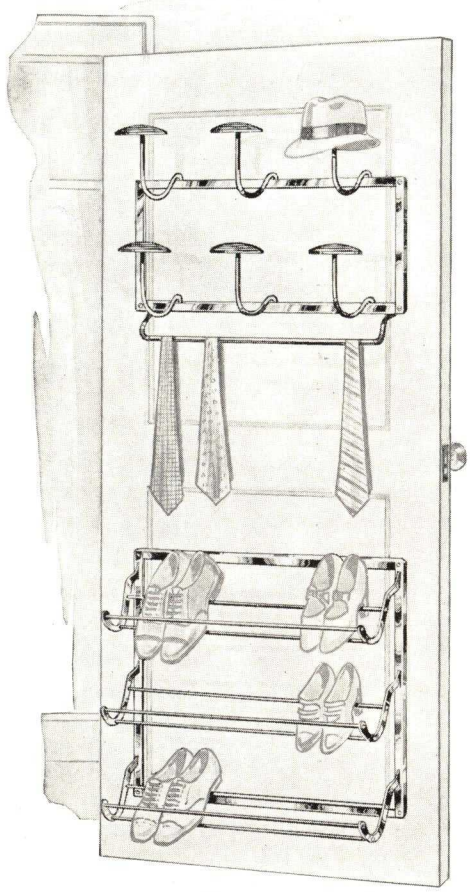
Slides in and out of the closet on ball bearing rollers, carrying garments out of the closet into the light of the room. Doubles hanging space. Made in seven sizes. Adjustable to fit any clothes closet.

12-in. size fits any closet 12 ins. to 16 ins. deep.
16-in. size fits any closet 16 ins. to 20 ins. deep.
20-in. size fits any closet 20 ins. to 24 ins. deep.
24-in. size fits any closet 24 ins. to 30 ins. deep.
30-in. size fits any closet 30 ins. to 36 ins. deep.
36-in. size fits any closet 36 ins. to 42 ins. deep.
42-in. size fits any closet 42 ins. to 48 ins. deep.

K-Venience No. 2—Extension Closet Rod

Easily attached to wall or hook rail. Three sizes.
18-in. size—adjustable from 18 ins. to 30 ins. in length.
30-in. size—adjustable from 30 ins. to 48 ins. in length.
48-in. size—adjustable from 48 ins. to 78 ins. in length.

All Fixtures Made of Steel. Polished Nickel-plate or Polished Chromium-plate Finish



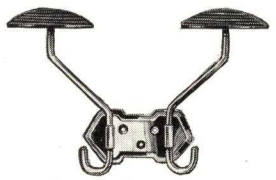
Upper Fixture—No. 782 Hat and Tie Combination

Holds 6 hats and a large number of ties. 20½ ins. wide, 18½ ins. high.

Lower Fixture—No. 784 Shoe Rack Combination

Holds 8 to 12 pairs of shoes securely in place by toe guards. 20½ ins. wide, 26 ins. high.

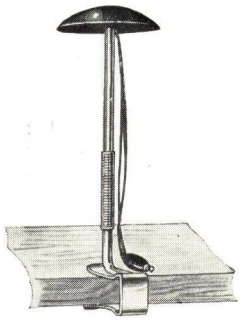
These combination fixtures are packed individually. May be used one above the other as shown, or separately. Easily attached to door or closet wall. Convert waste space to practical use.



No. 6—Hat Holder

A closet or hall fixture that looks well, and serves its purpose to equal advantage. Arms swing to desired position. Fills a need in every home.

Convert Waste Space to Practical Use



No. 1189—Hat Holder

Fastens securely to any closet shelf by means of spring clip at base. Hat may be pulled down to easy reach by cord. Keeps hats off dusty shelves. 10½ ins. high.

No. 777—Swinging Tie Rack

Square arm, set with dividing pegs, swings to left or right against wall or door when not in use. Keeps ties in perfect order. Arm 18 ins. long.

No. 771—Folding Tie Rack

A new principle in tie racks. Pulls out from door or wall affording easy access to ties, then folds back out of the way. Has full 36 separate compartments, each holding one or several ties. Handy to use, nothing like it in design. 20 ins. wide.

No. 547—DeLuxe Tie Rack

This rack provides space for literally dozens of ties in perfect array, or 21 ties each on a separate peg. Offers the advantage of removing one tie without dislodging others. 24 ins. long.

K-Veniences are smartly Designed, Easily Attached, and Practically Indestructible

ACKERMAN-JOHNSON CO.

Expansive Screw Anchors, Toggle Screw Anchors, Expansion Bolts, Concrete Inserts

625 West Jackson Boulevard, CHICAGO, ILL.
NEW YORK OFFICE, 53 Park Place

Products

ACKERMAN-JOHNSON EXPANSIVE SCREW ANCHOR; EXPANSION BOLTS; CONCRETE INSERTS and KINDRED APPLIANCES; a new TOGGLE SCREW ANCHOR for use where Toggle Bolts have been used.

Ackerman-Johnson Expansive Screw Anchor

Adaptability—For attaching objects to hard materials, as concrete, brick, stone, tile, marble, etc.

Description and Operation—Consists of a doubly tapered internally threaded cone made of brass, iron or steel (Fig. 1), within a lead alloy ductile sleeve (Fig. 2). These are assembled at the factory, the sleeve being forced on the cone to a normal position as at Fig. 3.

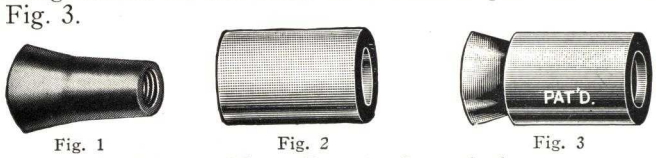


Fig. 1 Fig. 2 Fig. 3

Ackerman-Johnson Expansive Screw Anchor

When installed as illustrated, the sleeve is driven farther toward base of the cone and is expanded generally to any degree required to swedge tightly against the sides of hole, effecting perfect holding contact throughout the length and circumference of the anchor. Thus consolidated with the wall material, the anchor provides a machine threaded hole the same as an ordinary tapped hole in a machine part. Any object may then be attached with a standard screw or bolt of suitable diameter.

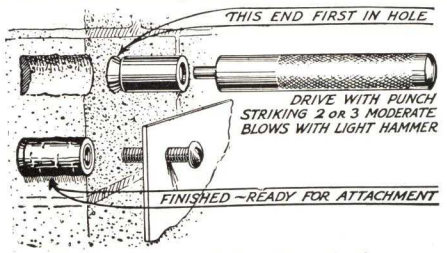


Fig. 4. Manner of Installing Anchor
The piloted setting punch supplied without charge with all anchors

The heavier the load attached, the more forcible becomes the expansion, causing the anchor to resist effort to pull it out far beyond the tensile strength of any screw or bolt.

Distinctive Advantages—Time saving through the use of Ackerman-Johnson anchors compared with old methods more than compensates their total cost.

They save much of drilling cost, requiring least depth for stated load. They are installed instantly, without the aid of the screw, and before the fixture is lifted into position to be fastened. Their margin of safety is equal to that of the steel bolts used.

They necessitate the least displacement of wall material and consequently less injury to buildings. They effect the neatest possible workmanship, while at the same time they are by far the strongest anchorage obtainable for the unusually heavy loads. Test data on request.

Sizes—The size of anchor is designated as the size of the bolt or screw to be used. Example: For No. 10-24 screw, use No. 10-24 anchor; for ⅜-in. bolts **use ⅜-in. anchor.**

EXPANSIVE SCREW ANCHORS
List Prices, Not Including Screws

Anchor size No.	Minimum dimensions of holes required, in.		Shipping weight, lbs. per 1000	List price per 100
	Diameter	Depth		
6 x32	¼	⅜	7½	$ 3.80
8 x32	5/16	½	15	4.50
10 x24	⅜	⅝	22½	4.95
12 x24	7/16	¾	34	6.50
¼"x20	½	⅞	50½	7.20
5/16"x18	⅝	1	95	9.75
⅜"x16	¾	1¼	162	12.00
7/16"x14	⅞	1½	231	15.00
½"x13	⅞	1½	221	15.00
⅝"x11	1⅛	2	512	25.00
¾"x10	1¼	2¼	560	40.00

Packed 50 or 100 in box.
8, 10 and ¼-in. sizes manufactured in special short lengths. For use anchoring in glass and marble panels, etc. ¾x10-in. and 1x8-in. anchors are now available.

Stud Type Expansion Bolts

So great is the holding power of this anchorage, that when set in strong stone or concrete with only its one primary sleeve expanded, the bolt shank can be pulled in two, without the anchorage yielding.

Bolt with Primary Expansive Sleeve Only

Bolt with Primary and One Secondary Expansive Unit

Secondary Expansive Units—Made up of an expansive sleeve and a slip steel cone, giving additional anchorage equal to the primary unit. Calculate the minimum depth of holes for setting each unit at twice the diameter of the hole drilled.

Sectional View Showing Bolt with Primary Expansion Sleeve, One Iron Spacing Sleeve, and One Secondary Expansive Unit

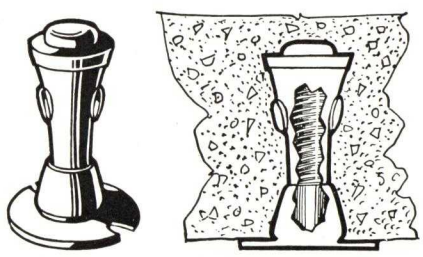
SIZES, STUD TYPE EXPANSION BOLTS

Diam. of bolt at thread, in.	Diam. of hole, in.	Length of bolts in inches
¼	⅜	1¼, 1½, 1¾, 2, 2½, 3, 3½, 4
5/16	½	1½, 2, 2½, 3, 3½, 4, 5
⅜	9/16	1¾, 2, 2¼, 2½, 3, 3½, 4, 4½, 5, 6, 8
½	¾	2½, 3, 3½, 4, 5, 6, 7, 8, 10, 12, 15, 20
⅝	1	3½, 4, 5, 6, 7½, 9, 10½, 12, 15
¾	1⅛	4, 5, 6, 7½, 9, 10, 10½, 12

Other lengths carried in stock and larger sizes made to order.

Ackerman-Johnson Concrete Inserts

For moulding into the concrete when poured. Afford minimum displacement of the concrete and maximum speed in setting. Can be furnished for all sizes of screws and bolts up to ⅝-in. diameter.



Exterior view Embedded in concrete

Ackerman-Johnson Concrete Insert

Users of Ackerman-Johnson Products

Extensively adopted by leading contractors, manufacturers, railroads, shipyards, government departments and public utility companies.

ACKERMAN - JOHNSON TOGGLE SCREW ANCHORS

Toggle Screw Anchors were designed to be used wherever "toggle bolts" could ordinarily have been used.

They make perfect screw anchorages to all wall structures such as hollow tile, hollow or solid soft gypsum tile, expanded metal or wood lath and plaster, every type and kind of wall board, thin wood panels, marble, slate, glass or other materials too thin for the proper setting of Expansive Screw Anchors, also, in soft wood, soft brick, cork or other substances too yielding for a screw or for an expansion bolt and to sheet metal walls, ceilings, air ducts, etc. With the specially designed tool they are easily and speedily *preset,* that is they are set, accurately and firmly, without it being necessary even to have on hand the object to be hung or the screw with which it is to be fastened.

They will remain so *preset* for repeated use, times without limit. It is impossible for the nut to be lost or even to move when it may be necessary at any time to withdraw the screw.

Only the ordinary stock lengths of screws are necessary with these toggles. Screws will average at least 1¼ in. shorter than those necesary for "toggle bolts."

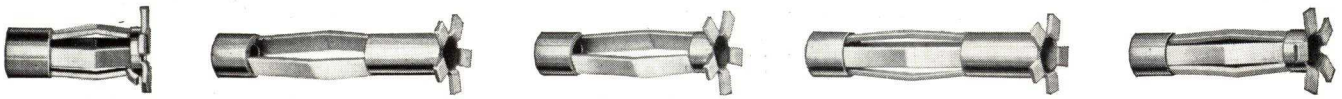
There are so many points of superiority over "toggle bolts" in this system of fastening that space on this sheet does not permit covering.

Made for No. 8x32, No. 10x24, and ¼"x20 standard machine screws.

Made in two-wing and four-wing types.

Made in two lengths, "long" and "short."

Made also in extra short length for sheet metal and other thin panels.



Extra Short | 2 Wing Long | 2 Wing Short | 4 Wing Long | 4 Wing Short

This extra short special made in four-wing type only.

"Extra short" anchors are for wall thickness, $\frac{3}{16}$ in. and less. "Short" anchors are for wall thickness, $\frac{3}{16}$ to $\frac{5}{8}$ in. "Long" anchors are for wall thickness, $\frac{5}{8}$ to 1¼ in. Made of steel, cadmium plated, can be furnished in brass. In soft substances, such as gypsum tile, soft brick, mortar, soft wood, cork insulation, etc., where thickness is too great for the anchors to reach through, they will clinch for a perfect setting, as may be seen in two settings shown in the illustration of a section of gypsum tile in Fig. 1 at left. The long, two-wing type is the better choice for gypsum block, the long four-wing for very yielding material such as cork.

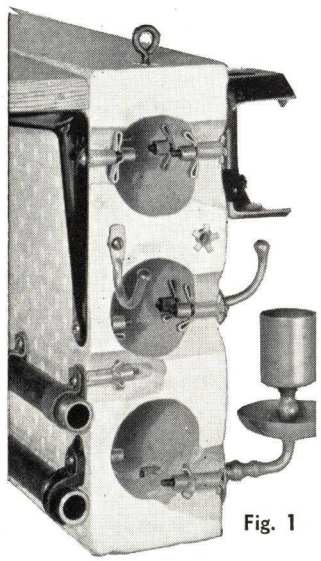


Fig. 1

A Section of Gypsum Tile, Chipped Away to Expose the Set Anchors

Note particularly the perfect clinch of those toggles which could not reach through the gypsum body

LIST PRICES, NOT INCLUDING SCREWS

For screw size	Type	Length to specify	For wall thicknesses	Diam. of *holes to drill	List price per 100
8x32	4-Wing	Ex. Short	0 to $\frac{3}{16}$"	$\frac{3}{8}$"	$6.80
8x32	2-Wing	Short	$\frac{3}{16}$" to $\frac{5}{8}$"	$\frac{3}{8}$"	7.00
8x32	4-Wing	Short	$\frac{3}{16}$" to $\frac{5}{8}$"	$\frac{3}{8}$"	7.00
8x32	2-Wing	Long	$\frac{5}{8}$" to 1¼"	$\frac{3}{8}$"	7.40
8x32	4-Wing	Long	$\frac{5}{8}$" to 1¼"	$\frac{3}{8}$"	7.40
10x24	4-Wing	Ex. Short	0 to $\frac{3}{16}$"	$\frac{7}{16}$"	6.80
10x24	2-Wing	Short	$\frac{3}{16}$" to $\frac{5}{8}$"	$\frac{7}{16}$"	7.00
10x24	4-Wing	Short	$\frac{3}{16}$" to $\frac{5}{8}$"	$\frac{7}{16}$"	7.00
10x24	2-Wing	Long	$\frac{5}{8}$" to 1¼"	$\frac{7}{16}$"	7.40
10x24	4-Wing	Long	$\frac{5}{8}$" to 1¼"	$\frac{7}{16}$"	7.40
10x24	2-Wing	Ex. Long	1¼" to 1¾"	$\frac{7}{16}$"	8.00
¼"x20	4-Wing	Ex. Short	0 to $\frac{3}{16}$"	$\frac{17}{32}$"	8.10
¼"x20	2-Wing	Short	$\frac{3}{16}$" to $\frac{5}{8}$"	$\frac{17}{32}$"	8.40
¼"x20	4-Wing	Short	$\frac{3}{16}$" to $\frac{5}{8}$"	$\frac{17}{32}$"	8.40
¼"x20	2-Wing	Long	$\frac{5}{8}$" to 1¼"	$\frac{17}{32}$"	8.90
¼"x20	4-Wing	Long	$\frac{5}{8}$" to 1¼"	$\frac{17}{32}$"	8.90

Setting tool for No. 8x32 or No. 10x24, complete. $0.50
Extra Draw Spindle No. 8x32 or No. 10x24..... .20

When ordering Toggle Screw Anchors, please specify according to first three columns.

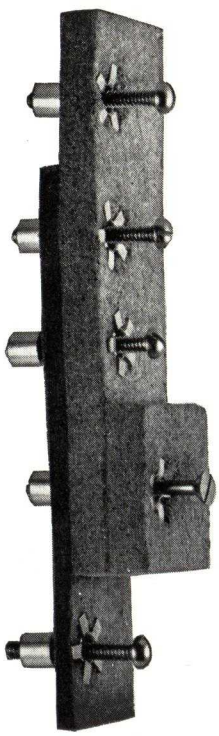
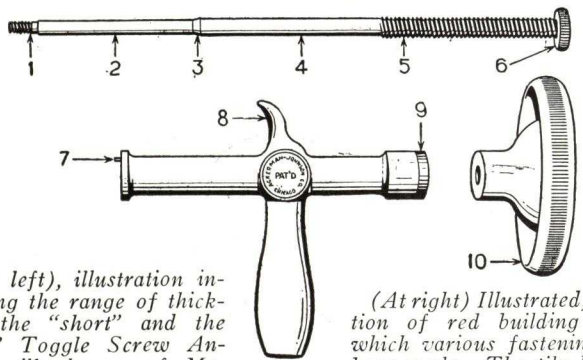


Fig. 2

(At left), illustration indicating the range of thickness the "short" and the "long" Toggle Screw Anchors will take care of. Materials pictured are Masonite and Celotex wallboards

Use of Setting Tool



(Above) 3 parts comprising the setting tool. (1) to (3) chrome vanadium, heat treated stud, butt welded at (3) to larger section of draw shaft. (5) Fast, double lead thread. (6) Knurled thumb nut for loading, integral with shaft. (7) Hardened stud, prevents rotation of anchor while being set. (8) Comfortable forefinger grip. (9) Hardened steel thrust bearing. (10) Hand wheel threaded to fit (5)

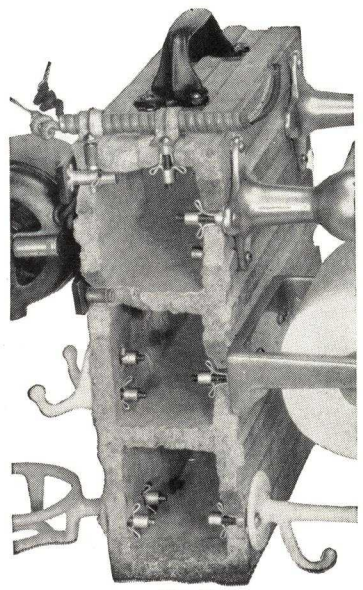


Fig. 3

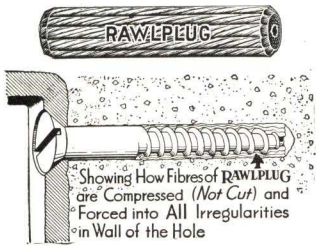
(At right) Illustrated, is a section of red building tile to which various fastenings have been made. The tile has been chipped away to expose some of the settings

THE RAWLPLUG COMPANY, INC.

95-98 Lafayette Street, NEW YORK, N. Y.

Complete stock carried in the following branches—Albany, Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Des Moines, Detroit, Fort Wayne, Kansas City, Los Angeles, Miami, Milwaukee, Minneapolis, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Seattle, St. Louis, Syracuse and Washington, D. C.

Rawlplugs



RAWLPLUGS

A screw anchor of unequaled holding power. Rawlplugs hold equally well in any material. Their unique composition makes them especially adaptable for anchoring screws in fragile materials such as glass, hardwood, tile, plaster, marble, etc.

Rawlplugs will not mar handsome interiors, crack marble or other delicate building materials. They cannot work loose, shrink or shear. They are waterproof and will not deteriorate, crumble or pulp.

The diameter of the Rawlplug, hole and screw is virtually the same. The screw entering the Rawlplug compresses it against all sides and into all irregularities of the hole. The entire Rawlplug becomes an integral part of the material which surrounds it, giving a grip greater than that of any other material.

Rawlplugs do not disfigure or mar the material in which they are used; they can hardly be seen and are completely hidden even by the screw head.

Rawlplugs are made for No. 6 to No. 20 wood screws, including all lengths, and lag screws ¼ to ⅝ in. including all lengths.

THEIR HOLDING POWER

Size of Rawlplug	Size of hole	Size of screw	Kind of screw	Length of screw engaged	Pounds pull	
					1:2:4 concrete	Brick masonry
No. 12	¼″	No. 12	Wood	1½″	1525	660
No. 14	9/32″	No. 14	Wood	1½″	1590	900
No. 16	5/16″	No. 16	Wood	1½″	1175	1400
No. 20	3/8″	No. 20	Wood	2″	2830	1750
No. 3/8	7/16″	3/8″	Lag	2½″	3700	2980
No. 7/16	½″	7/16″	Lag	2″	6670	2970
No. 1/2	5/8″	½″	Lag	3″	8900	3900
No. 5/8	¾″	5/8″	Lag	3″	12700	6150

Rawl-Drives

The only expansion bolt, for use in masonry, complete in one-piece.

Size of drilled hole same as diameter of bolt.

Drives like a nail right through hole in fixture and into masonry.

The tremendous gripping and holding power is caused by the process of heat treatment and the fact that it is fully expanded before driving.

Tensile strength increased 200% over standard commercial bolts, thus allowing twice the usual working loads or ½ the number of bolts per job.

Tremendous holding power permits use of smaller sizes.

Made in eighteen different sizes and three styles of heads—Round, Countersunk, and Stud.

RAWL-DRIVES

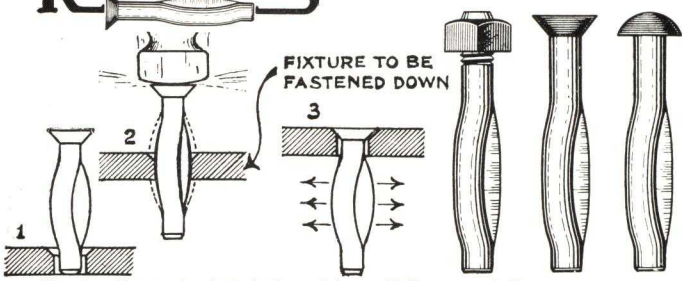


Fig. 1—Shows the bolt before driven (fully expanded).

Fig. 2—Illustrates the Rawl-Drive compressed as it is driven through the hole in fixture. Dotted lines indicate normal diameter.

Fig. 3—When entirely driven through, the bulged section resumes its normal diameter and is then compressed again when driven into hole in masonry.

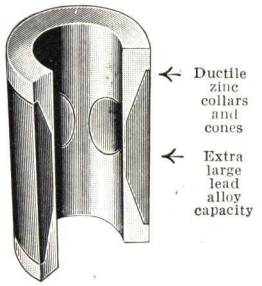
THEIR HOLDING POWER

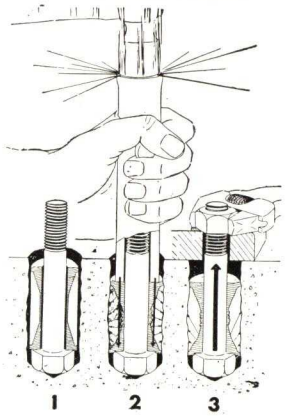
Bolt and drill size			Pounds direct pull			
Diam. of Rawl-Drives	Depth of hole	Rawl-drill used	Actual test in 1:2:4 concrete	Safe load concrete 1:4 safety factor	Actual test in common brick	Safe load brick 1:4 safety factor
3/16″	1″	#8	1200	300	634	158
¼″	1½″	#12	2325	581	1183	296
5/16″	2″	#16	4025	1006	1833	458
3/8″	2″	#20	6450	1612	2150	537
½″	3″	½″	12,525	3151	3700	925
5/8″	4″	5/8″	15,000*	3750	....	....

*Concrete failed.

Rawl-Anchors

A one-piece, heavy-duty, double-expanding, double-ended masonry anchor for bolts. It is foolproof—cannot be improperly installed. This zinc and lead alloy anchor, with its scientifically designed and patented double cone construction has a holding power in excess of any two-unit anchor. It is easier to handle, and requires but one caulking operation. Bolt cannot turn in hole after being caulked with a Rawl-Anchor.





RAWL-ANCHORS

1. Insert bolt in hole, head down. Slip Rawl-Anchor over it.
2. Caulk well with Rawl-Anchor Caulking Tool or piece of ordinary pipe of proper size.
3. Set fixture over bolt, tighten up nut and anchorage is complete.

THEIR HOLDING POWER

Diameter of bolts.....	¼″	5/16″	3/8″	½″	5/8″	¾″	1″
Actual test (pounds) holding of Rawl-Anchors in 1:2:4 concrete.....	*2300	*2900	*6000	*9000	‡12000	‡13600	‡15000
Safe load (pounds) on bolts, as shown by American Institute of Bolt, Nut and Rivet Manufacturers.....	268	453	678	1257	2018	3020	5510

*Bolt broke in tension. ‡Concrete failed.

Rawldrills

Three-point drills from 3/32 in. to 1⅝ in. inclusive (depending on type of drill) for hand or power hammer drilling in masonry.

Rawldrills are the most economical drills on the market at any price, when you consider their length of life and drilling speed.

RAWLDRILLS

They are the original three-point masonry drills and can be resharpened on any grinding wheel as easily as a chisel instead of requiring expensive reforging as do ordinary star drills.

The Crowner—The LOK-Crowner

Crowners and Lok-Crowners provide a simple, effective and artistic means of sealing and concealing screw and bolt heads, nuts, etc. They permit the use of stronger and less expensive iron screws and bolts instead of brass, bronze or plated material and obviate the necessity of countersinking. Easy to use and apply. Crowner is in one piece. Lok-Crowner consists of lockwasher and cap. Bakelite Lok-Crowners may also be had for electrical insulation. Sizes to fit all standard screws and bolts, and nuts.

Detail Bulletins on Request as Follows

Rawlplugs Bulletin U101
Rawl-Anchors Bulletin U201
Rawldrills Bulletin U301
Rawl-Drives Bulletin U402

General Catalog No. 37-E—Also Data Sheets W-1 for Architects and Engineers. Complete information and prices of any items on this page gladly furnished on request.

METAL SPECIALTIES

MAIN OFFICE & FACTORY
2947-51 Carroll Avenue
CHICAGO, ILLINOIS

NEW YORK, N. Y.
Frederick Pfeiffer
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SALES OFFICES IN
PRINCIPAL CITIES

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Lead Expansion 7
Steel Expansion 6
BRACKET SUPPORT, new work.. 8
BX STAPLES 10
CLAMPS, Cable 10
CONDUIT CLAMPS 10
HANGERS
Iron Perforated 11
Ring and Bolt..... 10
LAG SCREW, Flattened End.... 10
OUTLET BOX and FIXTURE HANGER 5
RADIATOR BRACKET, Adjustable 9
ROD, Threaded 10
PIPE HANGER, Adjustable Combination 10
PIPE HOOKS 11
PIPE STRAPS 10
ROMEX STRAPS (1 and 2 hole).. 10
SPRINKLER PIPE HANGER..... 5
STAR DRILLS 11
SWITCH BOXES, Sectional..... 8
TOGGLE BOLTS
Spring Wing 3
PB One-Piece 4

FOR INDUSTRY

HUNDREDS OF USES FOR PAINE ANCHORING DEVICES IN INDUSTRY

Lavatories

Drinking fountains

Toilet tanks

Shower hand-rails

Lighting fixtures

Door bells

Shelving

Mirrors

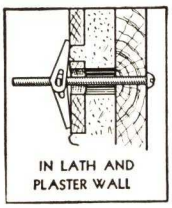
Thermostats

Baseboard and chair rails

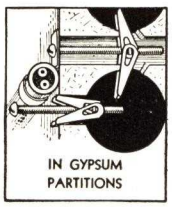
Telephone boxes *—and hundreds of other uses*

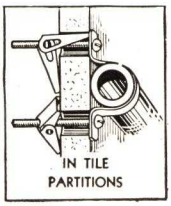
Uses for Paine Toggle Bolts and Expansion Anchors are practically unlimited in number. The experienced builder finds innumerable ways to use them, speeding up work, insuring permanence and lowering costs. They are the satisfactory, money-saving anchorage . . . secure, permanent . . . and so simple to use that no special skill or training is required to install them.

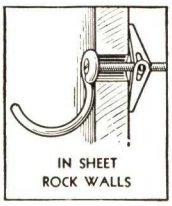
Paine Toggles Work Instantly . . . In Any Position . . . In Any Hollow Place



Long and close contact with Architects' and Builders' requirements has produced Paine Toggles . . . great adaptability . . . easy to use, and providing a secure, permanent anchorage.





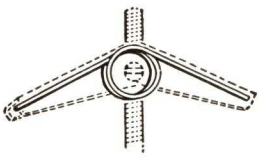


Your anchoring problem finds its sensible solution in the use of Paine Toggle Bolts. More than 25 years ago, Paine invented and marketed the first spring wing toggle. On the two pages following, you will find illustrated, with specifications, the many styles and sizes of Paine Toggles that are immediately available from stock. There is a style and size of Paine Toggle for every purpose . . . each of them backed by the Paine guarantee of consistently highest quality, correct design and greatest possible value.

PAINE MAKES THE TOGGLE
THAT WORKS IN MACHALITE AND GYPSUM

Paine Invented the Original Spring Wing Toggle Bolt

Consult with us on your special toggle problem. We will work with you in developing its satisfactory, efficient and economical solution.



The Spring Does It

Holding the toggle head in open position—and lying flat along the underside of the toggle head — is a spring.

The two wings are easily compressed with the fingers. As soon as the toggle head is through the bolt hole, this spring causes the toggle to fly open—ready for tightening.

Standard Toggle

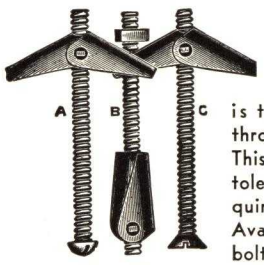


Fig. 123

The standard toggle head is attached to the bolt by means of a trunnion nut. As the bolt is tightened, it is drawn through the trunnion nut. This provides a wide working tolerance and cuts stock requirements to a minimum. Available in seven standard bolt sizes and eight bolt head styles.

Riveted-On Toggle

The flattened bolt end is riveted to the toggle. This type of spring wing toggle is specially designed for heavy duty in such materials as tile, steel ceilings and metal lath. Paine riveted-on toggle bolts are supplied regularly in two bolt sizes only — $\frac{5}{16}$ and $\frac{3}{8}$ inch diameter.

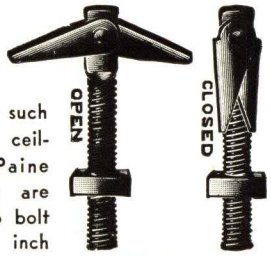
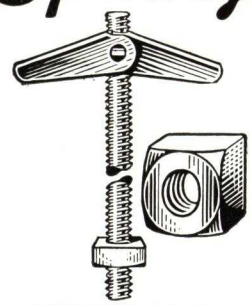


FIG. 125

PAINE *Spring Wing* TOGGLE BOLTS

ROUND HEAD
Style A

Spring wing, trunnion nut type. Bolt threaded full length. Has round head.



THREADED WIRE—SQUARE NUT
Style B

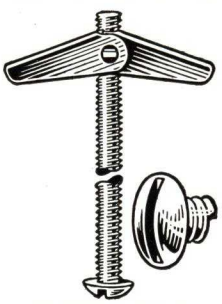
Spring wing, trunnion nut type with threaded wire bolt. Square nut.

FLAT HEAD
Style C

Spring wing, trunnion nut. Bolt is threaded full length. Flat head.

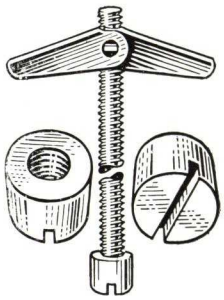
OVAL HEAD
Style D

Spring wing, trunnion nut type. Threaded full length. Oval countersunk head.



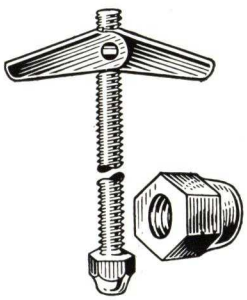
BUTTON HEAD
Style E

Spring wing, trunnion nut type. Bolt is threaded full length. Sometimes called mushroom head.



N. P. FILLISTER CAP NUT
Style F

Spring wing, trunnion nut type. Bolt threaded full length. N. P. Fillister Cap Nut.



N. P. HEXAGON CAP NUT
Style G

Spring wing, trunnion nut type. Bolt threaded full length. N. P. Hexagon Cap Nut.

SPECIAL EYE TOGGLE WIRE THREAD WITH LOOP
Style H

Spring wing type for special work in materials such as tile, steel ceiling and metal lath. Has looped round head.

SPECIAL RIVETED-ON TOGGLE WITH SQUARE NUT

Spring wing toggle is riveted on to flattened end of threaded wire bolt and fitted with square nut.

Specially designed for heavy duty.

SPECIAL SHAPES

Extra lengths, or special shaped bolts supplied promptly and at low cost. Write giving detail of your requirements for expert recommendations without obligation to you.

•

SPECIALS from Stock

Cadmium plated steel — or brass toggle heads with choice of steel or brass bolts. Chromium, nickel, hot dipped galvanized or other standard finishes.

Specifications

FIG. 123

Bolt Diameter	Bolt Length, in.	Wire Gauge Threads per Inch	Drill Hole, in.	Spread of Wings, in.	Weight per 100, lb.
1/8	1/8 x 1 1/2	6-32	3/8	1 5/16	1 1/4
	1/8 x 2				1 1/4
	1/8 x 2 1/2				1 1/2
	1/8 x 3				1 1/2
	1/8 x 4	6-32	3/8	1 5/16	1 7/8
	1/8 x 4 1/2				2
	1/8 x 5				2 1/2
	1/8 x 6				2 3/4
5/32	5/32 x 2	8-32	7/16	1 7/16	2
	5/32 x 2 1/2				2 1/8
	5/32 x 3				2 1/4
	5/32 x 3 1/2				2 1/2
	5/32 x 4	8-32	7/16	1 7/16	2 3/4
	5/32 x 4 1/2				2 7/8
	5/32 x 5				3
	5/32 x 6				3 1/4
3/16	3/16 x 2	10-24	1/2	1 15/16	3 1/4
	3/16 x 2 1/2				3 1/2
	3/16 x 3				3 3/4
	3/16 x 3 1/2				4
	3/16 x 4	10-24	1/2	1 15/16	4 1/2
	3/16 x 4 1/2				4 3/4
	3/16 x 5				5 1/8
	3/16 x 6				5 3/4
	3/16 x 7	10-24	1/2	1 15/16	6 1/4
	3/16 x 8				7 1/2
	3/16 x 9				8 3/4
	3/16 x 10				9 7/8
1/4	1/4 x 2 1/2	1/4-20	19/32	2	5 7/8
	1/4 x 3				6
	1/4 x 3 1/2				6 1/2
	1/4 x 4				7
	1/4 x 4 1/2	1/4-20	19/32	2	7 3/4
	1/4 x 5				8 1/4
	1/4 x 6				9 1/4
	1/4 x 7				10
	1/4 x 8	1/4-20	19/32	2	10 1/2
	1/4 x 9				11
	1/4 x 10				12

FIG. 123

Bolt Diameter	Bolt Length, in.	Wire Gauge Threads per Inch	Drill Hole, in.	Spread of Wings, in.	Weight per 100, lb.
5/16	5/16 x 3	5/16-18	13/16	2 3/8	10
	5/16 x 3 1/2				11
	5/16 x 4				11 1/2
	5/16 x 5				13 1/2
	5/16 x 6	5/16-18	13/16	2 3/8	15 1/2
	5/16 x 7				16 1/2
	5/16 x 8				17 1/4
	5/16 x 10				19
3/8	3/8 x 3	3/8-16	7/8	2 3/4	12 1/2
	3/8 x 3 1/2				13 3/4
	3/8 x 4				15
	3/8 x 5				17 1/2
	3/8 x 6	3/8-16	7/8	2 3/4	20
	3/8 x 8				26
	3/8 x 9				29
	3/8 x 10				32
1/2	1/2 x 4	1/2-13	1 1/8	3 1/2	30
	1/2 x 5				35
	1/2 x 6				39
	1/2 x 7				43
	1/2 x 8				47
	1/2 x 10				51

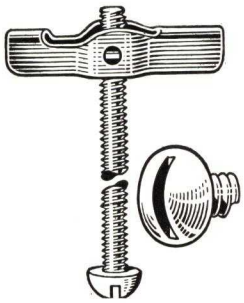
RIVETED-HEAD SPRING WING TOGGLE Fig. 125

Diam. Bolt Length, in.	Drill Hole in.	Spread of Wings, in.	Wt. per 100, lb.
5/16 x 3	5/8	2 1/4	10
5/16 x 4	5/8	2 1/4	11 1/2
5/16 x 5	5/8	2 1/4	13 1/2
5/16 x 6	5/8	2 1/4	15 1/2
3/8 x 3	5/8	2 1/4	12 1/2
3/8 x 4	5/8	2 1/4	15
3/8 x 5	5/8	2 1/4	17 1/2
3/8 x 6	5/8	2 1/4	20

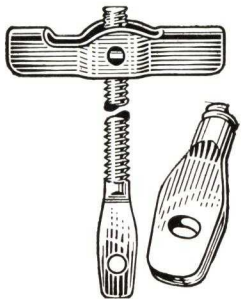
STANDARD PACKING UNITS

1/8 and 5/32-in. Toggle Bolts packed in cartons of 100 each. 3/16, 1/4, 5/16 and 3/8-in.; cartons of 50. 1/2-in.; cartons of 25. All Toggle Bolts Cadmium Plated. Style A furnished unless otherwise specified.

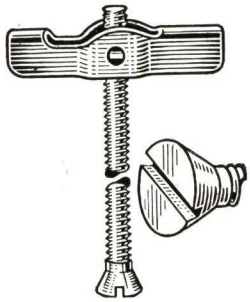
PAINE "PB" ONE PIECE TOGGLE BOLTS



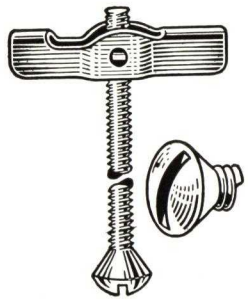
ROUND HEAD
Type No. 2—Style A
One piece, trunnion nut type threaded full length having round head.



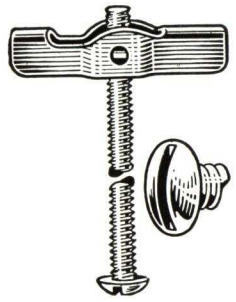
SPECIAL FLATTENED END TOGGLE
Type No. 2—Style X
Threaded wire with perforated flat end. One piece, trunnion nut type.



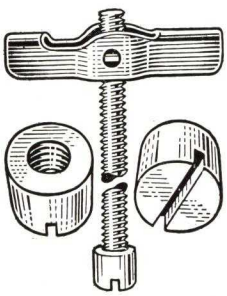
FLAT HEAD
Type No. 2—Style C
One piece, trunnion nut. Bolt is threaded full length and has flat head.



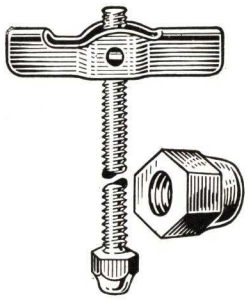
OVAL HEAD
Type No. 2—Style D
One piece, trunnion nut type with bolt threaded full length. Oval countersunk head.



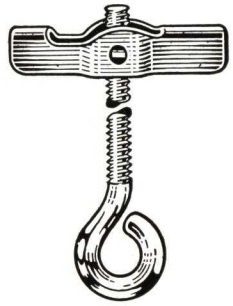
BUTTON HEAD
Type No. 2—Style E
One piece, trunnion nut type with bolt threaded full length. Sometimes known as Mushroom Head.



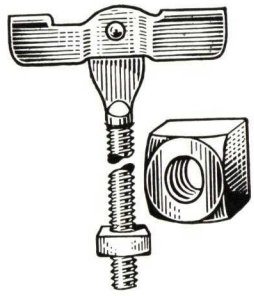
N. P. FILLISTER CAP NUT
Type No. 2—Style F
One piece, trunnion nut type. Threaded wire bolt. N. P. Fillister Cap Nut.



N. P. HEXAGON CAP NUT
Type No. 2—Style G
One piece, trunnion nut type with threaded wire bolt. N. P. Hexagon Cap Nut.



SPECIAL EYE TOGGLE
Type No. 2—Style H
One piece, trunnion nut type threaded full length with eye head.



RIVETED-ON TOGGLE SQUARE NUT
Type No. 1
Toggle is riveted on to flat end of threaded wire which has square nut on other end.

SPECIAL SHAPES

Extra lengths or special shaped bolts supplied promptly and at low cost. Write, giving detail of your requirements, for expert recommendations without obligation to you.

Both Type No. 1 and Type No. 2 offer the special advantages of equal holding surface on each end of toggle.

Specifications

One-Piece Toggle Bolts (all types) are not recommended for overhead work, and where space is limited.

Type No. 1 • Riveted-On Head • Square Nut

Has the toggle riveted to a flattened bolt end, insuring smooth instantaneous pivot action up and down. One end of the toggle is heavier than the other causing the toggle to fall into closed position for easy insertion. Then, simply by turning the bolt one half turn, the toggle opens for a secure anchorage. Style of head for No. 1 type threaded wire with square nut.

REGULAR STOCK, CADMIUM PLATED

TYPE NO. 1

Bolt Size, in.	Drill Hole, in.	Approximate Wt. per 100, lb.	Bolt Size, in.	Drill Hole, in.	Approximate Wt. per 100, lb.
3/16 x 3	7/16	4 1/4	1/4 x 3	1/2	7
3/16 x 4	7/16	5	1/4 x 4	1/2	8 1/2
3/16 x 5	7/16	5 3/4	1/4 x 5	1/2	10
3/16 x 6	7/16	6 1/2	1/4 x 6	1/2	10 3/4

Type No. 2 • Standard • Trunnion Nut

Balanced for easy pivot same as type No. 1; but the bolt screws into a trunnion nut at the toggle end. Note the wide selection of No. 2 styles.

BE SURE TO SPECIFY STYLE OF HEAD WANTED.

3/16, 1/4, 5/16-in. packed 50 to a carton. 3/8-in.; 25 to a carton.

Bolt Size, in.	Drill Hole, in.	Approximate Wt. per 100, lb.	Bolt Size, in.	Drill Hole, in.	Approximate Wt. per 100, lb.
3/16 x 3	9/16	4 1/4	5/16 x 3	3/4	11 1/4
3/16 x 4	9/16	5	5/16 x 4	3/4	13 1/2
3/16 x 5	9/16	5 3/4	5/16 x 5	3/4	14 3/4
3/16 x 6	9/16	6 1/2	5/16 x 6	3/4	16
1/4 x 3	5/8	7	3/8 x 3	7/8	14
1/4 x 4	5/8	8 1/2	3/8 x 4	7/8	17 1/2
1/4 x 5	5/8	10	3/8 x 5	7/8	21
1/4 x 6	5/8	10 3/4	3/8 x 6	7/8	24 1/2

PAINE SPRINKLER PIPE HANGER

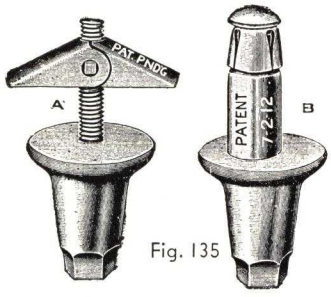
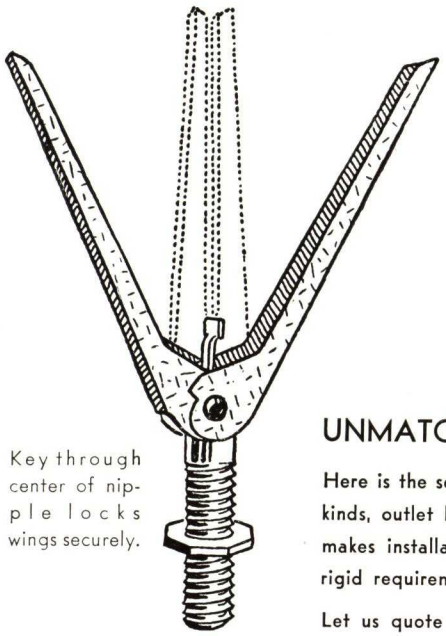


Fig. 135

A Malleable Ceiling Plate with either Spring Wing Toggle Bolt or No. 1 Type Steel Expansion Anchor. Assembled ready for the job before leaving factory. Made in two sizes: for 3/8 and 1/2-in rods.

PAINE OUTLET BOX AND FIXTURE HANGER 16/53



Key through center of nipple locks wings securely.

Fig. No. 400

Approved by Underwriters' Laboratories, U. S. A., and Hydro-Electric Power Commission, Canada

This is the easiest to use and the *most efficient hanger of its type ever invented.* It is ideally adapted for work in tile, metal ceiling, and lath and plastered walls and ceilings. This type Paine Hanger is far in advance of any other from the standpoints of speedy installation, labor saving and convenience.

UNMATCHED FOR RUGGEDNESS AND ALL-AROUND EASE OF USE

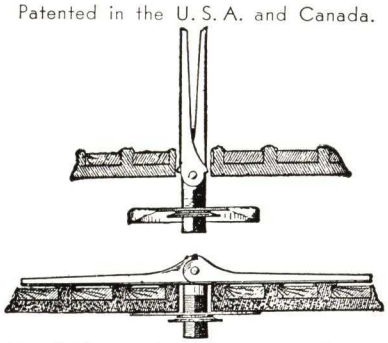
Here is the secure, easy to use and entirely satisfactory device for attaching ceiling fans, fixtures of many kinds, outlet boxes, etc., to both new and old work in metal, tile, lath and plastered walls and ceilings. It makes installation quick. Staunch and sturdy, it is designed and manufactured to comply with the most rigid requirements.

Let us quote on special hangers. We will supply them at a cost that is surprisingly small.

SPECIFICATIONS

The Paine Outlet Box and Fixture Hanger consists of two wings, each mounted on a 3/8-inch nipple which is 2 1/4 inches long. Through the center of the nipple is a key which locks the wings when they are in open position. The nipple is fitted with a lock-nut to hold the outlet box against wall or ceiling. The wings are 5 1/2 inches long, providing 11 inches of holding surface when open. They may be installed in an opening as small as 1 1/8 inches in diameter.

Patented in the U. S. A. and Canada.



Attach the article to be hung to hanger *before inserting in wall or ceiling.* Saves much overhead work, time and money.

When attaching outlet boxes, the Paine Hanger may be attached to the outlet box before placing in position through the wall or ceiling. This saves working strain and time. To remove the Paine Hanger, simply insert a screwdriver through the nipple to raise the locking key. This permits the wings to fold and the hanger to be removed. The Paine Hanger is patented in the United States and abroad.

Standard Packing Units: 6 boxes (300 hangers) to a shipping case. Shipping weight per 100 hangers: 30 pounds.

USE PAINE ENGINEERING AND SPECIAL SERVICE DEPARTMENT

Profit by Paine Experience

Paine leadership has been built from the outset by our reputation for highest quality products, utmost efficiency and greatest economy. The modern Paine plant, housing modern manufacturing equipment and a carefully selected staff of engineering and manufacturing executives, logically can effect savings for you with every assurance of lasting satisfaction.

IMPORTANT—Our outstanding position in this field and our long, closely applied experience should prove invaluable to you in arriving quickly at a practical solution of any anchoring problem that is out-of-the-ordinary.

Consultation Does Not Obligate You

Our consultation service, consisting of expert recommendation and definite estimate of cost places you under no obligation whatever.

You will be pleased with our prompt, thoroughgoing attention to your communication . . . and we shall be pleased with the privilege of serving you.

PAINE STEEL EXPANSION ANCHORS

FOR USE IN CONCRETE, BRICK, STONE, SLATE, MARBLE AND SIMILAR SOLID MATERIALS

Fig. No. 925

TYPE No. 1

Illustration at left shows Type No. 1. It is made of heavy gauge stamped steel and consists of a sleeve (upper part) and a cup (lower part). It is used with a carriage bolt, with the bolt-head at the bottom of the hole. The square shoulders at the head of the bolt fit the square hole in the cup.

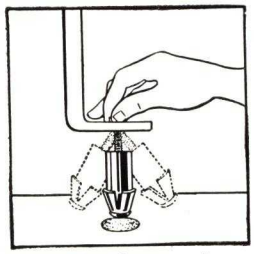
No turning of the bolt while being tightened.

TYPE No. 2

The type as shown at the right consists of any specified style machine screw or square head machine bolt and a threaded expansion cup. As the screw or bolt is tightened, the four cup jaws spread outward and upward . . . to hold as long as the bolt or the material lasts. In this type of Paine Steel Expansion Anchor, the bolt does not need to be cut off for a workmanlike, finished job.

Fig. No. 930

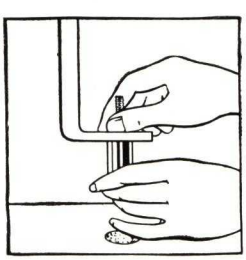
Strong and Enduring as the Material in Which They Are Set

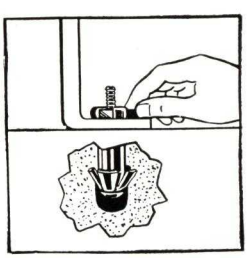

Attach the anchor loosely to object to be anchored.

No Setting Tool Is Needed

Merely insert the bolt through the article to be anchored and tighten the nut or cup (type 1 or 2) with the fingers. Then place in position and tighten firmly. Hole need not be exact in depth.

Paine Steel Expansion Anchors *fasten anything securely* to concrete, brick, tile, slate, marble and stone. Their expansion area is the largest of all expansion anchors. Their anchorage is on the sides of the hole, so they are equally effective in bottomless or exact depth holes.


Tighten with fingers as tight as possible. Drop into hole in material.


Tighten with a wrench . . . and you have a permanent secure anchorage.

MAY BE USED OVER AND OVER AGAIN

This is another *exclusive* Paine feature. The four jaws of the cup expand as the nut or bolt is tightened . . . and their holding power is equal to the strength of the bolt or the material in which the anchor is set. Yet, when the fixture is removed, it is only necessary to work the bolt from side to side to bend the jaws back to their original position, permitting the anchor to be lifted easily with the hammer claws from the hole. The anchor may be used over and over again.

SPECIFIED BY ARCHITECTS FOR

Theatre, Church, Auditorium, Grand Stand . . . or any Seating Installation.

Fire-proof Anchoring (in elevator shafts, etc.)

Vibration-proof Anchoring

Positive Anchoring (for punch presses, heavy motors, etc.)

Heat-proof Anchorage (in boiler rooms or other places where heat is excessive).

Specifications

Type No. 1 • Fig. 925 • Cadmium Plated • Complete with Bolts

Diameter Bolt and Length, in.	Drilling, in.		Weight per 100, lb.	Diameter Bolt and Length, in.	Drilling, in.		Weight per 100, lb.
	Diam.	Depth			Diam.	Depth	
3/16 x 1 3/4	9/16	1 5/8	5	3/8-16 x 3	7/8	3	27
3/16 x 2			5 1/4	3/8-16 x 3 1/2			28 1/2
3/16 x 2 1/4			5 1/2	3/8-16 x 4			30
3/16 x 2 1/2			5 3/4	3/8-16 x 5			33
3/16 x 3			6	3/8-16 x 6			35
1/4-20 x 1 3/4	9/16	1 5/8	6 1/2	1/2 x 4	1 1/8	3 1/2	50
1/4-20 x 2			7	1/2 x 5			55
1/4-20 x 2 1/4			7 1/4	1/2 x 6			60
1/4-20 x 2 1/2			7 1/2				
1/4-20 x 3			8 1/4	3/4 x 6	1 9/16	5 1/4	150
1/4-20 x 3 1/2			9				
1/4-20 x 4			9 1/2				

These Anchors come with or without Washers, Hex. or Sq. Nuts, Hex. Standard.

STANDARD PACKING UNITS

6/32 and 8/32-in. packed in cartons of 100 each. 5/16, 1/4, 5/16 and 3/8-in.; cartons of 50. 1/2 and 3/4-in.; bulk package.

Type No. 2 • Fig. 930 • Cadmium Plated • Complete with Screws

Diameter Bolt and Length, in.	Drilling, in.		Weight per 100, lb.	Diameter Bolt and Length, in.	Drilling, in.		Weight per 100, lb.
	Diam.	Depth			Diam.	Depth	
*6-32 x 1	5/16	1	2	1/4 x 3	9/16	1 3/4	8 1/2
*6-32 x 1 1/4			2 1/4	1/4 x 3 1/2			9 1/4
*6-32 x 1 1/2			2 1/2	1/4 x 4			9 3/4
*6-32 x 1 3/4			2 3/4				
*6-32 x 2			3	5/16 x 2	5/8	2	8 1/2
				5/16 x 2 1/2			9
*8-32 x 1	5/16	1	2 1/4	5/16 x 3			11
*8-32 x 1 1/4			2 1/2	5/16 x 3 1/2			12
*8-32 x 1 1/2			2 3/4	5/16 x 4			13
*8-32 x 1 3/4			3	5/16 x 5			15
*8-32 x 2			3 1/4	5/16 x 6			16
3/16 x 1 1/2	3/8	1 1/2	3 1/2	3/8 x 3	7/8	3	27
3/16 x 1 3/4			3 3/4	3/8 x 3 1/2			28 1/2
3/16 x 2			4	3/8 x 4			30
3/16 x 2 1/2			4 1/2	3/8 x 5			33
3/16 x 3			4 3/4	3/8 x 6			35
1/4 x 1 3/4	9/16	1 3/4	5	1/2 x 4	1 1/8	3 1/2	50
1/4 x 2			7	1/2 x 5			55
1/4 x 2 1/2			7 1/2	1/2 x 6			60

*Brass only.

PAINE LEAD EXPANSION ANCHORS

MACHINE SCREW TYPE

Fig. 900

This type, shown at left, consists of a brass cone and a lead expansion sleeve. The cone of brass is knurled which eliminates turning when screw is being tightened. Entrance to the cone is countersunk, making it easy to start the screw.

To install, put assembly in hole with bell-end of cone down, then place setting tool (furnished free with every box of fifty anchors) on top of the lead sleeve and hit it smartly a few blows with a hammer. Now place work over the hole, insert screw bolt, tighten . . . and you have a solid, secure anchorage. Bolts and screws not supplied with anchors.

BOLT AND NUT TYPE

Shown at the right, this anchor has four pieces: a bolt, a nut, a lead sleeve and a lead cone. Bolt and nut are heavily cadmium plated — rust resistant. Bolt head has two fins which sink in the lead sleeve and prevent turning while bolt is being tightened.

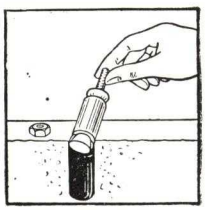
To install, remove nut and place balance of assembly in hole with head of bolt down. Place setting tool (free with every box of fifty anchors) on the lead cone and hit sharply a few times. Then place the threaded bolt end through the work, affix the nut and tighten. The telling actually takes longer than the doing.

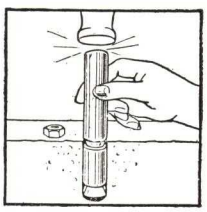
Fig. 910

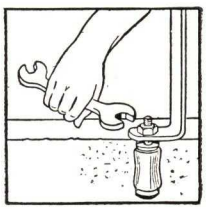
A Rust-proof and Enduring Anchorage
For Use in Stone, Brick, Tile, Mosaic Marble, Glass and Similar Materials

Paine Lead Expansion Anchors are expanded in the material before the article to be anchored is placed in position. They insure a secure binding and holding surface their entire length and circumference . . . the most satisfactory device for their purpose of any anchor ever invented.

Because of their great flexibility and strength, they are the safest for use in fragile material, and also are exceptionally efficient in tougher stuff, such as stone, tile, slate and marble.


EASY TO USE—remove nut and drop balance of anchor in hole.


Expand the anchor with a few sharp taps of a hammer on the setting tool.


Put work in place, start nut on bolt—and tighten with wrench.

CHECK WITH THESE PAINE FEATURES

1 The right "mix" of lead and antimony in Paine Lead Anchors insures maximum strength and flexibility. This is important . . . be sure you're not losing out on this important feature.

2 The scientifically correct "mix" in Paine Lead Anchors permits working safely in delicate, fragile material — at the same time securing a lasting, rustproof, jarproof, vibration-proof anchorage.

3 Because Paine Lead Anchors hold the entire length as well as the complete circumference of the sleeve, they are ideal for both shallow and deep anchoring. For extra-deep anchorage, extra sleeves and cones are available.

4 Paine Lead Anchors are correctly proportioned for greatest strength and durability. Our 25 years of leadership is built upon closely applied experience with anchoring problems in the building, plumbing and mill supply fields.

PLUS: ***The Paine Company unconditionally guarantees Paine Lead Expansion Anchors to be the very best that engineering and manufacturing skill can produce for their purpose.***

Specifications

MACHINE SCREW TYPE ● Fig. 900 ● (Prices do not include screws)

Anchor Size No.	Minimum Dimensions of Holes Drilled, in.		Shipping Weight Lbs. per 1000
	Diameter	Depth	
6 — 32	1/4	3/8	7 1/2
8 — 32	7/16	1/2	15
10 — 24	3/8	5/8	22 1/2
12 — 24	6/16	3/4	34
1/4 — 20	1/2	7/8	50 1/2
5/16 — 18	5/8	1	95
3/8 — 16	3/4	1 1/4	162
1/2 — 13	7/8	1 1/2	221
5/8 — 11	1 1/8	2	512

Packed 50 or 100 in Box.

BOLT AND NUT TYPE ● Fig. 910 ● (Prices complete with Bolts)

Bolt Diam., in.	Drilling, in.		Length of Bolt, in.	1 1/2	1 3/4	2	2 1/2	3	3 1/2	4	5	6
	Dia.	Depth										
1/4	1/2	1	Sh. Wt., lb.	6 3/4	7	7 1/2	8	8 1/4	9 1/4	10		
3/8	5/8	1 1/2	Sh. Wt., lb.			15	16	17 1/2	19	20 3/4	22 1/2	25
1/2	7/8	2	Sh. Wt., lb.					38 1/2		41 1/2	47	52 1/2

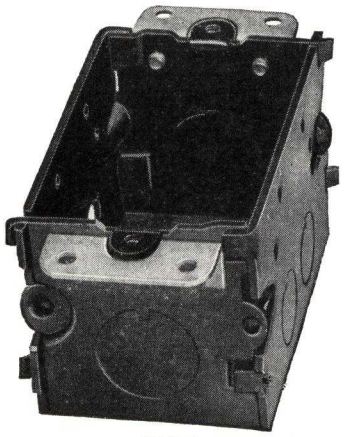
PATENTED

PAINE SECTIONAL SWITCH BOXES

PATENTED

APPROVED BY UNDERWRITERS' LABORATORIES

GANGABLE—supplied in any size or style to fit your requirements . . . Nail holes in sides — a Paine feature . . . Clamps out of way for easy insertion of cable . . . Ample wiring room . . . Bushed holes in Clamp always perpendicular — does away with spreading or bending when tightened around cable . . . Visible opening for Anti-Short Bushings . . . Strong, rigid and convenient . . . Sides pry off easily — and snap on quickly . . . FINISH — japanned or galvanized . . . Conveniently packed in cases of 100.

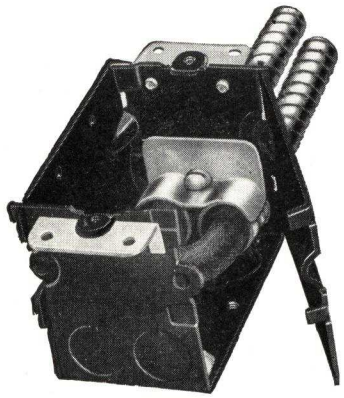


SC200

RIGID CONDUIT SWITCH BOXES

SECTIONAL • SQUARE CORNER • GANGABLE

Catalog No.	DESCRIPTION Length 3 in., Width 2 in.	Standard Package	Weight, lb., per 100
SC200	2 in. deep, one ½-in. conduit K.O. in each end and bottom, one ½-in. conduit K.O. in each side	100	60
SCK200	Same as SC200 except equipped with new work bracket and lath support	100	79
SC250	Same as SC200 except 2½ in. deep and two ½-in. conduit K.O. on side	100	69
SCK250	Same as SC250 except equipped with new work bracket and lath support	100	88
SC275	2¾ in. deep, one ½-in. conduit K.O. in each end and bottom and two ½-in. K.O. in each side	100	75
SCK275	Same as SC275 except equipped with new work bracket and lath holder	100	94

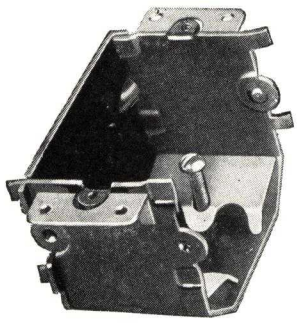


BX200

ARMORED CABLE AND SHEATHED CABLE SWITCH BOXES

SECTIONAL • SQUARE CORNER • GANGABLE

Catalog No.	DESCRIPTION Length 3 in., Width 2 in.	Standard Package	Weight, lb., per 100
BX200	2 in. deep, two cable K.O. in each side and each end, four cable K.O. in bottom, two ACBX clamps	100	67
BXK200	Same as BX200, except equipped with new work bracket and lath support	100	86
BX250	Same as BX200 except 2½ in. deep	100	76
BXK250	Same as BX250 except equipped with new work bracket and lath support	100	95



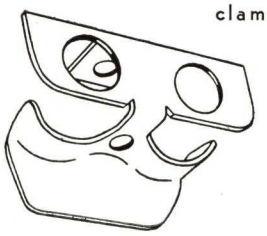
BL225

LOOM SWITCH BOXES

SECTIONAL • BEVEL CORNER • GANGABLE

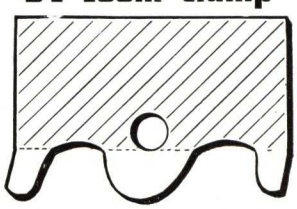
Catalog No.	DESCRIPTION Length 3 in., Width 2 in.	Standard Package	Weight, lb., per 100
BL225	2¼ in. deep, two loom K.O. in each side and in each end in bevel, two BL clamps	100	67
BLO225	Same as BL225 except without clamps	100	64
BLK225	Same as BL225 except equipped with new work bracket and lath support	100	86
BLKO225	Same as BLK225 except without clamps	100	83

New ACBX Clamp



This one-piece clamp provides ample space for removal of K.O. without removing clamp.

BL Loom Clamp

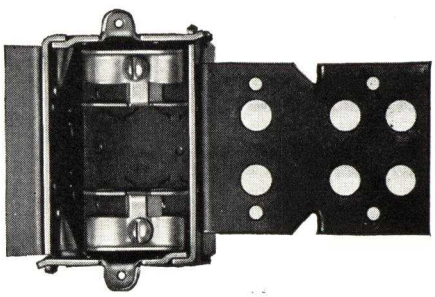


New design made to fit the wire snugly without cutting. Cadmium plated screws for fastening to the box.

New Work Bracket Support

K Series

This bracket is of heavy steel and is riveted securely to the side of the switch box. When fastened to studding, the bracket holds the box flush to the plaster line — holes in bracket keep plaster to bracket. This bracket insures a firm, rigid installation, due to lath support the full length of the switch box.



PAINE IMPROVED ADJUSTABLE RADIATOR BRACKET

Fig. 830

A Marvel of Simplicity and Efficiency

An exceptionally simple, efficient, easy to use radiator bracket. Complete with wall-piece of 3/16 in. pressed steel 2½ in. wide, foot bracket of ⅛ in. stock. Two metal keys for securing the foot bracket to wall-piece, one holding bolt with shaped washer and nut.

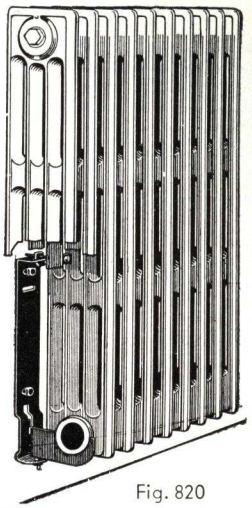


Fig. 820

SAFE LOADS

TYPE A	TYPE B
1 & 2 tubes, 500 lbs. per bracket	1 & 2 tubes, 450 lbs. per bracket
3 tubes, 400 lbs. per bracket	3 tubes, 350 lbs. per bracket
4 tubes, 300 lbs. per bracket	4 tubes, 275 lbs. per bracket
5 tubes, 275 lbs. per bracket	5 tubes, 250 lbs. per bracket
6 tubes, 250 lbs. per bracket	6 tubes, 225 lbs. per bracket

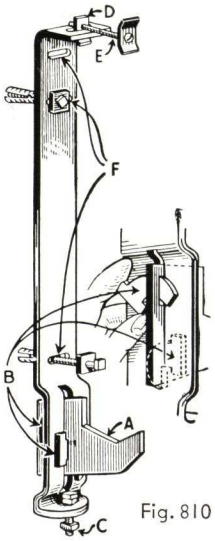


Fig. 810

QUICK AND CONVENIENT—SAVES TIME ON THE JOB

After the holes have been centered and drilled, affix the Wall Bracket loosely. Slip the Foot Bracket (A) into the vertical slot at the bottom of the wall bracket and insert the two metal keys (B)—one behind the wall piece and one in front of it.

Tighten entire bracket securely to the wall when the correct position for it is known.

Set the radiator on the bracket and insert the machine screw with Angular Washer (E) through the radiator tubes and, screwing on hook nut, (D) slide into top of bracket.

Set the vertical Adjusting Screw (C) to proper position and then tighten Machine Screw (E).

Now the radiator is held securely and firmly at both top and bottom. We recommend the 10-in. bracket for radiators up to and including 20 in. in height. For radiators more than 20 in. in height, use the 16-in. bracket.

Foot bracket may be installed after wall bracket has been securely anchored to wall.

Full Adjustability

Adjustments are provided for as follows: foot bracket (A) 1-in. up or down — wall-piece (F) and 1¼-in. horizontally. These working tolerances effect genuinely worthwhile savings in time and labor costs.

The use of two anchoring bolts or lag screws, with or without shields, is recommended where load on bracket is in excess of 50% of safe load estimate.

YOUR CHOICE OF THESE PAINE ANCHORING DEVICES

Angle Bolt with Nut

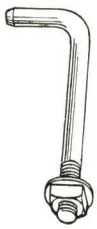


Fig. 975

For New Work Three pieces—the bolt, a nut and a washer. Bolt is set in wall during construction. Choice of 6, 8 or 10 inch length. Bolt has two inch angle and is threaded 1½ inches.

Paine Malleable Lag Screw Shield

Fig. 967

Used for lag screw when set in concrete, brick, stone and other solid materials. For use with lag screw ⅜"x3".

Paine Lead Expansion Anchor

Fig. 910

For use in concrete, brick or other solid material. See page on Paine Lead Expansion Anchors for complete information. Size supplied with radiator bracket is ⅜"x3".

Paine Steel Expansion Anchor

Fig. 925

For use in concrete, brick, marble, slate, stone and similar solid materials. See page on Paine Steel Expansion Anchors for complete information. Size supplied with radiator bracket, ⅜"x3".

One with each 10-in. Wall Bracket; two with each 16-in. Wall Bracket.

Specifications

10-INCH SIZE

Tube	Number o Case	Weights, lb.	
		Type A	Type B
1 & 2	36	93	97
3	36	101	104
4	36	104	107
5	36	107	110
6	36	110	113

16-INCH SIZE

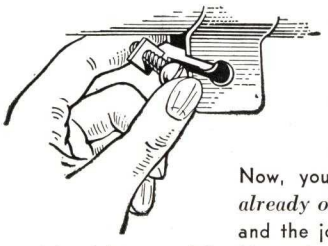
Tube	Number to Case	Weights, lb.	
		Type A	Type B
1 & 2	24	86	88
3	24	92	94
4	24	94	96
5	24	96	98
6	24	98	100

Type A holds radiator 1½-in. from wall (all sizes carried in stock). Type B holds radiator 2½ in. from wall (made on order).

Brackets for stock packed in individual carton, which contains bracket, foot bracket, locking keys, angular washer, and nut, and machine screw.

10-in. Brackets include one ⅜-in. short lag screw shield and 3-in. lag screw. 16-in. Bracket includes two ⅜-in. short lag screw shields and 3-in. lag screws. This makes complete unit ready for installation on any kind of a job. All packed in handy carton—prevents loss of parts and loss of time assembling in the shop.

NEW DESIGN PAINE CABLE AND CONDUIT CLAMPS



Available with Paine Patented Slot or Standard Round Hole. Paine Cable and Conduit Clamps with the Patented Slot offer an exclusive Paine feature and a marvelous time saving convenience. Now, you merely slip the bolt, *with nut already on*, into the slot, tighten the nut . . . and the job is done. There is no longer any need for fussing and fumbling, the old, "three hands" irritating way, wasting time trying to squeeze the clamp together and tie the nut to the bolt at the same time. These clamps hold conduit or pipe away from wall or ceilings — insuring longer life.

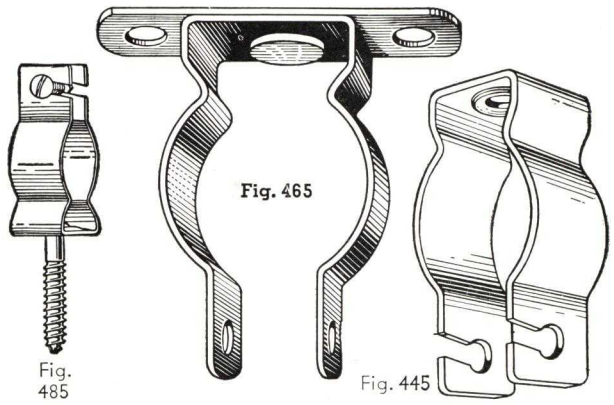


Fig. 485

Fig. 465

Fig. 445

Improved Cable Clamp

The preferred clamp for use on cross arms, poles and similar work. With a malleable shield, it may also be used in solid materials such as brick, stone and concrete. The lag screw is gimlet pointed, riveted to the clamp base . . . and the entire assembly is then hot-dip galvanized — strong, secure and lasting.

Furnished galvanized only.

Flat Base Cable Clamp

This clamp has a wide, flat base with a round hole at each end for attaching. Most accurate, snug fitting clamp, giving universal satisfaction. Galvanized or black enamel finish and with Paine Patented Bolt Slot or Round Bolt Hole as specified.

Paine Improved Conduit Clamp

The snug round fit and the Paine patented bolt slot in this clamp make it, say users, the lowest cost, most satisfactory conduit clamp ever designed. It is supplied with a cadmium plated bolt and nut of the right size for the clamp. May be had in black enamel finish or galvanized, as specified.

With or Without Patented Slot—With Correct Size Cadmium Plated Stove Bolts

Size of Conduit, in.		Size of 250 Volt Lead Covered Cable	Fig. 485 Cable Clamp Lag Screw Base			Fig. 465 Cable Clamp Flat Base			Fig. 445 Conduit Clamp		
Rigid	Thin Wall		Mfgs. No.	No. to pkg.	Wt. lb.	Mfgs. No.	No. to pkg.	Wt. lb.	Mfgs. No.	No. to pkg.	Wt. lb.
3/8–1/2	1/2	3C No. 14 to 7C No. 14	C0	100	5	F0	100	5 1/2	0	100	4 1/2
3/4	3/4	No. 1 to 4-0	C1	100	8 1/2	F1	100	9	1	100	7 1/2
1	1	No. 4-0—300 M	C2	50	7	F2	50	8	2	100	10
1 1/4	1 1/2	500 M to 750 M	C3	50	8 1/2	F3	50	9	3	100	12
1 1/2	.....	800 M to 1125 M	C4	50	10	F4	50	11	4	100	14
2	.....	1500 M	C5	25	6 1/2	F5	25	7 1/4	5	50	11
2 1/2	.....	200 M (3C 4-0)	C6	25	8	F6	25	8 3/4	6	50	12 1/2

Hanger Ring and Bolt

Supplied in 15 sizes—made from galvanized or black stock. Nicely finished . . . no rough edges. Snug fitting, accurately made and fitted with precision thread bolt and nut.

Fig. 600

1/2 to 1 1/2-in. packed 100 to a sack. 2 to 4 1/2; 50 to a sack, 5 to 6-in.; 25 to a sack. Over 6-in.; as ordered. Specify Black or Galvanized Stock.

Size of Pipe, in.	Gauge of Steel	Width of Steel, in.	Size of Bolt, in.	Wt., lb., per 100
3/8-1/2	16	3/4	1/4	7 1/2
3/4	16	3/4	1/4	8.9
1	16	7/8	1/4	10
1 1/4	16	7/8	1/4	14
1 1/2	16	7/8	1/4	15
2	14	1	1/4	24
2 1/2	14	1	1/4	28
3	12	1 1/8	5/16	46
3 1/2	12	1 1/8	5/16	48
4	12	1 1/8	5/16	58
4 1/2	12	1 1/8	5/16	72
5	12	1 1/8	5/16	80
6	12	1 1/8	3/8	92
7	10	1 1/4	3/8	187
8	10	1 1/4	3/8	212

Threaded Rod

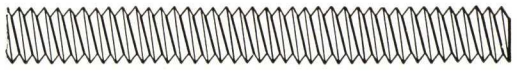


Fig. 620

Brass or steel as specified. Precision threaded. Available in 10—24 and 1/4—20 diameters, 24-in. lengths. Odd diameters and lengths made up special.

BX Staples

Points are offset so they will not split the lumber.

Fig. 615

Pipe Straps

Prominent bead — or center rib — makes this strap STRONG. You'll like its uniformity of gauge and the snug form fit of all Paine Pipe Straps.

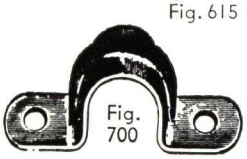


Fig. 700

Romex Straps

No. 201-1 Hole

No. 201-2 Hole

One Hole and Two Hole

For Sheathed Cable. Made of 22-gauge galvanized stock with prominent center rib assuring great strength.

No. 201—1 Hole—14-2 and 12-2 wire, 98 to lb.

No. 201—2 Hole—10-2 wire, 80 to lb.

Size, in.	Pieces per Lb.	Gauge Material	Inside Diam. of Strap, in.
1/8 Baby BX	120	20	.405
	124	20	.540
1/4	65	22	.540
3/8	54	22	.675
1/2	41	22	.840
3/4	24	20	1.050
1	13	18	1.315
1 1/4	12	18	1.660
1 1/2	11	18	1.900
2	9	18	2.375
2 1/2	8	18	2.875
3	7	18	3.500
3 1/2	6	18	4.000
4	5	18	4.500

Paine Adjustable Combination Pipe Hanger

Consists of a 6-in. length of perforated hanger iron with a gimlet pointed lag screw at one end and a pipe ring at the other. Both are fastened to the hanger iron with a bolt and nut. Splendidly adapted to use in odd places or wherever a wide margin of adjustability is required. Hanger iron, lag screw and pipe ring are of the proper size, making a complete unit correctly proportioned for best service.

All sizes carried in stock — Galvanized or Black. Sizes to 2 1/2 in. in bags of 50 and 100. Larger sizes, bags of 25.

Size Ring Diam., in.	Lag Screw		Weight, lbs., per 100
	Diam. in.	Length in.	
3/4	5/16	3 1/2	31 1/4
1	5/16	3 1/2	31 1/4
1 1/4	5/16	3 1/2	31 1/4
1 1/2	5/16	3 1/2	31 1/4
2	3/8	4	50
2 1/2	3/8	4	75
3	3/8	4	81
3 1/2	1/2	5	88
4	1/2	5	100

Fig. 560

Paine Flattened End Lag Screw With Bolt

Fig. 650

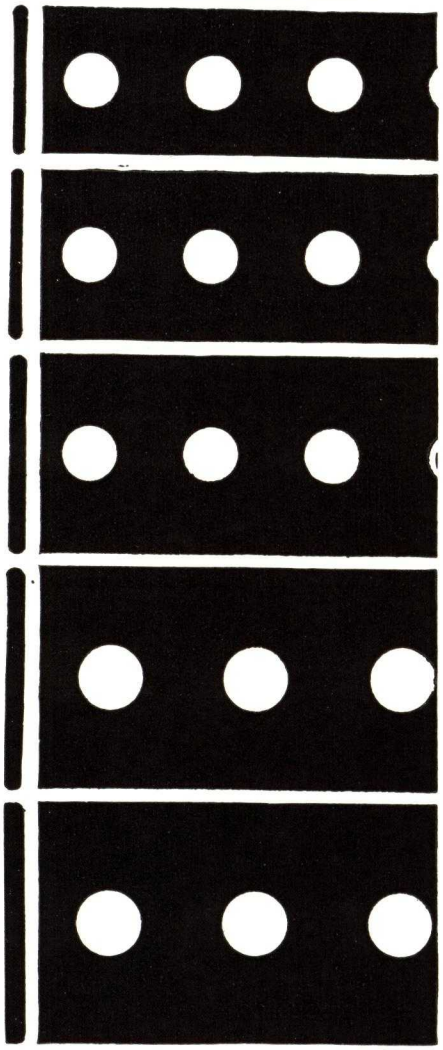
Precision rolled and gimlet pointed. Fitted with stove bolt at flattened end. Lag screw is accurately threaded (threads per inch) for use with malleable shield.

Size, in.	Weight, lb., per 1000	Bolt Used, in.
1/4 x 3	40	1/4 x 3/4
5/16 x 3 1/2	77 1/2	1/4 x 3/4
3/8 x 4	110	1/4 x 3/4
1/2 x 5	245	5/16 x 3/4

PERFORATED HANGER IRON

Also Known as Strap Iron or Extension Bar

ACTUAL WIDTHS ILLUSTRATED



No. 000
22 ga. x 3/4 in.
No. 00
18 ga. x 3/4 in.
No. 0
16 ga. x 3/4 in.
No. 1
16 ga. x 7/8 in.
No. 2
14 ga. x 1 in.
No. 2A
10 ga. x 1 in.
No. 3
12 ga. x 1 1/8 in.
No. 4
12 ga. x 1 1/4 in.

Illustration (left) shows actual widths and the gauges in which Paine Perforated Hanger Iron (Strap Iron or Extension Bar) is available from stock.

Supplied in standard Black Stock or Hot dipped Galvanized finish. Made from mild steel band with milled edge (rounded). Big stock carried in all sizes listed . . . in 5 and 10-ft. lengths, bundles of 100 ft. and shipped in 500-ft. bundles. All perforations accurate — clean cut with no burr or sharp edge.

Galvanized before fabrication supplied only in 4-ft. length at regular prices. Slit edge stock, free of burrs and 75% covered with rust-resisting galvanizing.

No.	Width, in.	Gauge	Hole Size, in.	Centers, in.	Safe Load, lb.	Weight, lb., per 100 Ft.
000	3/4	22	1/4	1/2	500	7
00	3/4	18	1/4	1/2	520	12
0	3/4	16	1/4	1/2	540	13 1/2
1	7/8	16	1/4	1/2	685	14 1/2
2	1	14	5/16	5/8	975	25
2A	1	10	5/16	5/8	1480	38
3	1 1/8	12	3/8	3/4	1350	32
4	1 1/4	12	3/8	3/4	1580	35

COILED STOCK OR PLUMBERS' TAPE

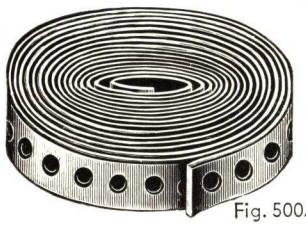


Fig. 500A

10-ft. lengths, 3/4-in. x 22 gauge standard cadmium plated. All other sizes black standard. Hot Dipped Galvanizing 5 cents per pound net, additional. Provides easier stocking in small space. Easily handled and most convenient for workman's kit.

This important item forgotten may tie up the job. Eliminate stoppage of work by always carrying it handy for calls.

Fig. 500

Special Requirements

Paine perforated hanger iron (strap iron or extension bar) will be supplied in special lengths, gauges and perforations at a cost surprisingly low, with any size holes or centers.

Improved "SNUGFIT" Wire Pipe Hook

Fig. 610

Fits snug around the pipe, and covers a greater part of the pipe circumference than other pipe hooks. This specially developed Paine feature serves to hold pipe in the desired position. Its prominent head facilitates driving of the spike. You'll find Paine advantages make this pipe hook most convenient, economical and desirable.

WEIGHT IN POUNDS, PER 1000

Pipe Sizes, In.	Length of Hook, In.			
	4	6	8	10
1/2	65	87 1/4	110	130
3/4	65 1/4	87 3/4	111	133
1	65 1/2	88 1/4	112	135 3/4
1 1/4	65 3/4	88 3/4	113	137
1 1/2	66 1/2	89 1/4	114	138 1/4
2	67 1/4	92	116	140 1/2

Paine Star Drills

Fig. 375

Extremely hard and tough. Pierce the hardest material, from seasoned concrete to blue granite. Because of the Paine Company's long experience with construction requirements, we are able to offer this, the best star drill it is possible to secure.

Small sizes, 12 to package. Larger sizes, 6 to package.

Diam., in.	Length, in.	Weight, lb. per Doz.	Diam., in.	Length, in.	Weight, lb. per Doz.	Diam., in.	Length, in.	Weight, lb. per Doz.
1/4	8	3/4	5/8	8	4 3/4	1 1/4	8	.....
	12	1 1/4		12	7 1/4		12	27
	18	2		18	11 1/4		18	39 3/4
	24	2 1/2		24	15 1/4		24	52
5/16	8	1 1/2	3/4	8	5 1/4	1 3/8	8	.....
	12	2 1/8		12	8 1/2		12	25
	18	3 1/4		18	13		18	38 3/4
	24	4 1/4		24	17 1/2		24	52 1/2
3/8	8	1 1/8	7/8	8	8 1/4	1 1/2	8	.....
	12	3 1/4		12	10 1/2		12	25 1/2
	18	5		18	16		18	39
	24	6 1/2		24	21 1/2		24	53
7/16	8	2 1/4	1	8	9 1/2	1 5/8	8	.....
	12	2 3/8		12	13		12	26 1/2
	18	5 1/4		18	19 1/2		18	39 1/2
	24	.....		24	27		24	53 1/2
1/2	8	3 1/8	1 1/8	8	.....	1 3/4	8	.....
	12	4 3/4		12	15 1/2		12	27 1/2
	18	7 1/2		18	28 3/4		18	41
	24	9 3/4		24	37		24	54 1/2
9/16	8	4 1/4						
	12	6 1/4						
	18	9 1/2						
	24	13 1/4						

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1912

1938

PAINE PRODUCTS

Keep Step with the March of Time

PANAMA CANAL

Paine Toggle Bolts, Expansion Anchors, and other products by the many, many thousands helped speed the work and build for permanence in the Panama Canal. Read the specifications of those who know and—chances are—you'll find they call for Paine products where the most rigid requirements are met with.

CHRYSLER BUILDING

Paine keeps step with Progress. In that monument to modern engineering, the Chrysler Building, you will find Paine products satisfyingly performing their intended job of insuring security and permanence.

MAMMOTH BRIDGES

Securely anchoring electrical work, railings and many other fixtures in these vast structures are only a few of the innumerable uses for Paine products. Check with specifications of leading architects and builders and you'll double-check on Paine.

THEATERS

Every year, millions of units of Paine products go into anchoring the seating arrangements of theaters, stadiums, ball-parks and similar structures. Over a period of more than a quarter of a century, Paine has led the field for advanced design and skillful manufacture of many types of anchoring devices.

MOBILE USE

The use of Paine products is not confined to stationary structures. The very car you drive, the modern railroad train, airplanes, all of them employ such products.

IN THE HOME

The home owner can use Paine products with great convenience and saving of time and labor. They solve many an anchoring problem and may be used without special skill or training.

PAINE ANCHORING DEVICES USED THROUGHOUT THE WORLD

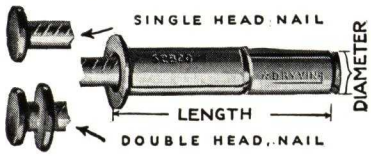
The use of Paine Anchoring Devices extends throughout the civilized world. Expert workmanship, correct design and consistently high manufacturing standards have built for Paine Products a well-earned reputation for leadership in their field. You can depend on them at all times.

STAR EXPANSION BOLT CO.

147 Cedar Street, NEW YORK, N. Y.

BRANCH OFFICES IN PRINCIPAL CITIES

Dryvin Hammer Drive Anchors—Rustproofed—Type 3900



An expansion shield which uses nails as an expansion and locking pin, employing an entirely new principle of installation. Furnished regularly with single head nails; when specified, furnished with double head nails at no extra cost. Made in 16 sizes, from $\frac{3}{16}$x$\frac{7}{8}$ to $\frac{1}{2}$x3$\frac{1}{2}$ in.

Tampin Expansion Nuts—Type 4000

Suitable when shallow hole for installation is necessary. Setting tool packed in each box, no extra charge. Made in 10 sizes from 6/32 to $\frac{5}{8}$ in., for machine bolts.

Scruin Lead Screw Anchors—Type 400

Requires smaller installation hole for corresponding size screw, and takes more sizes of screws grouped in more convenient series. Order by screw size and length. Made in 7 sizes for screws from No. 6 to 24, and lengths from $\frac{3}{4}$ to 1$\frac{3}{4}$ in.

Starlag Expansion Shields—Rustproofed—Type 1700

Starlag has no assembly lugs which may break or come apart. Expansion is obtained by threaded nut which applies greatest force at bottom of hole. Recommended for greater holding power especially under unfavorable conditions. Made in 10 sizes from ¼ to ¾ in. for use with lag screws.

Sebco Lag Expansion Shields—Rustproofed—Type 1900

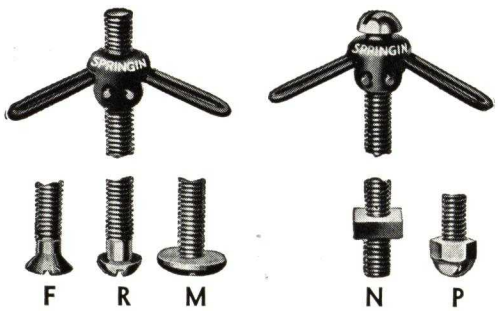
A two-way expansion shield made in 13 sizes from $\frac{3}{16}$ to $\frac{3}{4}$ in. for use with lag screws.

Sebco Toggle Bolts—Rustproofed—Types 2800 and 2900

Ideal fastenings for lath, plaster, hollow tile, pressed boards, hollow metal or sheet steel. Made in 4 types. Type 2800 has head of bolt fastened to toggle, and nut is used to make fastening. Type 2900P has a toggle head, threaded rod and a cap nut. Type 2900R has round headed bolt. Type 2900M has mushroom head furnished in $\frac{1}{8}$-in. diameter only. Type 2900F, same as 2900R, except bolt is flat headed. All toggles are national standard thread. Made in 41 sizes from $\frac{3}{32}$x3 to $\frac{1}{2}$x6 in.

Springin Toggle Bolts—Rustproofed—Type 5500

Resilient wings, the distinctive feature, made of tempered spring steel with a cam action against saddle which throws them to open position. Made in 5 types. F has a flat head screw. R has a round head screw. M has mushroom head and is furnished $\frac{1}{8}$ in. diameter only. Nut type, reverse R or F screw and add nut. P type, reverse R or F screw and add cap nut. All toggles are national standard thread. Made in 25 sizes from $\frac{1}{8}$x2 to $\frac{1}{2}$x6 in.

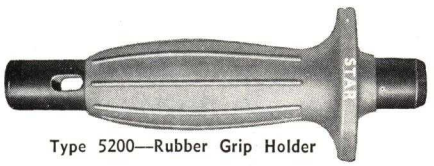


Hamrtwist Masonry Drill Points—Type 4200

Type 4200—Large Shank—Sebco

A fast and easy cutting tool giving a round and uniform hole in concrete, brick, or stone. Drill does not lose its diameter as there is no taper at the point. Has a much longer life than a four-point drill, and can be resharpened on a grindstone. Used with plain or rubber-grip holders for hand drilling, or chuck for power drilling. Made in 11 sizes, from $\frac{3}{16}$ to $\frac{5}{8}$-in. diameter.

Drill Holders—Types 1400 and 5200

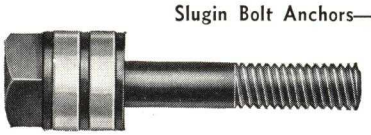


Type 5200—Rubber Grip Holder

Type 1400—Plain Holder

Plain or rubber-grip holders are made to fit all sizes of Hamrtwist Drill Points. The rubber-grip holder is made with a protecting shield and rubber-grip that prevents hitting and stinging of the hand. A knockout pin is furnished with each holder. These holders are used for hand hammering.

Slugin Bolt Anchors—Type 6800



Made of hard iron rings and lead. Has unsurpassed range of expansion, will not creep under sustained loads. Each slug a complete unit. Made in 7 sizes, from ¼ to 1-in. diameter for machine bolts.

Loxin Expansion Shields—Rustproofed—Type 3600

A single machine bolt type expansion shield designed to hold in a varying range of hole sizes. Made in 12 sizes from ¼ to ¾-in. diameter. For machine bolts. Also in brass from 10/24 to ½ in.

Star Single Expansion Shields—Rustproofed—Type 7100

A three-way shield which conforms to irregularly shaped holes, giving equal expansion in three directions. Made in 6 sizes from ¼ to ¾-in. diameter for machine bolts.

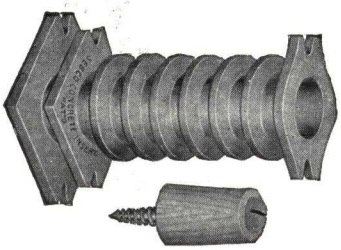
Star Double Expansion Shields—Rustproofed—Type 7000

New style double expansion shield. Overlap spring holds shield together firmly. Will not come apart. Made in 9 sizes, ¼ to 1-in. diameter for machine bolts.

Star Bottom Bearing Shields—Closed End—Rustproofed—Type 7200

New design elliptical shaped nut gives greater range of expansion; prevents nut from turning in shield. Excellent for fastening pipe hangers, sprinkler work. Made in 7 sizes, ¼ to ¾-in. diameter for machine bolts.

Star Concrete Inserts—Type 2400



A practical means of providing threaded holes in concrete walls, ceilings and floors for possible future use. Fastened to form before concrete is poured. When forms are removed, inserts remain as permanent sockets to receive standard machine bolts whenever desired. Made in 5 sizes for bolts from ¼ to ¾-in. diameter.

Write for A-I-A. Catalogue No. 27-A-4 Giving Complete Details and Engineering Information on Each Item

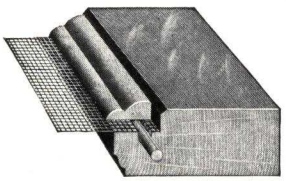
THE BURROWES CORPORATION

Manufacturers of Rustless Screens for All Requirements

GENERAL OFFICES AND PLANT

PORTLAND, MAINE

Today, as in 1873, Burrowes screens are carefully and expertly made - to - order only. Unless otherwise specified, our famous "Copbronze" netting is used. This rustless netting is the finest obtainable. With ordinary care it will not deteriorate and should outlast the house. Burrowes "Copbronze" netting is woven from rustless "Copbronze" wire, full gauge in accordance with specifications for non - ferrous screen cloth as established by the Department of Commerce Bureau of Standards. 16-mesh is standard —finer or coarser to order. Top quality hardware used throughout, with special hardware to order.



Section of Burrowes Wood Frame Screen showing the lock strip and spline which hold the netting securely in place

WOOD FRAME SCREENS

Frames of heavy stock with mortise and tenon corners. Netting ("Copbronze" unless otherwise specified) is held in place with a lock strip. By this method far superior to the "tacked in" arrangement of ordinary screens, the netting is drawn tight with special machines and held in place by round spline. This gives same tension over entire screen with no possibility of any part giving way.

Patent Sliding Wood Screen* Specifications

Screens shall be of kiln-dried sugar pine; mortise and tenon joints; of $\frac{13}{16}$-in. stock, $1\frac{5}{8}$-in. stiles and top rail, 2-in. bottom rail; wire drawn and held taut by wood spline and flush moulding; shallow and deep groove in stiles. Springs attached to deep groove to hold screen in position for top or bottom ventilation. Thicker and wider stock if specified.

Section of Burrowes New Century Screen showing one of two metal shoes which permit perfect adjustment

New Century Sliding Screen* Specifications

Screens shall be of kiln-dried sugar pine, mortise and tenon joints, $\frac{13}{16}$-in. stock, $1\frac{5}{8}$-in. stiles and top rail, and 2-in. bottom rail; wire drawn and held taut by wood spline and flush moulding; left stile to have short lip and long lip; equipped with adjustable shoes, bronze screw bolt and stationary nut. Wired with .0113 "Copbronze" 16-mesh wire cloth. Thicker or wider stock if specified. Even when windows are out of square, adjustable shoes assure perfect fit.

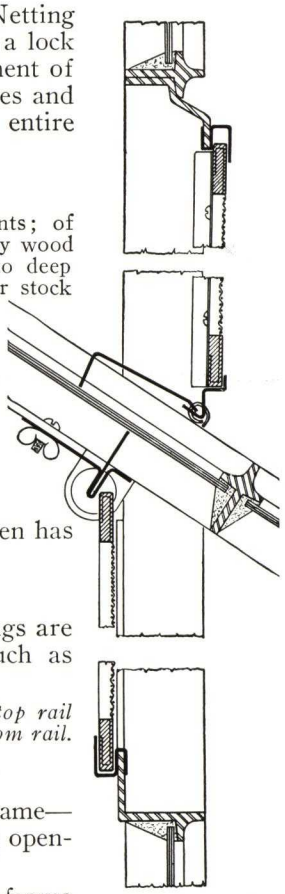
Deep Grooved Wood Screen*

Of same specifications as Patent Sliding, except that Deep Grooved Screen has deep groove without springs and has half length guide moulding.

Hinged Wooden Screen*

Of same specifications as Patent Sliding, except that no grooves or springs are required. Hardware used to conform with installation requirements, such as pivot equipment, hinged equipment, or top hanger equipment, etc.

**Regular sizes shall apply up to area of 10 sq. ft. Heavy stock—2-in. stile and top rail and 2-⅜-in. bottom rail. Extra heavy stock, 2⅜-in. stile and top rail, and 3-in. bottom rail.*



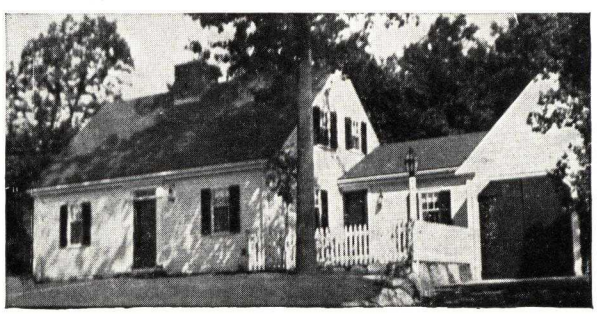
Section showing typical installation of Burrowes Regis Screens on Pivoted Steel Sash

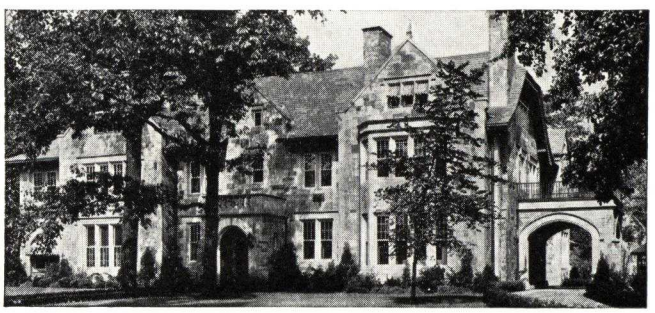
SCREENS FOR PIVOTED SASH

Burrowes metal screens for pivoted sash lie flat against the window frame—nothing to project on either side. Adequate means are provided for closing opening between upper and lower screens and at pivot points.

Specifications—Screens shall be either Burrowes Regis or Primus solid frame Screens. Lower screen to be secured by Burrowes patented clip guide that locks screen automatically. Upper screen to rest on Burrowes base and flange that is bolted to sash.

Typical Burrowes Installations





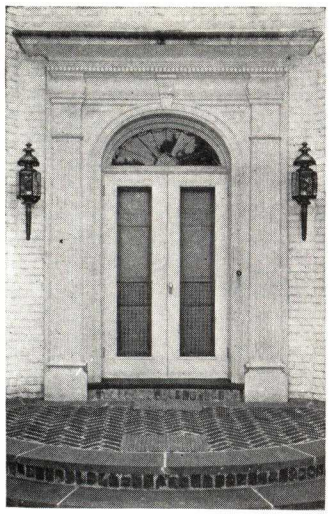


Illustration of an actual Burrowes Screen Door, showing how it harmonizes with the architecture of the doorway

BURROWES SCREEN DOORS

Specifications

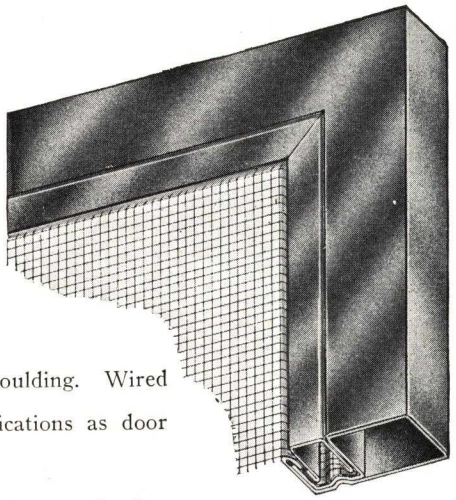
Doors shall be of kiln-dried sugar pine, mortise and tenon joints, 1⅛-in. stock, 3½-in. stiles and top rails, and 6-in. bottom rails; wire drawn and held taut by wood spline and rabbetted moulding. Wired with .0113-in. "Copbronze," 16-mesh wire cloth. Also furnished in extra heavy stock and hardwood, or to architects' specifications.

PORCH SECTIONS

Specifications

Porch Sections shall be of kiln-dried sugar pine, mortise and tenon joints, 1⅛-in. stock, 2⅜-in. stiles and top rails, 6-in. bottom rails; wire drawn and held taut by wood spline and flush-moulding. Wired with .0113 in. "Copbronze," 16-mesh wire cloth.

The heavy stock, likewise, has the same specifications as door stock, except 3-in. stock is used for stiles.



Corner of Hollow Metal Screen showing firmly locked spline

METAL SCREENS

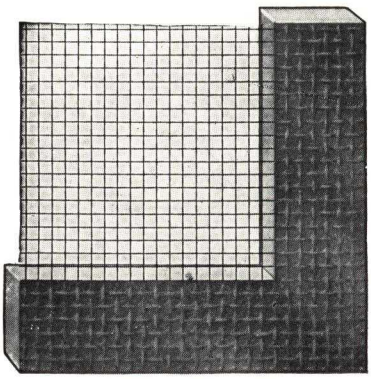
These screens are preferred by many customers because the frames are nearly invisible and permit of an increased area for light and air. Burrowes Metal Screens come in the following styles: Regis, Apexeon, Hollow Metal, Rex, Primus. Material—steel, bronze, or aluminum.

Regis Specifications

Screens shall be rewirable rolled core and rolled casing frame; core joints welded; wire drawn, and held taut by mitered-joint casing riveted in position. Finish size, ¼x⅞ in. Wired with .0113 in. "Copbronze," 16-mesh wire cloth. Electro galvanized steel with three coats of baked enamel.

Furnished in genuine bronze, electro plated steel and buffed aluminum.

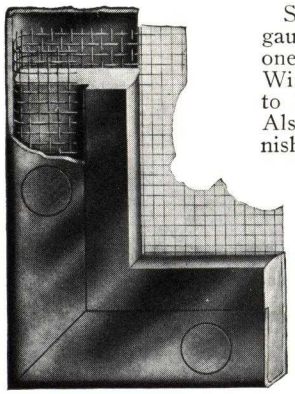
Also furnished in large size $\frac{5}{16}$ in. x $1\frac{1}{16}$ in.



Corner of Primus Metal Screen—outside view. Netting securely soldered to solid, one-piece frame

Hollow Metal Specifications

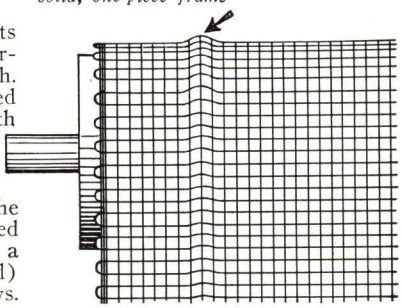
Screens shall be of rewirable formed-tubular construction of .025 gauge; $\frac{7}{16}$ in. x 1 in. Joints mitered and sweated, making an integral one-piece frame; wire drawn and held taut by U-shaped spline. Wired with .0113 in. "Copbronze," 16-mesh wire cloth. Material to be electro galvanized steel with three coats of baked enamel. Also furnished in .032 in. x $\frac{7}{16}$ in. x 1½ in. Both sizes can be furnished in steel, bronze, or aluminum, also steel electro plated.



Corner of Regis Metal Screen showing sturdy construction and easily-removed outer casing

Primus Specifications

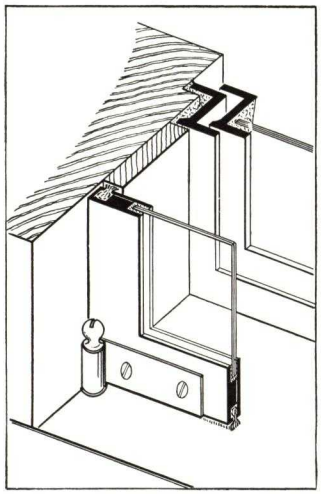
Screens shall be of solid frame construction; joints welded. Wire drawn and held taut by tinning and soldering. Wired with .0113 in. "Copbronze," 16-mesh wire cloth. Size ¼ in. x ⅝ in. Material—galvanized steel with baked enamel finish. Also furnished in ¼ in. x ½ in. and both sizes furnished in bronze or steel.



Full size view of special netting corrugation and selvage—to prevent "spiral creeping" and lengthen life of Rolling Screen

ROLLING SCREENS

A special Burrowes feature (patented) prevents the screen from crawling sideways when it is raised or lowered and thus keeps it in the guides. This is accomplished by a corrugation near the selvage. The side guides (patented) have an adjustable spring tension, controlled by screws. This holds the wire in place without use of staples or clips, and maintains operating bar in level position without binding.



Section of window showing Storm Sash installed. Readily interchanged for Burrowes Screens

INSIDE STORM SASH

Designed for modern insulation, this all-metal storm sash creates dead air space without marring casements or woodwork. Ideal for air conditioning.

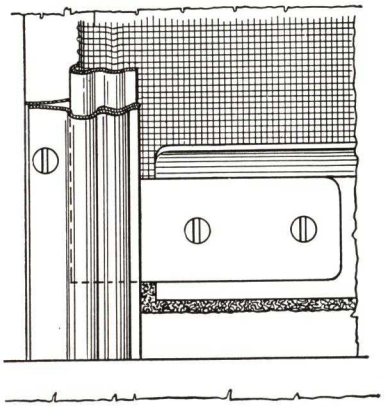
Specifications

Storm Sash shall be of fabricated frame and cap construction; electro welded bar frame, spot welded to formed cap plate. Attached by screw and body construction. Felt held in position by cement preparation; glass set in rubber. Over-all size shall be ½ in. x 1 in. Material—electro plated steel; double thick A-1 grade glass.

Also furnished in bronze.

COOPERATION AND SERVICE

Remember, every Burrowes job is *custom made.* Architects and builders are urged to consult our factory-trained representatives in all principal cities—for help in any screening problem. Services of expert fitters available. Structural details and samples on request. Choose your finish from the Burrowes color cards or submit your own color sample and we will match it.



Elevation view. Lower left hand corner of screen in spring tension guide. Shown half size

MEMORANDA

16
56

Screens

by CHAMBERLIN

POINTS TO CHECK IN SELECTING THE RIGHT SCREENS

- √ Convenience
- √ Harmony with architectural style
- √ Low cost through long life
- √ Structural design
- √ Planned installation
- √ Ventilation
- √ Admission of maximum light
- √ Unobstructed vision

ADDED SMARTNESS FOR EVERY HOME

For homes of every type, of every class, in every community, to be screened by Chamberlin is truly a mark of distinction. Through the fine design and superior features of Chamberlin all-metal construction, the screens have become an added touch of smartness and style in the architecture of the home.

CHAMBERLIN SERVICE

The Chamberlin Sales and Service Organization is nation-wide. Established in 1893 to market the first practical metal weather strip, it has the advantage of 45 years of continuous experience in the building industry.

Since 1907, when it abandoned its licensee method of representation prone to divided interest among a diversified line of products, the Company has maintained its present Branch Office System which insures centralized responsibility of service, sales and installation for Chamberlin products.

The personnel of each Branch Office consists of experienced, Chamberlin-trained representatives, thoroughly familiar with and interested only in Chamberlin Products and, above all, Chamberlin Service. Demonstration models and samples are maintained at each Branch Office quickly accessible for examination.

Chamberlin financial responsibility today stands unimpaired.

SCREEN CONTRACTS

Separate Contracts—Because of the wide variety of screens adaptable to the different types of windows and doors, it is sometimes a difficult task for the architect to clearly define in his specifications his exact requirements, thus leaving to the General Contractor the responsibility of interpreting the intent of the specifications in the light of a definite sub-contract awarded. It has therefore been found advantageous to all concerned that the screens be purchased through a Separate Contract made directly with the screen manufacturer, and particularly so since the screen installation at the building should be made by him rather than by field mechanics unfamiliar with screen requirements.

Lump Sum Appropriation—Where it is desirable that the cost of the screens be included in the General Contract, this is best handled under the customary lump sum allowance. The local Chamberlin Representative will gladly co-operate with the architect in establishing this lump sum appropriation. His thorough familiarity with screen problems and their solutions assures the architect of a dependable estimate of cost based on logical selection of type and complete, satisfactory installation. Changes in the finally completed building calling for adjustments in the screen installation are readily handled under this method due to centralized responsibility.

CHAMBERLIN METAL WEATHER STRIP CO., INC.

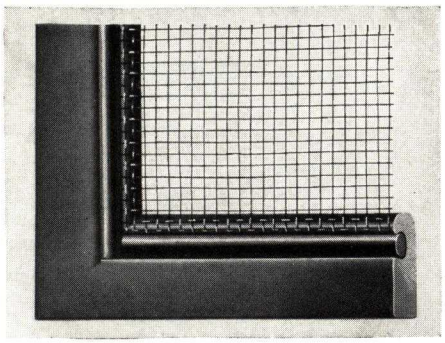
1254 LABROSSE ST. DETROIT, MICHIGAN

FACTORIES: DETROIT, MICHIGAN PERU, ILLINOIS

CHAMBERLIN SOLID FLAT SCREENS

CONSTRUCTION

The eccentric wiring spline groove is rolled and cold-drawn into the frame bar at the mill. It is not a machine groove. There are no sharp edges to cut the wire screen cloth. The frame is wired by rolling the mesh into the eccentric grooves and securely locking it therein with solid wire splines. The frames are electrically butt-welded, with a seamless joint at all corners and at junctures with cross-braces where these are required.



NO. 100 FRAME—¼" x 9/16"

FRAME MATERIALS

Steel—Hot-rolled, cold-drawn steel completely Parkerized and finished after complete fabrication of the frame including attachment of hardware accessories.

Bronze—Solid extruded architectural bronze.

CHAMBERLIN TUBULAR FLAT SCREENS

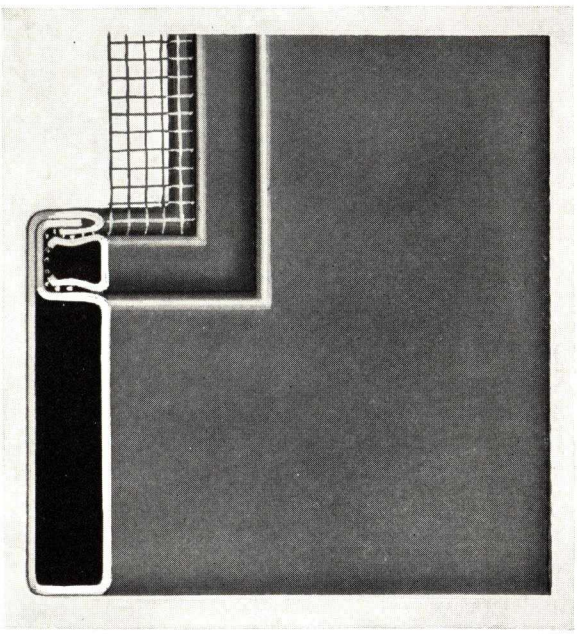
DESCRIPTION

Chamberlin tubular screens are made in steel, bronze, aluminum, Monel and stainless steel. The one-inch rail screen is standard for ordinary windows; the one-and-one-half inch for large windows and porch sections; the two-inch rail is designed for extra large windows or porch sections.

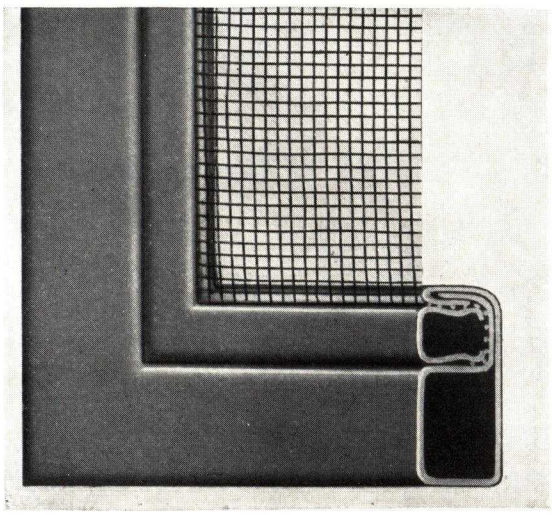
CONSTRUCTION

The sheet metal strips for both frames and wiring splines are accurately roll-formed to the sections detailed. Frames are reinforced inside with corner plates and are electrically welded at junctures or laps, and butt-welded with a seamless joint at all corners and at junctures with cross-braces where they are required.

The illustrations show the method of wiring. Splines are removable for rewiring. Note particularly that the edges of the spline groove as well as those of the spline are carefully rounded to avoid possibility of cutting the screen cloth.



NO. 700 FRAME—7/16" x 2"



NO. 500 FRAME—7/16" x 1"

FRAME MATERIALS

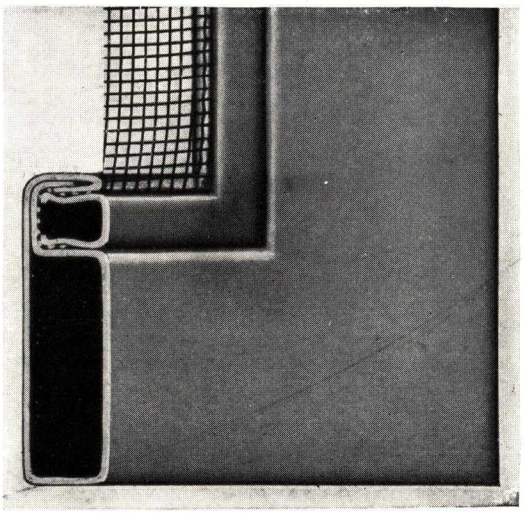
Steel—Zinc-coated, .025 and .032.

Bronze—cold-rolled, .025 and .032.

Aluminum—3 S .040.

Stainless Steel— .025.

Monel Metal—.025.



NO. 600 FRAME—7/16" x 1½"

FULL SIZE CROSS SECTIONS

CHAMBERLIN SOLID FRAMES

1" x 9/16" IN STEEL

1" x 9/16" IN BRONZE

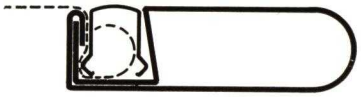
CHAMBERLIN TUBULAR FRAMES

IN STEEL, BRONZE, ALUMINUM, STAINLESS STEEL, MONEL

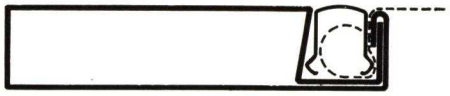
No. 500B – 7/16" x 1"

No. 500C – 7/16" x 1"

No. 600B – 7/16" x 1 1/2"

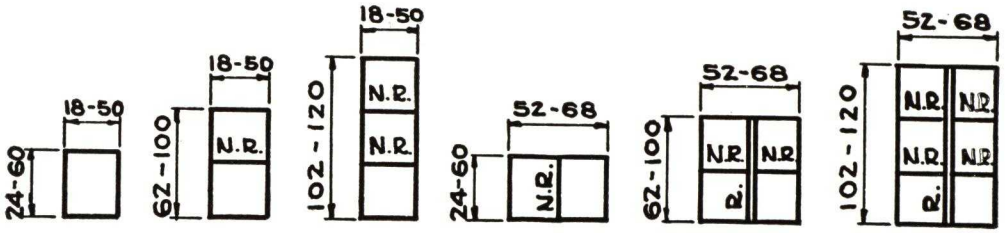


No. 600C – 7/16" x 1 1/2"



No. 700B – 7/16" x 2"

NOTE: "B" Sections are used for sliding screens and for all but pivot side of pivoted screens. Round edge sections "C" are used for pivot side of pivoted screens and bottom rail of horizontal sliding screens.



Braces allowable in accordance with above diagram.
"N.R." indicates Non-rewirable Brace. "R" indicates Rewirable Brace.

FINISHES

Steel—Standard colors (gray, black, brown, green) are furnished with prime and finish coats baked on. Special colors are furnished with prime coat baked on and finish coats sprayed on.

Bronze—Polished or statuary bronze finishes.

Aluminum—Wire brush finish with one coat of clear lacquer.

WIRE SCREEN CLOTH

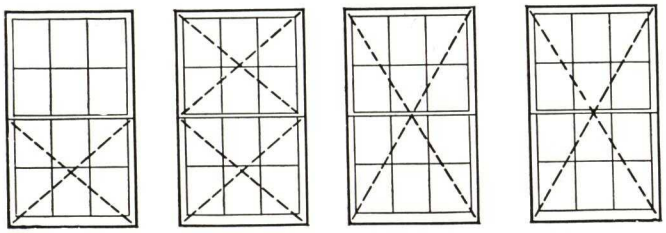
Standard Mesh—No. 16 mesh .0113 copper bronze wire on steel and bronze frames; No. 16 mesh .0113 aluminum wire on aluminum frames; No. 16 mesh .009 Monel wire on stainless steel frames; No. 16 mesh .009 Monel wire on Monel frames.

Special Meshes—At additional cost.

SCREENS FOR DOUBLE HUNG WINDOWS

METHODS OF SCREENING

There are four types of screens to select from: (1) single vertical sliding half screens, (2) twin sliding half screens, (3) top hung full screens, (4) interior rolling full screens. The determining factors are: (A) Exterior or interior installation; (B) Ease and convenience of erection, removal and storage (Type 4 excepted — roll screens remain up year 'round); (C) Ease of window washing during the screen season; (D) Initial cost warranted for the particular project.



Type 1 Outside | Type 2 Outside | Type 3 Outside | Type 4 Inside

(1) SINGLE VERTICAL SLIDING HALF SCREENS

Exterior Installation—Since the upper sash is seldom lowered for ventilation, this type of screen, the most economical, is admirably adapted. The lower sash may be opened as much as is desired. Full length guides attached to the face of the blind stop make it possible to screen either the upper or lower half of the window at will, although in the case of the upper half, the upper sash must be completely lowered to close insect passageway. Outsides of windows are easily washed. Screens are easily installed from the inside, are light, and require minimum storage space.

(2) TWIN SLIDING HALF SCREENS

Exterior Installation—Screens entire window opening independent of sash operation. Full length guides attached to face of blind stop or in outside rabbet make it possible, due to thinness of screens, to slide both screens either up or down to give access to exterior of sash for washing. They are easily installed from the inside by one person, are light, and easily handled and stored.

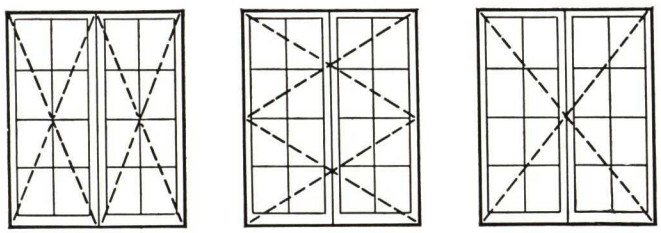
(3) TOP HUNG FULL SCREENS

Exterior Installation—A single full screen pivoted at the top, set in the outside rabbet. Can be installed from the inside.

(4) INTERIOR ROLLING FULL SCREENS

Interior Installation—The screen is always easily accessible from the inside. See pages 8, 9, 10.

SCREENS FOR CASEMENT WINDOWS



Type 1 Inside | Type 2 Inside | Type 3 Inside or Out

SINGLE FIXED OR PIVOTED FULL SCREENS

In-Opening Casements—For either single or double casements screen sets in outside rabbet. Screen may be either fixed, or top or side pivoted depending on size and shape. See Type 3.

Out-Opening Casements — For single casements screen sets in interior jamb rabbet. Screen should be side pivoted.

DOUBLE PIVOTED FULL SCREENS

Out-Opening Casements—For double casements screens set in interior jamb rabbet. Screens should be side pivoted to swing in with insect tight meeting stiles. Adaptable where interior drapery treatment will not interfere. See Type 1.

TWIN HORIZONTAL SLIDING FULL SCREENS

Out-Opening Casements—For double casements screens operate in top and bottom guides. Provide interior jamb rabbets at head and sides. Adaptable where interior drapery treatment will interfere with in-swinging pivoted type. See Type 1.

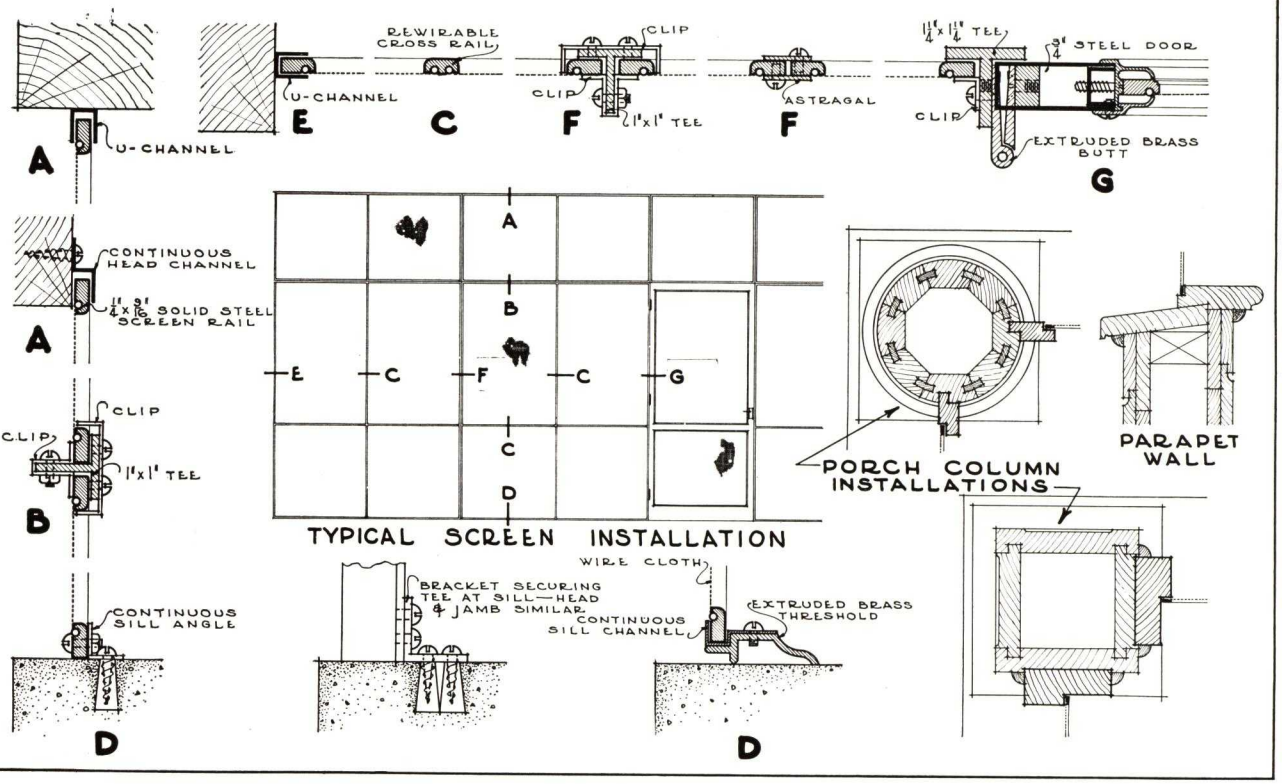
TWIN VERTICAL SLIDING HALF SCREENS

Out-Opening Casements — For single or double casements screens operate in side guides. Provide interior jamb rabbets. Adaptable where interior drapery treatment will interfere with in-swinging pivoted type and casement hardware is more conveniently operated than with horizontal sliding type. See Type 2.

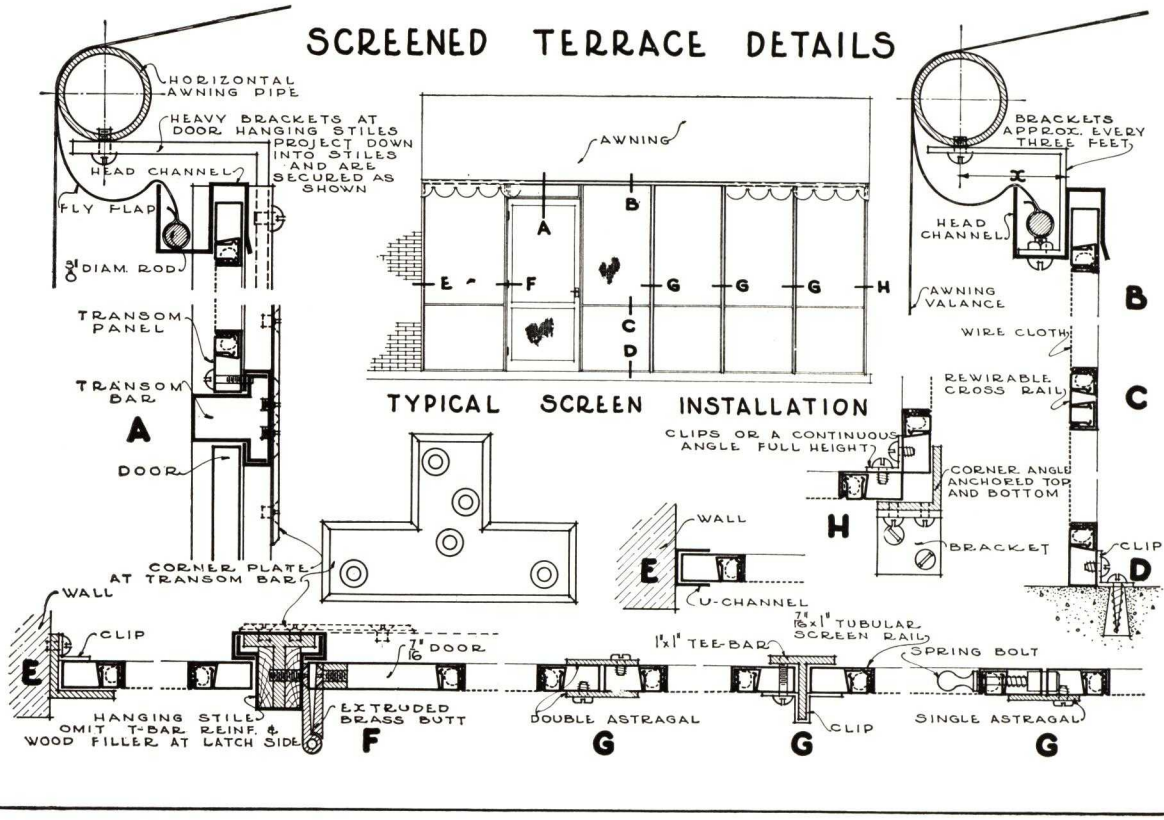
INTERIOR ROLLING FULL SCREENS

Out-Opening Casements—For single or double casements with housing and guides visible or concealed. See pages 8, 9, 10.

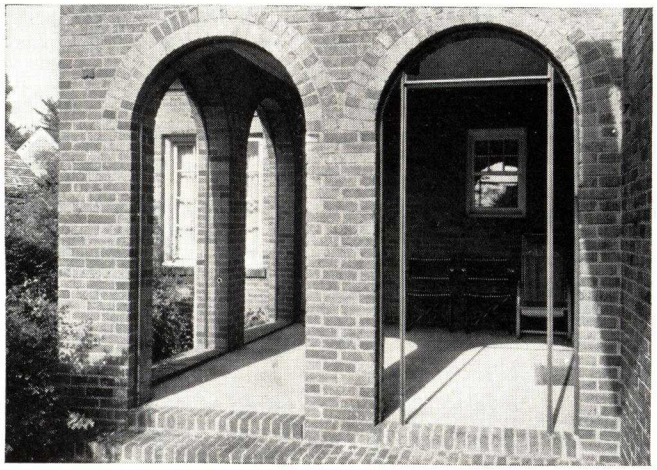
SCREENED PORCH DETAILS



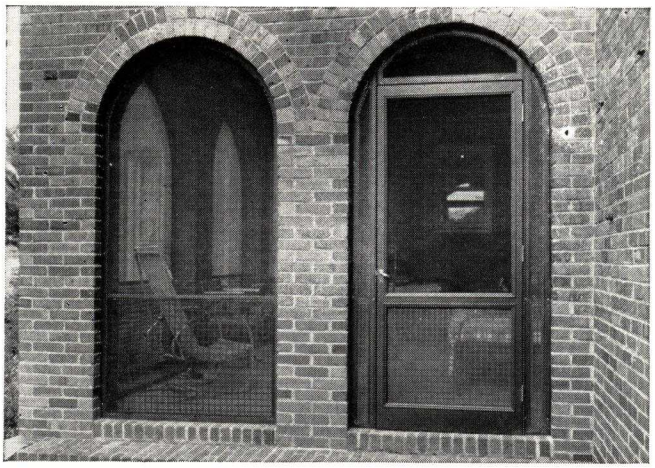
SCREENED TERRACE DETAILS



Even If the Porch or Terrace Is of Unusual Design, Chamberlin Can Transform It Into a Delightful Outdoor Living Room

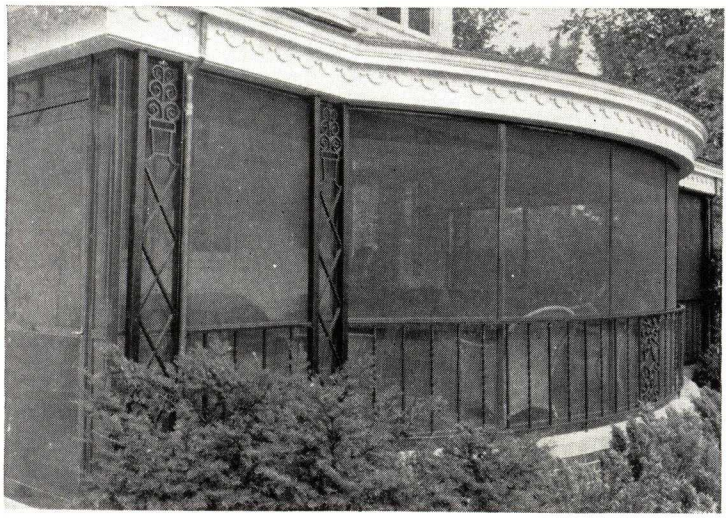


Before screening, metal 1″ x 1″ x ⅛″ ells placed at wall and 1¼″ x 1¼″ x 3/16″ metal tees at door.

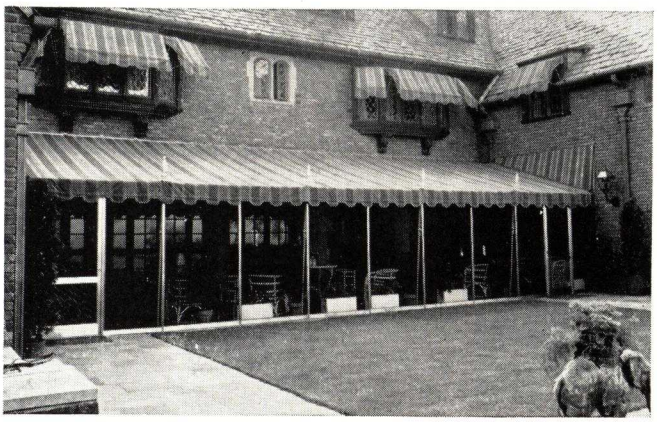


After screening with 7/16″ x 1½″ Tubular Steel sections finished green. Door ¾″ thick steel with 16 mesh copper bronze .015 wire. Lower panel reinforced with 1½″ mesh flat ribbon bronze grille statuary finish.

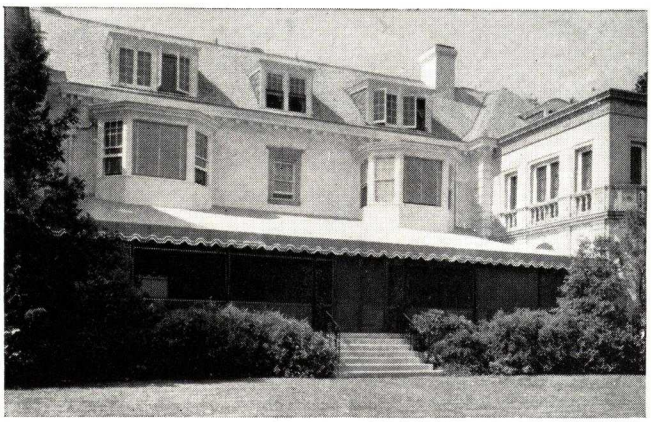
A porch or terrace of unusual design sometimes seems an impossible problem when first considered for that extra room, but the present-day art of bending and shaping metals as developed by Chamberlin, and the wide experience of its engineers, successfully overcome even serious handicaps.



View at left shows exterior of porch shown on front cover. Porch sections were bowed to follow contour of porch, thereby fitting into and harmonizing with the architecture of the building and giving maximum use of floor space.



Porch sections 7/16″ x 1″ Tubular Bronze natural finish. Doors ¾″ thick bronze natural finish with 1″ mesh copper guard in lower panel.
This unused space was here transformed into a livable outdoor room.



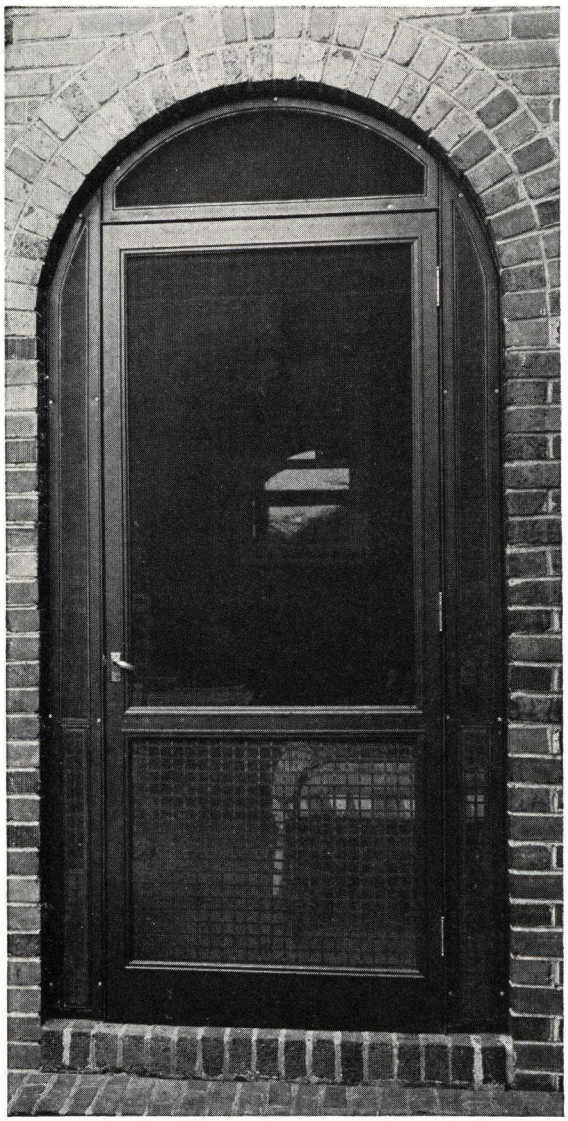
Porch sections 7/16″ x 2″ Tubular Bronze statuary finish with 16 mesh copper bronze .015 wire. Double doors 1⅛″ thick statuary finish with 1″ mesh flat ribbon bronze grille statuary finish in lower panel.

Chamberlin Metal Weather Strip Co., Inc.

CHAMBERLIN METAL SCREEN DOORS

The entrance door conveys the first impression of a home. Doors are the real test of a good screen job, and screen doors should be selected with the same care as entrance doors.

Chamberlin hollow-section metal doors are made of steel or bronze in frame thicknesses of $\frac{7}{16}$ inch, $\frac{3}{4}$ inch and $1\frac{1}{8}$ inch; and of aluminum in frame thicknesses of $\frac{3}{4}$ inch and $1\frac{1}{8}$ inch.



STANDARD DIMENSIONS

Light Weight Doors
7/16 Inch Thick

Side Stiles 2 Inch
Top Rail 3 Inch
Cross Rails 2 Inch
Base Rail 6 Inch

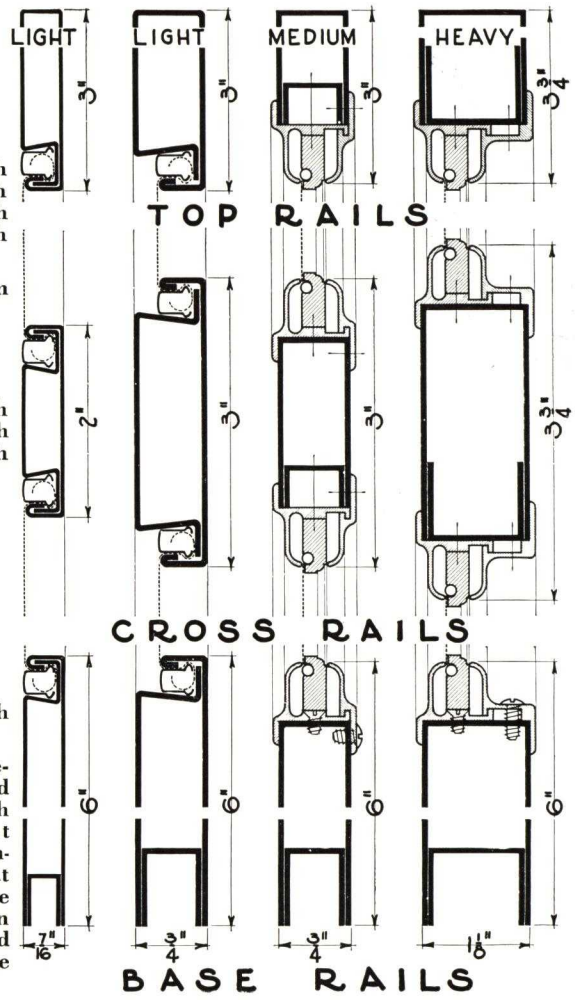
Light and Medium Weight Doors
¾ Inch Thick

Side Stiles 2½ Inch
Top Rail 3 Inch
Cross Rails 3 Inch
Base Rail 6 Inch

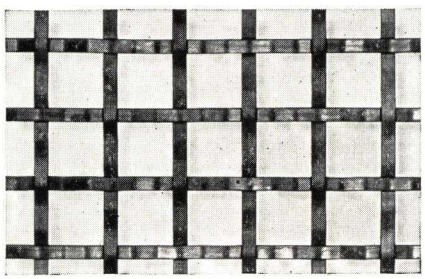
Heavy Weight Doors
1⅛ Inch Thick

Side Stiles 3¾ Inch
Top Rail 3¾ Inch
Cross Rails 3¾ Inch
Base Rail 6 Inch

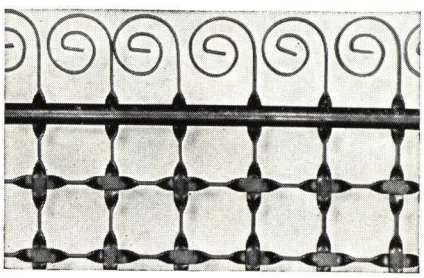
The ¾ Inch Medium Weight and the 1⅛ Inch Heavy Weight doors are constructed so that the removable screen panels can be interchanged with removable glass panels.



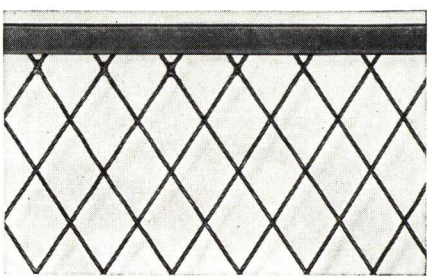
Doors may be made with wider stiles and rails when ordered special. Doors can be furnished in special panel and shape designs. Doors can be furnished in standard or special finishes. Solid bronze hardware is standard equipment.



A grille for screen doors made of bronze or steel ribbon interlocked to form a reinforcement against unusual service.



An ornamental scroll top may be added to screen door grilles when the door itself is made of only one panel.



A diamond mesh guard is an economical method of protection for doors and windows that must withstand extra hard usage.

CHAMBERLIN NU-ROLL SCREENS

Nu-Roll screens have many features that make them very desirable. They eliminate seasonal trouble and expense of installation, removal, and storage. When windows are closed, roll screens may be raised out of the way and out of sight. When installed on steel sash, undersill operating levers are unnecessary. Windows are easily accessible for cleaning purposes and awnings may be operated from the inside.

Nu-Roll Screens are adaptable to steel sash, outswinging wood casements, and double-hung windows.

In cases of large steel windows, Nu-Roll Screens are usually mounted in such a way that only the moving sash is screened.

HOUSING AND GUIDE MATERIALS AND FINISHES

Steel—Housing, drawbar, and guides are made of cold-rolled steel, zinc-coated.

Standard colors (gray, green, brown, black) in baked enamel.

Special colors in lacquer over baked enamel primer.

Bronze—Housing, drawbar, and guides are made of solid (not plated) cold-rolled bronze, in polished or statuary bronze finish, either of which will harmonize with almost any color scheme.

Combinations—Concealed housing may be of steel (soffit only exposed) with bronze drawbar and guides.

Roller and Shaft—The roller is 22-gauge solid brass tubing, perfectly aligned and revolving on a 1/4-in. rolled steel shaft. The wire cloth netting is soldered to the brass roller. The roller is packed with a special protective lubricant having a 300-degree melting point.

Roller Bearings—Roller is equipped with special Doehler die-cast, rustproof bearing at each end to insure continuous, smooth operation and to prevent binding.

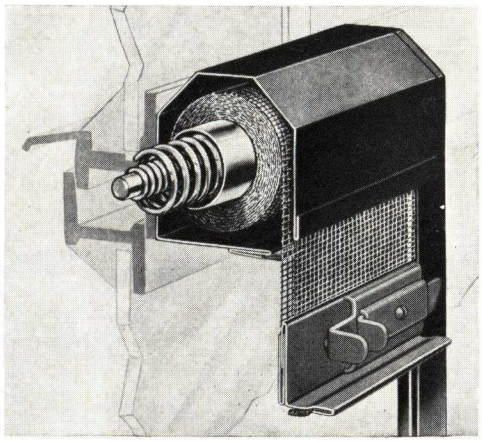
Roller Spring—Spring runs entire length of roller. It is adjustable for tension and is made of specially drawn oil-tempered wire, enclosing an auxiliary spring tube to prevent the possibility of the main spring binding on the roller shaft.

Wire Cloth—The wire cloth is made of specially annealed 16-mesh bronze Anaconda wire with five extra strands for selvage reinforcement.

Guides—Guides are made of rolled channels 15/16 in. deep. Each guide is made of two members—one member rigid, one of spring metal (an exclusive Chamberlin feature) which hugs the wire cloth. This insures insect-tightness, smooth and uniform operation, and prevents the cloth from vibrating against the housing lips. Tension of the spring member is adjustable and holds the drawbar at any point. The rigid guide member automatically interlocks with the drawbar at all positions.

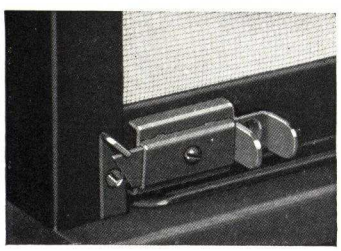
DETAILS

Roller Housing—Screens under 70 in. in height have a box housing 2 in. in diameter; when over 70 in. in height, the housing is 2 1/4 in. in diameter. The wire cloth opening has hemmed edges and a heavy weatherproof felt baffle (an exclusive Chamberlin feature) to clean wire during operation and to keep insects out of the housing.

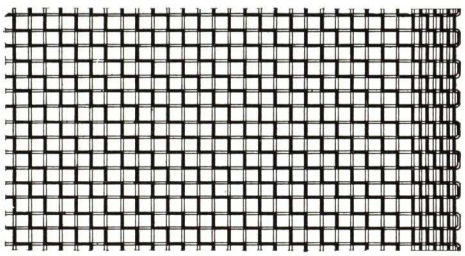


Housing Mounted on Transom Bar

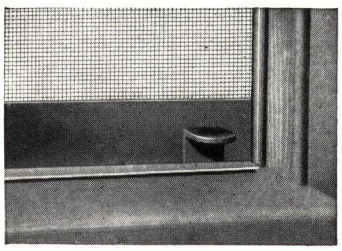
Drawbar and Catches—The drawbar is a rigid, two-piece flanged member to which, at either end, are attached automatic or spring bolt side catches engaging with keepers. The bottom of the drawbar is equipped with weatherproof, insect-tight, non-marring felt.



Spring Bolt Catch No. 19 and Keeper No. 21 used with Visible Guide



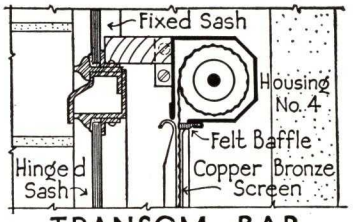
Screen Cloth with Reinforced Selvage of Five Extra Strands



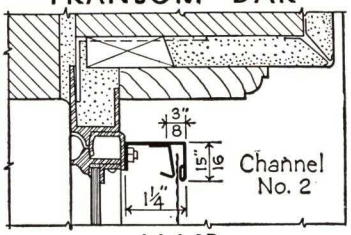
Automatic Catch No. 12 used with Concealed Guide

CASEMENT WINDOW INSTALLATIONS

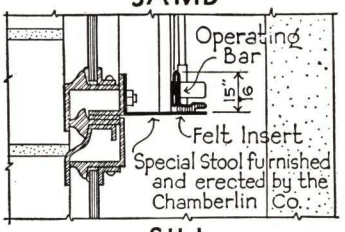
The extremely small size of the roller housing (2 inches in diameter) with exposed corners beveled, together with the small neat guide channels, make the visible installations inconspicuous and unobtrusive. Concealed housing and guides provide practically invisible installations and the window opening is entirely clear when the screen is rolled up.



TRANSOM BAR

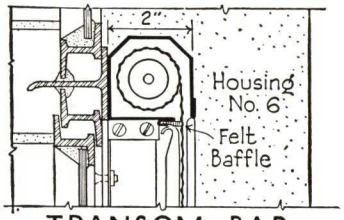


JAMB

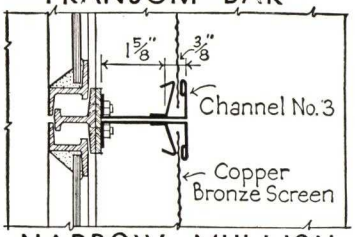


SILL

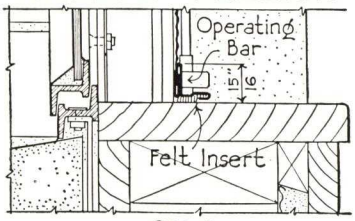
EQUIPMENT No. 42 S-S-P
Visible Installation on
Steel Projected Window



TRANSOM BAR

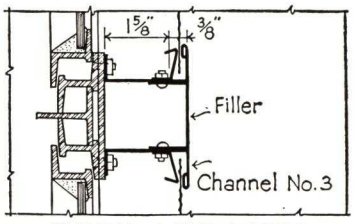


NARROW MULLION



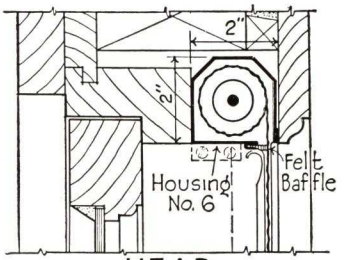
SILL

EQUIPMENT No. 63 S-S-T
Visible Installation on
Out-opening Steel Casement



WIDE MULLION

EQUIPMENT No. 63 S-S-T
Visible Installation on
Out-opening Steel Casement



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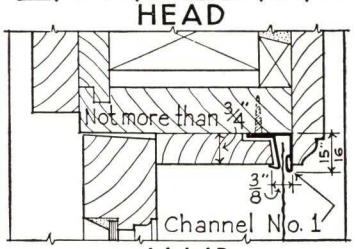

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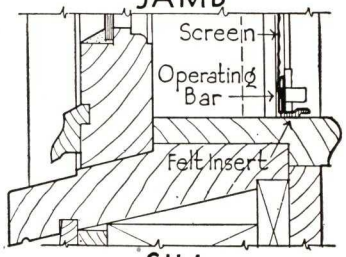
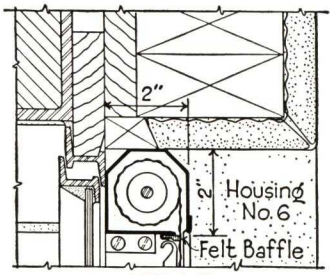


SILL

EQUIPMENT No. 61 W-W
Concealed Installation on
Out-opening Wood Casement



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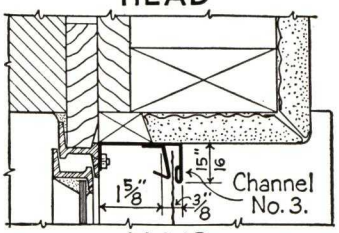

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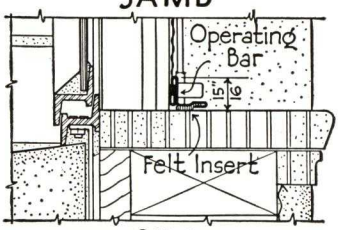
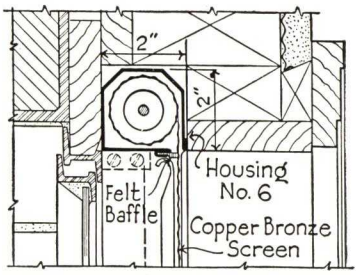


SILL

EQUIPMENT No. 63 S-S
Visible Installation on
Out-opening Steel Casement



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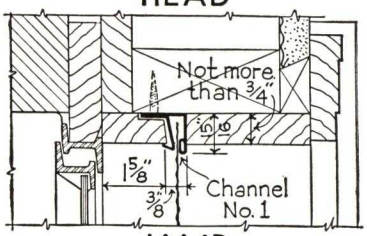

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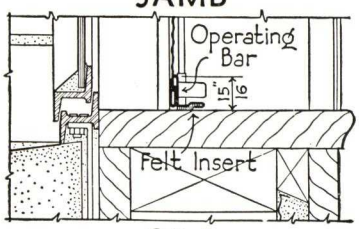
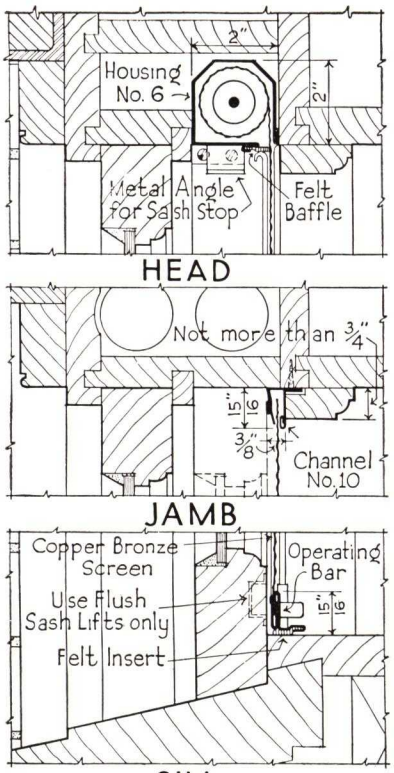


SILL

EQUIPMENT No. 61 S-W
Concealed Installation on
Out-opening Steel Casement



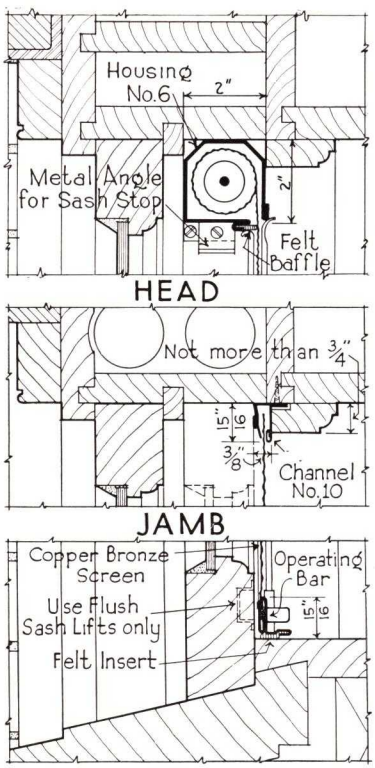
EQUIPMENT No 610 R-W-W
Concealed Installation on
a Wood Double Hung Window.

DOUBLE HUNG WOOD WINDOW INSTALLATIONS

Where it is possible to conceal both the roller housing and the guides, the installation is practically invisible and the window opening is entirely clear when the screen cloth is rolled into the housing. This installation assures the maximum of ventilation and unobstructed view.

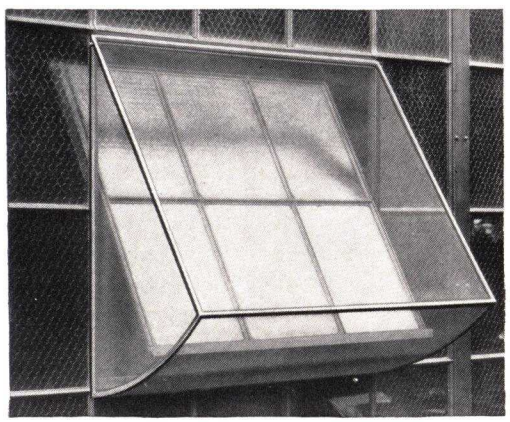
On the better class of work, the use of bronze housing and guides is recommended.

A combination of steel housing (only the bottom of the housing is exposed and this is usually hidden by draperies) with bronze guides and draw-bar may be used, or guides and draw-bar may also be of steel.

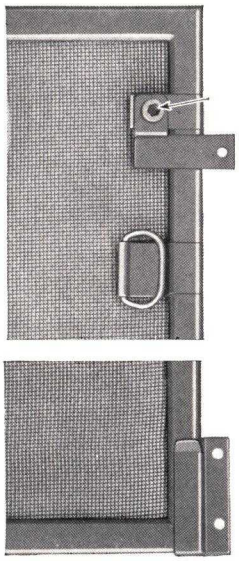


EQUIPMENT No. 610 R-W-W
Semi-Concealed Installation on
a Wood Double Hung Window

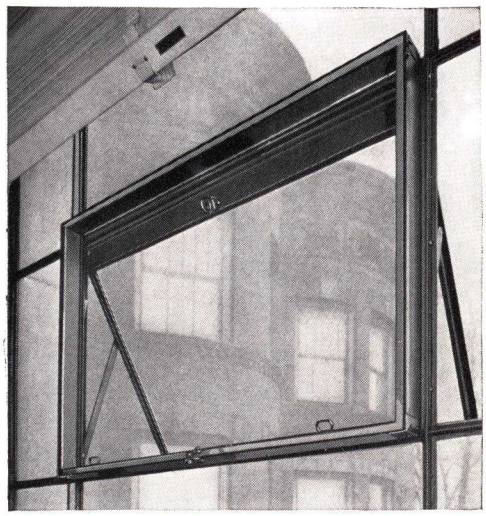
SCREENS FOR INDUSTRIAL and INSTITUTIONAL BUILDINGS



Chamberlin screens are made in many special shapes to suit particular requirements. They are ideally suited for industrial installations. Cage screens require more than usual skill in manufacturing, and the Chamberlin Solid narrow metal frame is particularly recommended for the purpose.



On asylums, hospitals, detention homes, etc., screens can be provided with locking device requiring special key for removal.



Box frame screens are used where window hardware would break through the wire cloth if the screen were installed on the window itself.

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LITTLE ROCK, ARK., 108 W. Markam St.—2-2969
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LOUISVILLE, KY., 1384 Bardstown Rd.—Highland 1000
MEMPHIS, TENN., 242 Madison Ave.—8-4406
MIAMI, FLA., Builders Exchange—3-2151
MILWAUKEE, WIS., 518 E. Mason St.—Marquette 5156
MINEOLA, L. I., N. Y., 32 Jericho Turnpike—Garden City 9807
MINNEAPOLIS, MINN., 2400 Hennepin Ave.—Kenwood 5234
MOUNT VERNON, N. Y., 100 N. Third Ave.—Oakwood 1270
NASHVILLE, TENN., 30 Green Hills Drive—7-7880
NEWARK, N. J., 109 Frelinghuysen Ave.—Bigelow 8-1525
NEW HAVEN, CONN., 37 Whitney Ave.—8-2577
NEW YORK, N. Y., 52 Vanderbilt Ave.—Van. 3-2340
NYACK, N. Y., 59 Jefferson St.—Nyack 950
OAKLAND, CALIF., 608 16th St.—Glencourt 3546
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RICHMOND, VA., 206 Exchange Bldg.—3-4112
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ST. PAUL, MINN., 509 Globe Bldg.—Cedar 6381
SACRAMENTO, CALIF., 720 "I" St.—Main 445
SALT LAKE CITY, UTAH, 337 S. Main St.—Wasatch—730 Ext. 13
SAN FRANCISCO, CALIF., 895 Post St.—Prospect 8363
SAN MATEO, CALIF., 1615 S. El Camino Real—San Mateo 387
SCHENECTADY, N. Y., 147 Jay St.—4-9712
SCRANTON, PA., 431 Lackawanna—4-3815
SEATTLE, WASH., 1817 Olive Way—Capitol 3676
SOUTH BEND, IND., 224 W. Jefferson—3-6936
SPOKANE, WASH., S. 177 Washington St.—Main 2518
SPRINGFIELD, ILL., 1717 S. Whittier St.—Main 8612
SPRINGFIELD, MASS., 47 Colton Ave.—4-8650
SUMTER, S. CAR., 204 N. Purdy St.—7-W
SYRACUSE, N. Y., 427 Maple St.
TACOMA, WASH., 1003 Pacific St.—Main 2501
TAMPA, FLA., 604 Jackson St.—4218
TERRE HAUTE, IND., 709 Washington Ave.—Crawford 5575
TOLEDO, OHIO, 1220 Madison Ave.—Main 2822
TRENTON, N. J., 205 N. Montgomery St.—2-4474
WASHINGTON, D. C., 932 New York Ave., N. W.—National 3655
WILKES-BARRE, PA., 179 Sambourne St.—2-2212
WILMINGTON, DEL., 802 Orange St.—2-2023

CHAMBERLIN METAL WEATHER STRIP CO., INC.

MEMBER OF PRODUCERS COUNCIL

GENERAL OFFICES: 1254 LABROSSE STREET, DETROIT, MICHIGAN

FACTORIES: DETROIT, MICHIGAN and PERU, ILLINOIS

CHASE BRASS & COPPER CO.

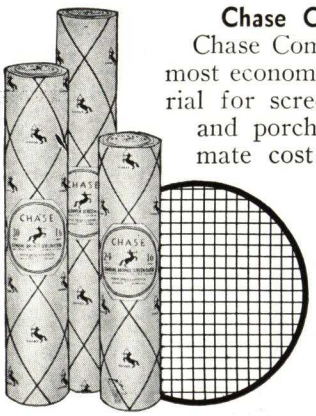
—INCORPORATED—

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

WATERBURY, CONN.

For Other Chase Pages, see File Index

CHASE BRONZE AND COPPER INSECT SCREEN CLOTH



Chase Commercial Bronze

Chase Commercial Bronze is the most economical, non-rusting material for screening windows, doors and porches when quality, ultimate cost and permanence are controlling factors.

Chase Commercial Bronze Insect Screen Cloth is woven from solid bronze wire, guaranteed to contain not less than 90% copper, the remainder being zinc which is introduced as a hardening agent. Commercial bronze screen cloth is preferred to copper in that it has greater stiffness and strength. Bronze screen cloth when released after having been bent under pressure of the thumb will spring back into its original flat, straight surface, whereas pure copper screen cloth when bent under even moderate pressure remains dented.

Size of Mesh to Use

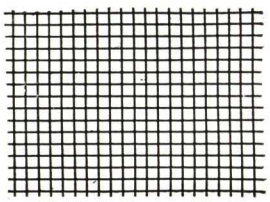
The term mesh is generally understood to mean the number of openings in a linear inch and that is the standard by which our screen cloth is manufactured.

16-Mesh—Used more than any other size because it gives better service in guarding against both mosquitoes and house flies.

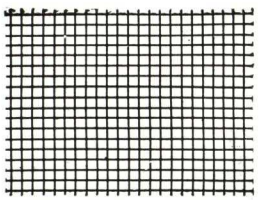
14-Mesh—Protects against flies but will not bar out mosquitoes.

18-Mesh—Required in some tropical climates and close to Southern seashores, in order to protect against the extremely small mosquitoes and gnats that infest those locations.

Available in Two Finishes



16-Mesh Screen Cloth



18-Mesh Screen Cloth

Bright Finish—This has a beautiful golden bronze sheen.

Antique Finish—Where bright finish is undesirable use antique finish which gives the cloth a dark bronze color that will not reflect glare of sunlight. Antique finish is produced by a special process which adds a permanent dark coating to wire before it is woven into cloth, thus insuring uniform color. This process in no way detracts from rust-resisting qualities of the screen cloth.

Chase Copper Screen Cloth

This cloth is exactly what its name implies: screen cloth woven from 99.9% pure copper wire that is drawn as hard in temper as it is possible to make. Copper of course is non-rusting and needs no painting. It does not give as good results as bronze where large surfaces are to be covered, owing to its softness and liability to damage and being stretched out of shape after it is installed. Chase Copper Screen Cloth is clearly and unmistakably labeled "copper," or if the wrapping has been removed it can be readily identified by testing with the fingers for resiliency and strength.

Other Uses for Insect Screen Cloth

Chase Insect Screen Cloth is often specified to cover vents, fresh air intakes and ventilator guards to prevent the passage of snow.

Extra fine meshes are usually specified for vision screens and bank window screens. Chase Copper Wire Cloth is available for this purpose in 40, 50 and 60-mesh.

Standard Widths

Chase Commercial Bronze Bright Finish Insect Screen Cloth is always available for immediate warehouse shipment in all even widths from 18 to 48 in., i.e., 18, 20, 22, 24, 26, etc. All of these widths are available in either 14, 16, or 18-mesh.

Antique finish bronze cloth is also carried in all even inch widths from 18 to 48 in. in 14, 16, and 18-mesh. Chase Antique Bronze Screen Cloth can also be furnished in 54, 60, 66 and 72-in. widths in 16-mesh only.

Chase Copper Insect Screen Cloth is carried in stock in all even inch widths from 18 to 48 in. in 14, 16 and 18-mesh.

A Feature of Chase Screen Cloth

Deep crimps keep the mesh uniform. This is important as it prevents bulging

Specify Chase Screen Cloth to insure permanent protection against flies and mosquitoes. It cannot rust—never needs painting.

CHASE WAREHOUSES

NEW YORK, N. Y.	PITTSBURGH, PA.	ST. LOUIS, MO.
BOSTON, MASS.	CINCINNATI, OHIO	NEW ORLEANS, LA.
PROVIDENCE, R. I.	CLEVELAND, OHIO	HOUSTON, TEX.
NEWARK, N. J.	DETROIT, MICH.	LOS ANGELES, CALIF.
PHILADELPHIA, PA.	CHICAGO, ILL.	SAN FRANCISCO, CALIF.
BALTIMORE, MD.	MILWAUKEE, WIS.	SEATTLE, WASH.
	MINNEAPOLIS, MINN.	

THE CINCINNATI FLY SCREEN CO.

CINCINNATI, OHIO

SALES AGENCIES IN PRINCIPAL CITIES OF THE UNITED STATES

PRODUCTS, SERVICES AND FACILITIES

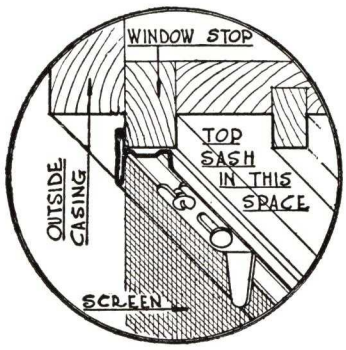
ZIP-IN FRAMELESS ALL-BRONZE FLY SCREENS.
"CINMANCO" ALL-METAL REWIREABLE FLY SCREENS for every type of window and door opening; WOOD and METAL FRAME SCREEN DOORS; FLI-BAC ROLL SCREENS; "E-Z" SLIDE WOOD FRAME SCREENS.

This Company has had over forty years' experience in building fly screens. A highly specialized field organization has been developed to assist architects with their screen problems. The large, modernly equipped plant of THE CINCINNATI FLY SCREEN CO. and its ideal, central location assure prompt deliveries.

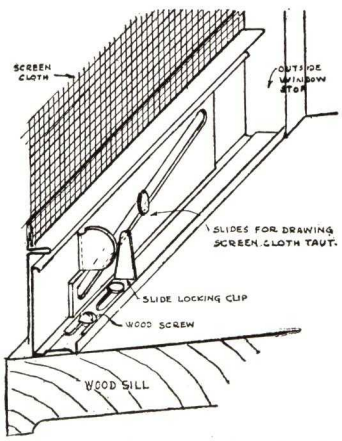
ZIP-IN FRAMELESS ALL-BRONZE SCREENS

Zip-in Screens are full length and cover both top and bottom window sashes. Rails and screen cloth are made entirely of bronze, insuring long life and freedom from rust. Quickly cleaned by dipping in hot soap suds or other mild cleaning solution. Made in stock sizes to fit standard windows. Measure height and width of each window opening and write specifications accordingly. Special sizes can be made to order at slight additional cost.

An Atlanta, Ga., Residence
Screened throughout with Zip-in Frameless Fly Screens



Section of the Top Rail Detail



Section of the Bottom Rail Detail

14 Zip-in Advantages

(1) Easily and quickly installed from the inside—only 4 screws to place. A screwdriver is the only tool required.

(2) Eliminates screen guides in window frames.

(3) No side frames to obstruct light and air.

(4) No fitting required. If windows are out of square, Zip-in Screens are adjustable at the bottom for minor variations.

(5) All-bronze, rustless construction at the price of wood frame screens.

(6) No painting or other maintenance expense.

(7) Full length permits either top or bottom window sash, or both, to be open—thereby providing a better ventilation.

(8) No rolling parts to get out of order.

(9) The wire cloth is held taut and may be quickly tightened by a slight movement of bottom slides.

(10) Makes window washing easier. Release of the bottom catches permits the screen to swing free at the bottom.

(11) No ugly, thick frames. Neat, trim appearance both inside and outside.

(12) Manufactured in stock sizes to fit standard openings.

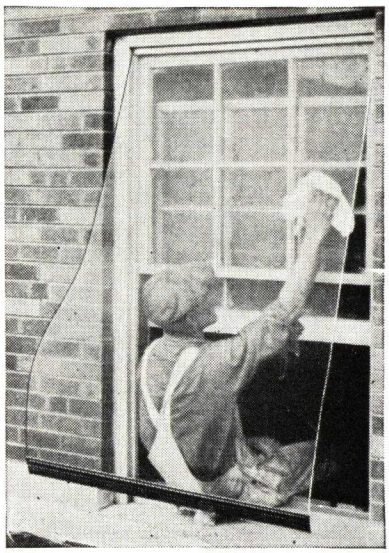
(13) When removed from the window, Zip-in requires only a small storage space.

(14) Screen may be conveniently cleaned each season. The complete screen may be immersed in soapy water or other cleaning solution.

Zip-in Screens have many other valuable features which make them superior.

Quickly Installed

This revolutionary improvement in fly screen construction solves the screen problem to the utmost satisfaction of all who seek high quality at reasonable cost. These modern, easy-to-handle screens are a vast improvement over the conventional frame type because they can be quickly installed or removed—no frames, no rollers, no guides, no built-in box. They are neater in appearance, and may be stored compactly in a small space. Illustration shows how easily windows may be washed when Zip-ins are installed.

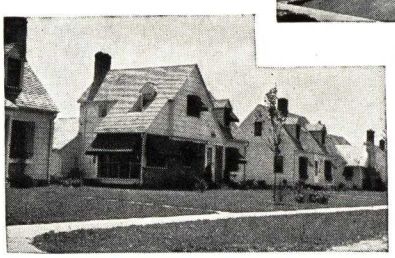


Easily Stored

One of the outstanding advantages of the Zip-in Screen is that it is so easily stored during the winter. A fiber box, 3 in. square, is provided for each Zip-in. The screens may be stored in a closet of the room where used, or boxes may be numbered to correspond with window numbers and all boxes stored in attic, cellar, or any dry place. Economy of storage space is an important consideration, particularly in large buildings where several hundred or even thousands of screens may be used. Each year, the Zip-ins will effect a substantial saving in labor cost of installation, removal, cleaning and storage.

5200 Zip-in Screens Used in New York Low Cost Housing Project

One unit in group of six-story apartments of the new low cost housing development of Boulevard Gardens Housing Corp., Boulevard Gardens, N. Y.



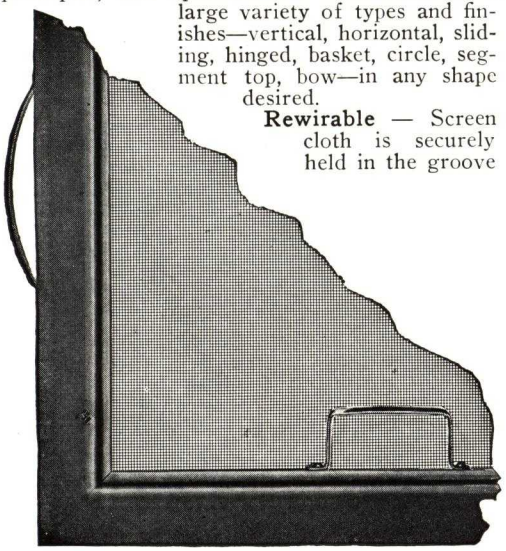
In Homes of Eastman Employees, Rochester, N. Y.

At left, row of homes constructed by Eastman Kodak Employees Realty Co. Hundreds of Zip-in Screens are used in these homes. Zip-ins were chosen as standard screen after careful consideration of other types

"CINMANCO" ALL-METAL SCREENS

(.025 and .032-in. Thick Metal)

Made of bronze, aluminum, or galvanized copper-content steel strip. Frames are tubular in construction, assembled on correct mechanical principles, and spot welded. Furnished in a large variety of types and finishes—vertical, horizontal, sliding, hinged, basket, circle, segment top, bow—in any shape desired.



Rewirable — Screen cloth is securely held in the groove by rounded spline that will not cut cloth. Spline can easily be removed for rewiring screen. Frames are sturdily reinforced by inside metal angles. Detachable springs are easily removed and renewed.

Bronze Wire Cloth—"Cinmanco" genuine 90% copper, rustless, bronze wire cloth, 16-mesh is regularly furnished. Other meshes as specified.

The "Cinmanco" All-metal Screen is built to defy time, weather and abuse.

Frames are made of solid bronze, or of galvanized copper-content steel, welded. Also aluminum. Furnished in a variety of finishes. Genuine rustless, 16-mesh bronze wire cloth (90% copper-content) is used, unless otherwise specified.

●

We manufacture screens for every type of door and window, including all makes of steel sash using underscreen operator.

Wood Doors

Carefully selected, well-seasoned lumber — white pine, oak, cherry, mahogany, walnut, or other woods, as specified. Doors are 1⅛ in. thick (unless otherwise ordered), mortised, glued, and wedged. Highest quality paints, stains, and varnishes are used, all carefully rubbed down. A wide variety of grilles for selection. Mortise door latch is solid bronze and can be furnished in a variety of finishes. Five knuckle, steel bushed, loose pin bronze butts, or sherardized steel plated butts can be supplied.

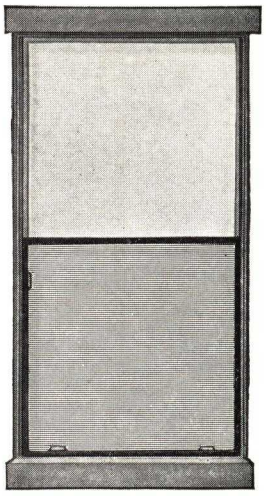
PROMINENT INSTALLATIONS OF "CINMANCO" SCREENS

"Cinmanco" Screens are extensively used in homes, schools, hospitals, hotels, clubs, offices and other building throughout the nation. A few typical installations:

Hotels and Clubs—Breezy Point Lodge, Pequot, Minn.; Elks Club, Memphis, Tenn.; East Lake Country Club, Atlanta, Ga.; Boca Raton Club, Boca Raton, Fla.; Cincinnati Club, Cincinnati, Ohio; Atlanta Biltmore Hotel, Atlanta, Ga.

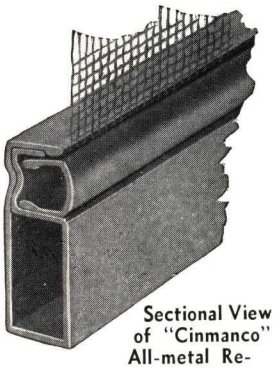
Schools—Cranbrook School, Detroit, Mich.; LaSalle Military Academy, Oakdale, N. Y.; Mt. St. Joseph Academy, Delhi, Ohio; Berry School, Rome, Ga.; University of Illinois, Urbana, Ill.; University of Montana, Missoula, Mont.

Hospitals—U. S. Marine Hospital, Buffalo, N. Y.; Gallinger Hospital, Washington, D. C.; Sawtelle Hospital, Los Angeles, Cal.; St. Francis Hospital, Escanaba, Mich.; Good Samaritan Hospital, Cincinnati, Ohio; Locust Mountain Hospital, Shenandoah, Pa.



All-Metal Sliding Screen

Slides smoothly in a pair of copper, or galvanized steel, guides extending full height of window frame. Can be made to cover entire window opening. Twin Sliding Screens, operating like a double-hung window furnished for casement windows.

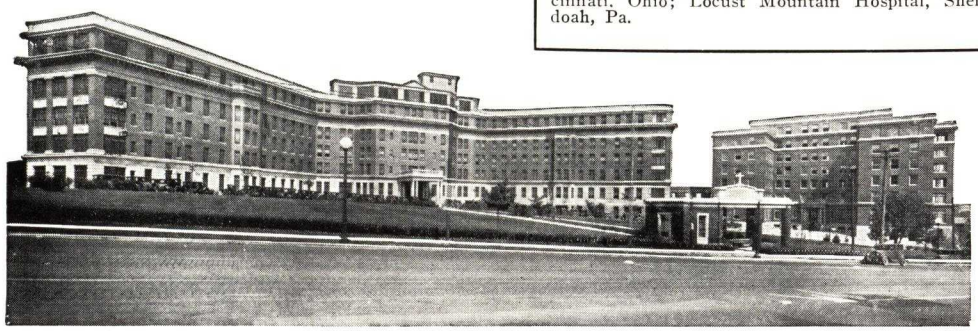


Sectional View of "Cinmanco" All-metal Rewirable Screen

Actual size

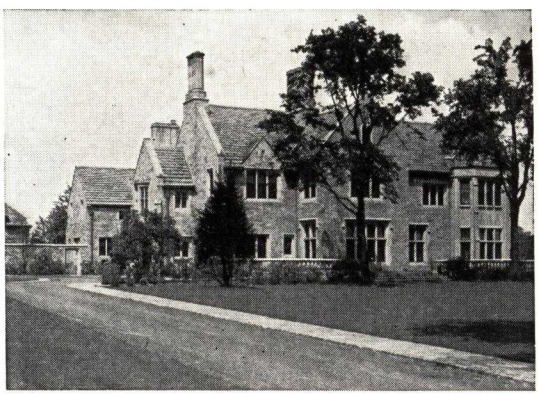
Note the tubular construction, combining unusual strength with light weight. The wire cloth is tightly held in place by round-edge spline that will not cut screen fabric; spline easily removed for rewiring

●



Good Samaritan Hospital (above), screened with "Cinmanco" All-Metal Rewireable Screens

(Below) Atlanta Biltmore Hotel. "Cinmanco" All-Metal Screens used



"Cinmanco" All-Metal Rewireable Screens were specified for this beautiful residence in Buffalo, N. Y.

MEMORANDA

CORRY METAL CORPORATION

CORRY, PA.

ARTISANS IN MODERN SCREENING

SCREENS BY CORRY

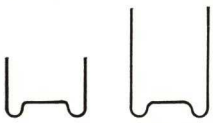
The Corry Metal Corporation presents two distinct lines of Metal Window Screens, both adaptable to all types of windows.

Both lines are available in Steel or Bronze.

A light Metal Screen Door is also produced in Steel or Bronze which is used successfully for French Doors or smaller door openings where usage is not severe.

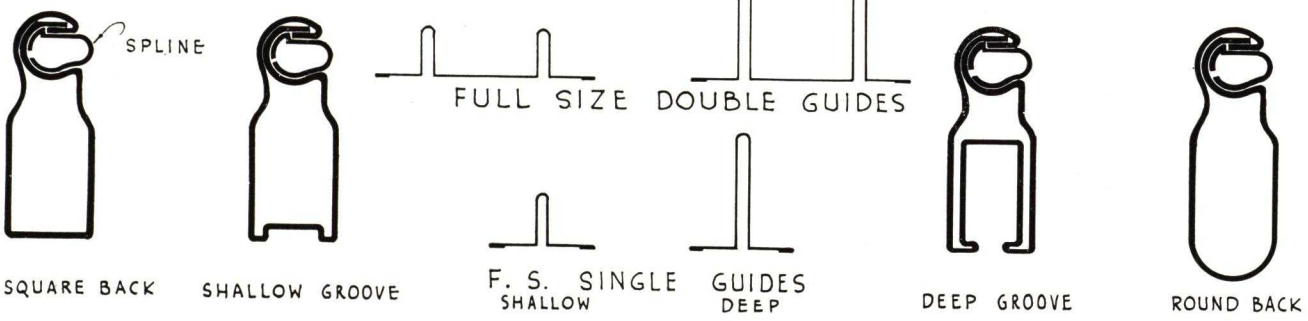
"COMET"
FULL SIZE SECTION SHOWN WITH SPLINE

F.S. GUIDES FOR "COMET" FRAME

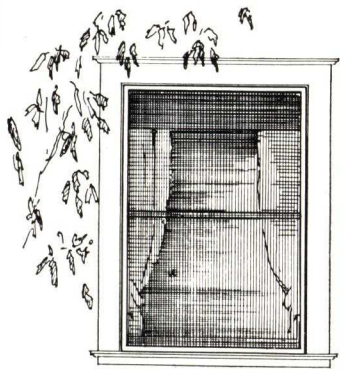


SHALLOW DEEP

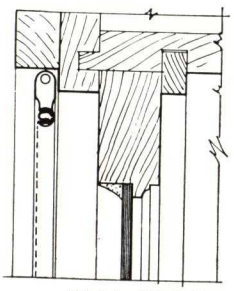
FULL SIZE "STANDARD" FRAME SECTIONS AND "SD" GUIDES



TOP PIVOT SCREEN



Application of Top Pivoted Screen to Wood D.H. Window



HEAD DETAIL FOR ABOVE ¼ SIZE

"Standard" Line

Distinctive in appearance with great strength and rigidity.

1⅛ in. Wide x 7/16 in. Thick Frames—This size of framework is most universally used on all types up to 20 sq. ft. Fabricated from .028-in. gauge metal.

1½ in. Wide x ½ in. Thick Frames—This size of framework used on exceptionally large openings, such as porch sections, etc. Fabricated from .032-in. gauge metal.

Material—Steel frames, tubular, formed from electro-galvanized stock. Bronze frames from commercial bronze.

Finishes—Finishes for steel frames baked on at high temperature. Standard finishes for bronze frames, natural or dark oxidized. Special finishes available.

Guides—Single or double "Rib" type guides only, used for sliding screens.

Screening—16-mesh bronze wire cloth woven from .0113-in. wire oxidized finish, furnished regularly. Other meshes available.

"Comet" Line

A moderately priced screen substantially built and rewireable. Ideal for ordinary sized windows, either double hung or casement, due to inconspicuous narrow framework.

¾ in. Wide x ⅜ in. Thick Frames—Fabricated from .028 gauge metal.

Material—Steel frames, tubular, formed from electro-galvanized stock. Bronze frames from commercial bronze.

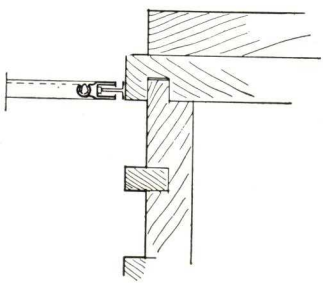
Guides—Zinc-alloy, channel type guides *only* furnished for "Comet" Sliding Screens.

Screening—16-mesh bronze wire cloth woven from .0113-in. wire furnished as standard.

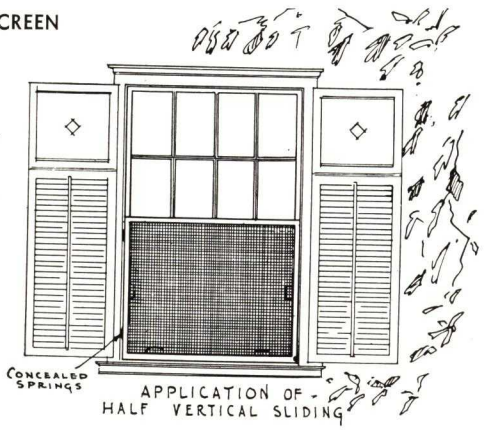
Adaptability

"Corry" Screens are adaptable to most any type of window. Ask your local dealer or write us for complete specifications and details covering any particular type required. Recommendations and costs gladly given without obligation.

HALF VERTICAL SLIDING SCREEN



JAMB DETAIL SHOWING SCREEN ATTACHED TO BLIND STOP



APPLICATION OF HALF VERTICAL SLIDING

THE EVERHARD MANUFACTURING CO.

Metal Frame Screens for All Types of Windows, Casement Storm Sash

OFFICE AND FACTORY
CANTON, OHIO

Products

Everhard Metal Frame Screens for Metal Casements; *Everhard Thermosash*—Double Glazing for Metal Casements; *Screens* for *Casement, Projected, Pivoted* and *Wood or Metal Double Hung Windows; "Vimlite" Deflectors* for no-draft ventilation; Window Guards.
Also Special Fabric Holding Frames.

Window Screens BY Everhard

Experience

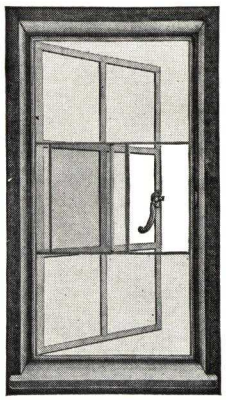
Over twenty-five years in the manufacture of screens and other high-grade metal products. In ten years we have specialized in correctly designed screens for steel sash and have built an enviable record for "Window Screens by Everhard."

SCREENS FOR METAL CASEMENTS

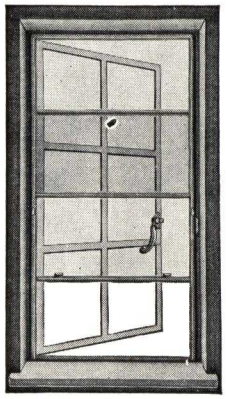
Everhard Kay-Screens

Kay-Screens prove an economical and satisfactory screening unit for the standard type outward opening metal casement window. Shades or drapes remain scarcely disturbed when Kay-Screens are used. Narrow meeting rails are so designed that when the screen is closed the cloth lies in one plane with the rails acting as a cross brace at the muntin line. Attachment is by knurled head screws to the regular screen drilling, or by patented spring clips requiring no drilling of the sash.

Sliding Panel Kay-Screen H—For use on standard casements where the locking handle is located at the center of the height. The panel slides freely and is left in fully opened position when window is locked. Illustration shows panel partly open.



Kayscreen H



Kayscreen L

Standard Flat Screens

Vertical Sliding Kay-Screen L—Suitable where locking handle is 2 or 3 in. below center. Vertical sliding panel (shown partly open) is supported by a latch directly opposite upper panel while window is locked, so that a full half of opening is clear, and only width of one narrow meeting rail is visible.

EVERHARD SCREEN FRAMES FOR ALL-WOOD OR METAL WINDOWS

Types B, BF and BFX

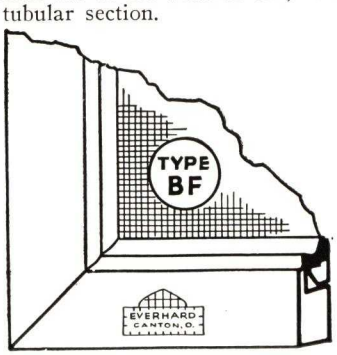
Type B—Type B frame, $\frac{7}{16}$x$\frac{11}{16}$ in., a neat, narrow tubular frame, is rolled from steel, bronze, stainless steel or aluminum, and is particularly suitable for flat casement screens.

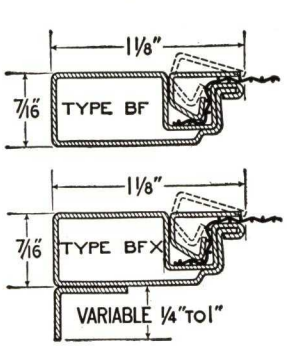
Type BF—Type BF is rolled from .025-in. or .030-in. electro-galvanized steel or from full hard commercial bronze.

The $\frac{7}{16}$x1⅛-in. section, with locked and welded seam makes a stiff, substantial frame where a tubular frame screen up to 25 sq. ft. in area is required. Corners are mitered, ground true and pressed to a close fit over heavy galvanized steel corner reinforcement extending nearly 3 in. into each leg. Inner edges of the corner are electrically welded together.

This frame is made in top-hung, vertical or horizontal sliding screens for all kinds of wood or metal windows.

Type BFX—Type BFX is used principally on projected-in or projected-out metal sash where it is necessary to clear the kick-out of the weather bar, made from a high-grade, standard tubular section.





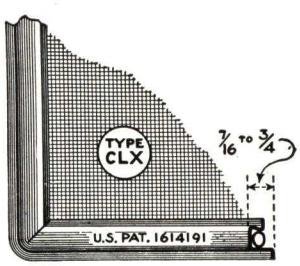
Types CLX and CG

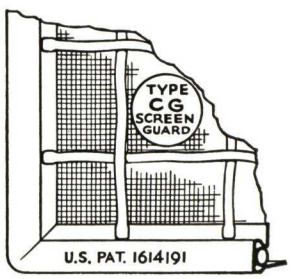
Type CLX—Type CLX frame in $\frac{7}{16}$, $\frac{9}{16}$, ¾ and 1-in. depths is rolled from .037-in. steel and is designed for a maximum of strength and simplicity for screens up to 16 sq. ft. in area.

The easily removable solid rod spline which holds the cloth is continuous around the corners, reinforces the corners, and stiffens the frame against whip. Patents issued and pending.

Type CG—Type CG guard screen is the CLX insect screen of any depth, with the addition of 1½-in. mesh, 9-gauge steel wire cloth, or ¾-in. mesh, 16-gauge flat rolled diamond mesh expanded metal welded to the screen frame at all contacts.

Particularly suitable for basement window guard screens, or for light detention screens on hospital windows, etc.





EVERHARD THERMOSASH

The New Double Glazing for Metal Casements, Decidedly a Comfort in Any Home and a Necessity with Air Conditioning

Thermosash are separate frames glazed with one piece of clear double strength glass, and fit over the inside of the casement window in the place occupied in summer by the screen.

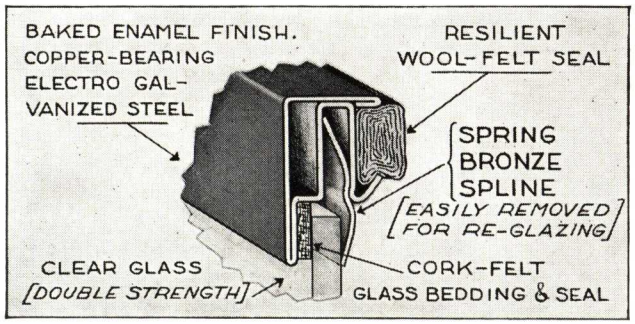
They are provided at the edges with a moth-proofed resilient wool felt sealing strip all around, which insulates the Thermosash from the casement and also seals the dead air space against indoor moist air coming in contact with the cold outer glass—the principal cause of condensation.

Careful tests have shown that the dead air space between glass cuts down heat losses through the glass over one-half and eliminates drafts during cold weather.

Over the fixed glass portions of the windows additional Thermosash of suitable sizes are attached either with screws tapped into the window or with newly developed rustproof spring clips which securely hold the Thermosash in position.

Where desirable, as in bedrooms, ventilation is provided by one or more Thermosash fitted with glazed tilt-in ventilators over the bottom glass in the window vent, as shown in the illustration. These may be opened, along with the window, to admit a small amount of air directed upward, away from the floor.

Thermosash may be fitted to most standard makes of metal casements and will almost pay for themselves in a few winters by the fuel savings alone, to say nothing of the additional comfort.

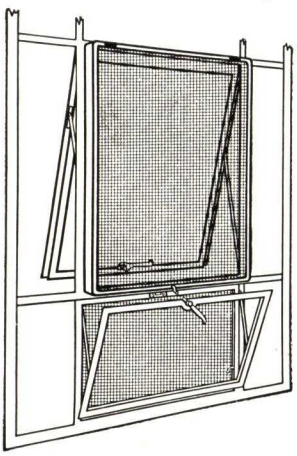


Write for Circular

Write for circular or blue prints giving complete details of Thermosash for various window units, but be sure to state the make of sash, also whether screen-type (with under-screen operator) or non-screen (with locking handle on the vent leaf).

Also we will gladly supply any information you need on *other types* of Everhard Screens for any window problem.

Project-out Vents

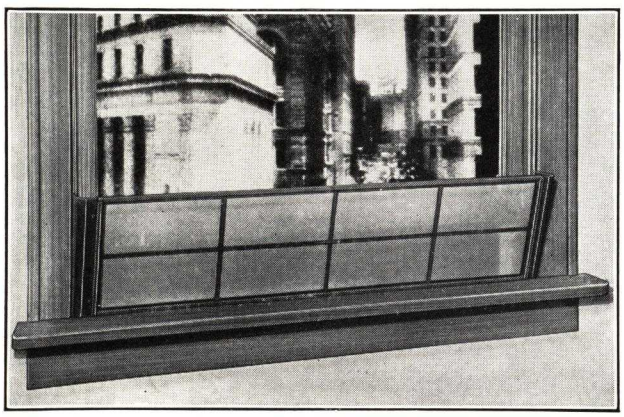


Project-out Vents are screened by BF screens hinged to an extension box as shown or by CLX screens top hinged to the window and latched over the sill by extension latches holding the screen free of the hardware when the vent is closed. Top hung CLX or BFX flat screens are used on the projected-in vents.

Pivot Windows

Pivot Windows are screened by special closing fittings at the pivot, depending on the make of window, and by twin flat screens removable from inside.

Vimlite Deflector



Unbreakable, Better, Safer Than Glass and Costs Less

This beautiful panel has a strong steel frame, 12 inches high, filled with VIMLITE glass, a flexible, almost indestructible material composed of fine steel wire cloth bedded in synthetic glass.

All the light, including violet, is transmitted, but broken up, giving a semi-transparent effect.

Made in lengths and heights to replace glass ventilators in present brackets, or in the 12-inch height complete with end brackets.

HIGGIN PRODUCTS, INC.

Steel, Bronze and Wood Frame Screens, Rolling Screens, Wood and Metal Door and Porch Screens

GENERAL OFFICES AND FACTORY
NEWPORT, KENTUCKY
SALES AGENCIES IN PRINCIPAL CITIES

For Weatherstripping, Access Panels, Lightproof Shades and Venetian Blinds, see our pages in File Index

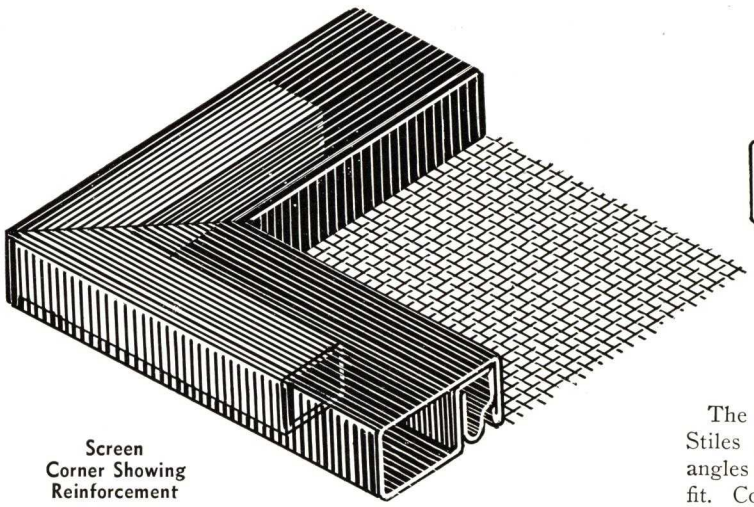
HIGGIN ALL METAL SCREENS

The Company and Its Organization

Higgin has been nationally known for more than forty years as makers of the finest quality all-metal screens made-to-order. Thousands of these earlier installations still serve satisfied owners. Having early built up a reputation for quality of product and for integrity, it has been and continues to be the aim to maintain these high standards and improve upon them. To further insure complete satisfaction both to architect and owner, the company's Sales Representatives throughout the country are carefully chosen for their honesty and ability. To properly screen a building, whether modest residence or the largest building requires intelligent handling both in the field and at the factory. Higgin Sales Representatives will be found to be thoroughly capable. In each territory a competent fitting organization is maintained by the Sales Agent.

Central Location

The factory and the general offices are located at Newport, Kentucky, directly across the Ohio River from Cincinnati, Ohio, one of the country's important and most centrally located transportation terminals.



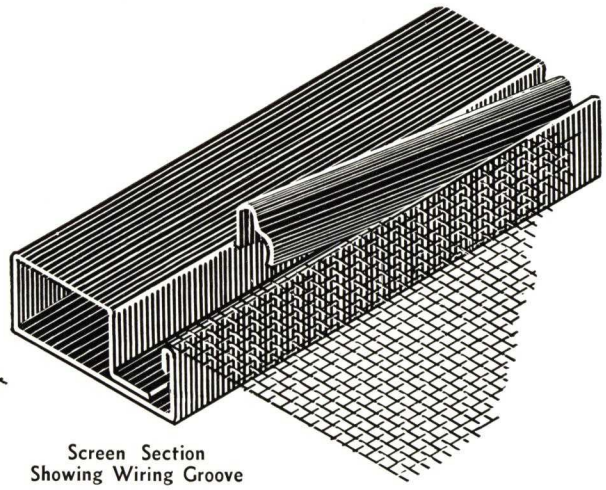
Screen Corner Showing Reinforcement

Types of Screens

Every style of window, every conceivable shape, every kind of opening can be neatly and perfectly fitted with Higgin Screens. Making all types of screens, wood or metal frame or rolling, the company is unbiased in its recommendations. Each screen is accurately measured to fit and is designed to follow architectural lines and to be in harmony with adjacent work.

Screen Frame Construction

The tubular rewirable screen section has been manufactured in its present design for more than twenty years, so that proof of its merits are plentiful. Frames are constructed of cold rolled electro-galvanized copper content steel especially made and prepared in ribbon form for rolling to finished shape in our own plant. Steel frame screens, after forming, are spotwelded through the spline groove where metal laps, at frequent intervals and doubly at ends. The result is a rigid rail without twist or wind. Bronze screens have lapped edges continuously soldered. After spotwelding and truing of mitres the tubular rails of steel frame screens are dipped in a special baking enamel after first being thoroughly cleaned free of dirt and grease. The dipping process is of particular importance for it adds materially to the life of the screen, for the enamel, which is later baked on, covers both the inside and the outside of the tube. It is well known that tubing "sweats" inside and without this inside coating rails may rust from the inside out without detection until too late.



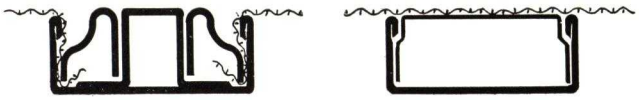
Screen Section Showing Wiring Groove

The inside coating is possible, due to method of assembly. Stiles and rails are assembled on box shaped reinforcing angles constructed of .0625-in. thickness metal, with a driving fit. Corners of course are neatly mitered and closely fit. This construction makes an extremely strong screen with definite merits over the welded corner (welded corners can be furnished). For sliding screens the reinforced corner construction will permit the screen to fit itself to the opening, few if any window frames being perfectly in square. With Higgin construction, another feature worth mentioning, especially where economy in maintenance is necessary, is that screens can have new rails added to replace damaged ones without the expense of an entire new screen. Higgin screens are of course easily rewired.

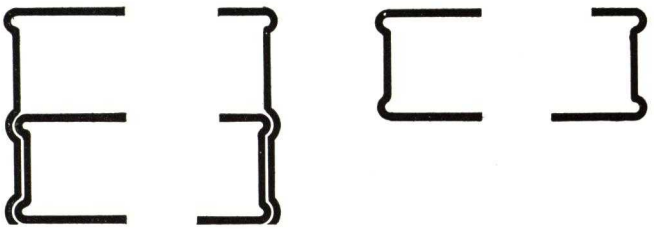
Metal Frame Screens

The details and descriptions on this and subsequent pages are intended to set forth essential screen parts and accessories most frequently required. Further details may be had for the asking.

Above: Section Through Rewireable Screens—At the left, the rail section is $1\frac{1}{16}$ in. wide by $\frac{7}{16}$ in. thick. At the right, the rail section is $1\frac{1}{2}$ in. wide by $\frac{7}{16}$ in. thick. Both are formed from .032 in. thick electro-galvanized steel (enameled) or from commercial bronze.

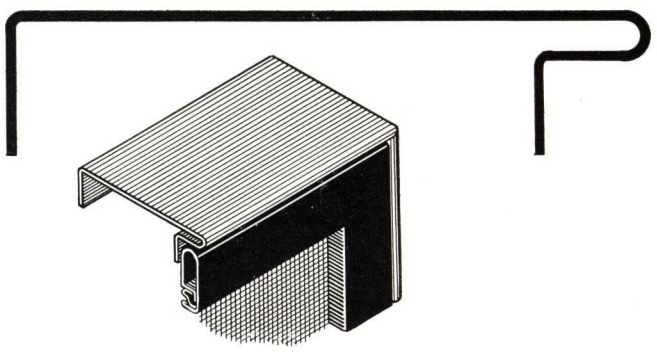


Above: Here Are Two Types of Screen Brace—At the left is the rewireable type and this should be called for and used where screen area is large. Wire cloth is limited in widths available and large expanses of cloth are impractical. To the right is non-rewireable brace for use wherever the rewireable type is not necessary.



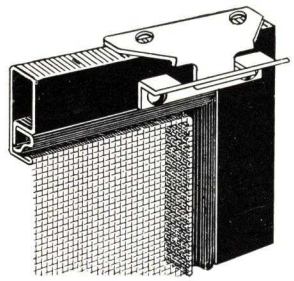
Above Are Channel Guides for Sliding Screens—At left is a pair of double guides which may be used at sides for double vertical sliding screens or at top and bottom for horizontal sliding screens. The base members of these guides are of .032 in. metal (steel or bronze) and the channels .025 in. At right are guides for half height sliding screens or the single horizontal sliding type.

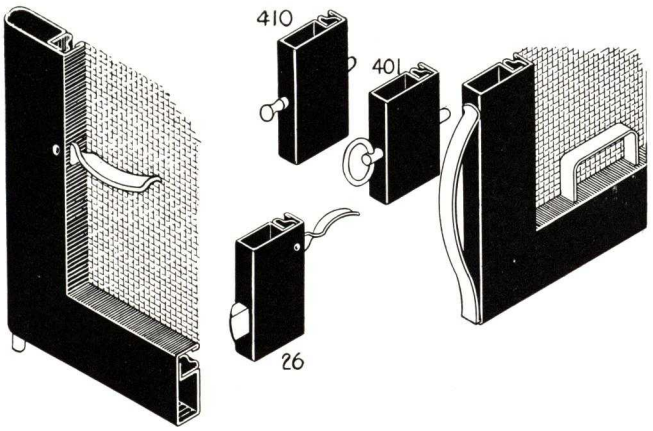
Above: Sill Tracks—At left is a solid brass sill track which is recommended for horizontal sliding screens (multiple sliding). Center track is of the same metal and for single horizontal sliding screens. At extreme right is a metal, usually bronze, rebate strip for use at sill for inside side hinged screens. Keeping the screen off the sill prevents marring.



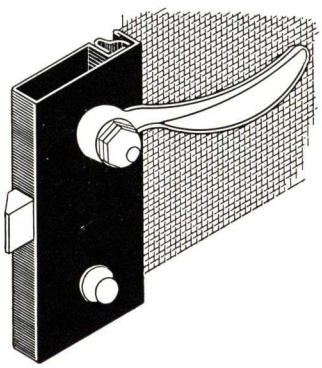
Box—The above full side section is of a box provided with screen rebate for use in connection mainly with outswing steel projected windows. Depth of the box is, of course, governed by the extension of sash hardware. This box, which is shipped knocked-down but equipped for quick assembly, may also be used for many other purposes.

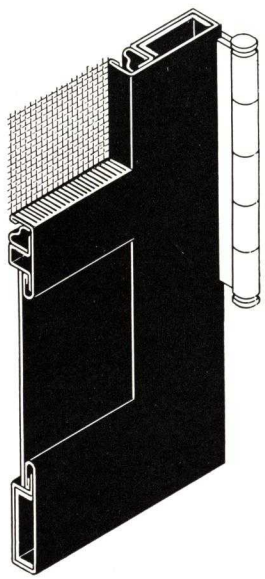
Top Hanging—Two methods may be employed for hanging screens from the top, especially for double hung windows where screens go outside. First, the pivot hung screen having a fixed pin at one corner and a trigger operated pin at other corner. The latter pivot is shown below at left. To the right is the No. 458 Top Hanger with self-locating member for attaching to window frame. Hangers are .0625 in. thickness galvanized metal, enameled.





Hardware—Above are illustrated a few items of hardware which may be had with Higgin Screens. The trigger operated pivot hinge at the left may be used for side hung screens as well as for those hung from the top, as mentioned in preceding paragraph. No. 410 is a spring bolt with knob pull. It may also be had as a friction type bolt which is particularly convenient for top and bottom bolts for double pivot hung screens. No. 401 is a spring bolt with ring for gripping. No. 26 is a mortise type catch for top or side hung screens. Trigger operated, this catch is very popular as it is easily operated and permits screen to be slammed shut. At extreme right is a compression spring for sliding screens. These are of heavy tempered steel with a japan protecting coat. Lift handle is bronze and has the screen number stamped on it for sliding screens.

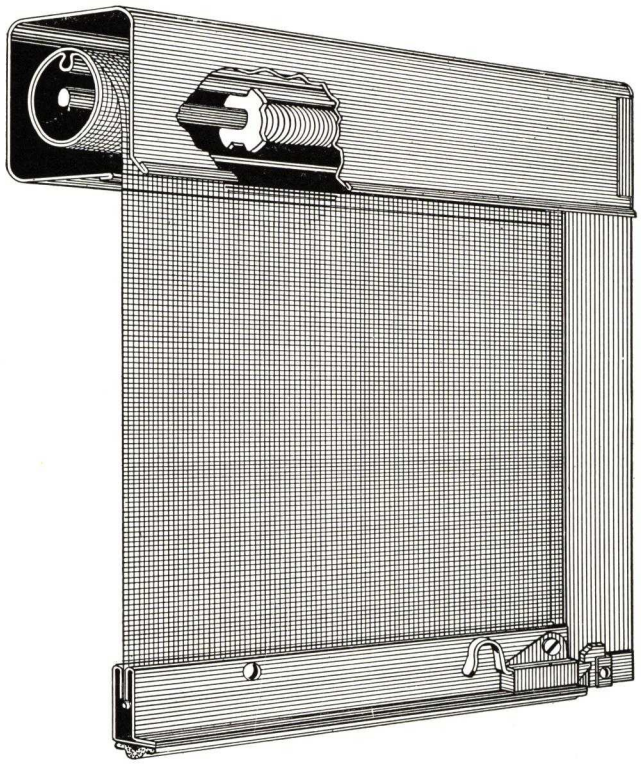




Light Metal Door—Above and to right are several features of the Higgin Light Metal door. This door has stiles and top rail $1\frac{1}{2}$ in. wide and $\frac{7}{16}$ in. thick. Bottom rail is paneled and may vary in height although 6 to 8 in. is standard. Stiles and rails are reinforced their entire length by .05-in. steel channels making a rigid door for openings away from heavy traffic. The mortise latch with lever handles both sides is all of bronze. These doors may be locked from inside with thumb set. At right is section through bottom rail of doors showing panelling.

Rolling Screens

Higgin Rolling Screens are built so that any part or parts may be replaced without damage to other members. The equipment consists of a metal assembly box or housing, spring roller, deep side guides, raising bar with felt cushioned bottom and automatic locking latches. Assembly boxes, side guides and raising bars are of galvanized steel. Wire cloth is of bronze, antique finish, 16-mesh per inch. The roller tube is made up of a 1¼-in. diameter lockseam tubing with pear

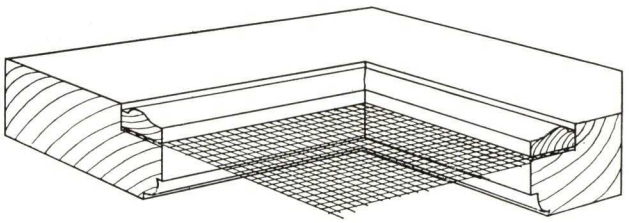


shaped groove for holding screen cloth evenly and surely the entire length of the tube; a continuous steel spindle and coil spring of music wire thoroughly coated in non-running grease. The coil spring is arranged to "float", in that while one end is attached to the spindle, the other is threaded over a washer which is inserted over the spindle in such a way that it can move, thus preventing the coil spring from becoming warped or set.

Side guides are $1\frac{3}{16}$ in. deep and permit from ¾ to 1 in. of wire cloth to extend into each guide. Guides may be had to fasten into jambs or onto face surfaces. *(See illustrations above.)* Special equipments are available for attaching Higgin Rolling Screens directly to steel casements. Request details on Equipment 5070 and 5066.

Wood Screen Doors

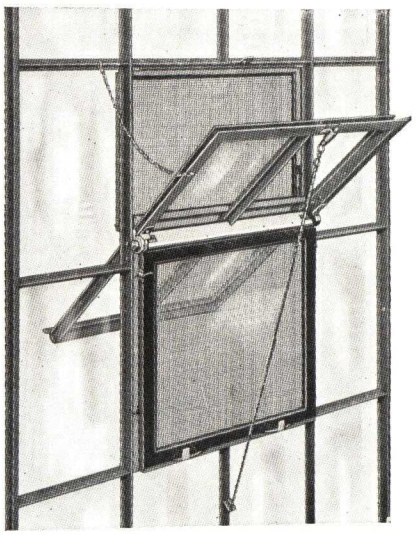
Higgin Wood Frame Screen Doors are of highest quality, made from seasoned wood, with joints mortised, glued and wedged. Higgin Doors are made in many woods; 100 percent vertical grain Sitka spruce, plain oak, quartered oak, walnut, mahogany, etc. Wire cloth, usually 16-mesh bronze antique finish, is held



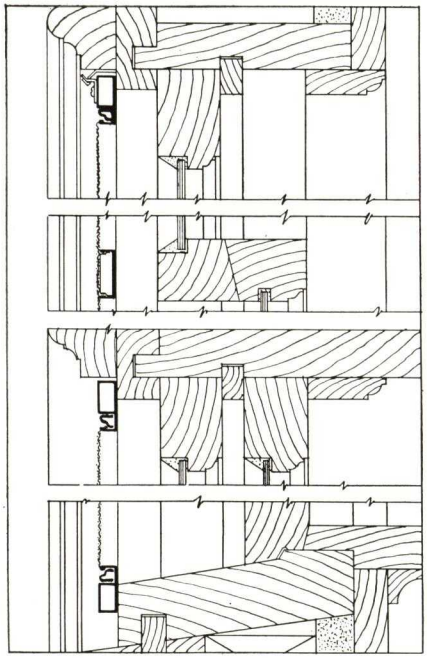
firm and taut in a groove in frame by means of a rattan spline, no tacks or staples. Cover moulds are neatly mitred and fastened with brass brads.

Higgin Doors may be equipped with ribbon grille, flat or quarter twist, attached directly to door or to channel frame. A full line of screen door hardware is carried.

Screen Equipment for Horizontally Pivoted Steel Sash

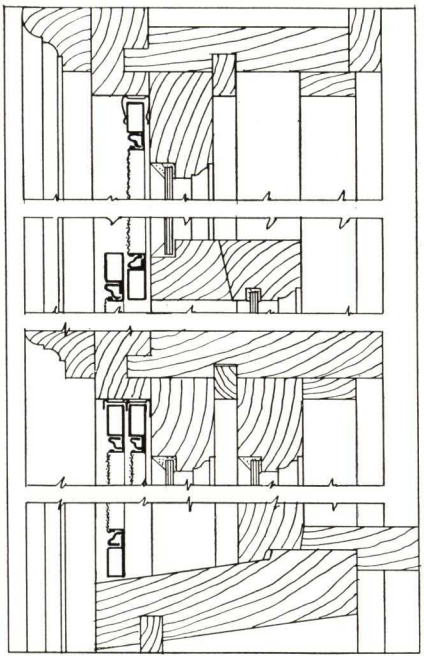


Higgin flat screen equipment for horizontally pivoted steel sash ventilators is simple and strong in design. A straight metal frame screen is placed at the top of the opening on the outside and a like screen at the bottom on the inside. These screens set in angle frames which are permanently attached to the window frame with machine screws. Metal contact rolls are attached to ventilator at the center, closing up the spaces between the ventilator and screens at all times, no matter at what angle the ventilator may be set. Rolls and angles become a permanent part of the window, but screens can easily be removed and replaced. Higgin Equipment is adaptable to any type or make of horizontally pivoted sash.



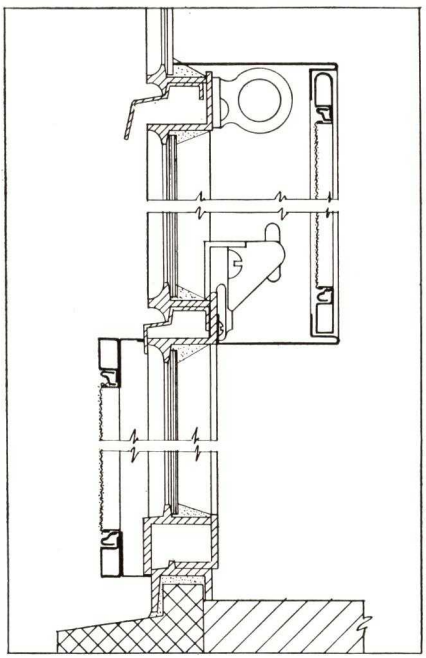
Top Hung Screens

Above: Double hung window with top hung metal frame screens. Higgin Equipment No. 2322. Screen is hung on No. 458 metal hangers. Equipment No. 2320 is similar but has pivots (one operative) instead of hangers. Fasteners at sides may be trigger operated mortise latches or spring bolts (see Page 2), the latter being required for metal windows.



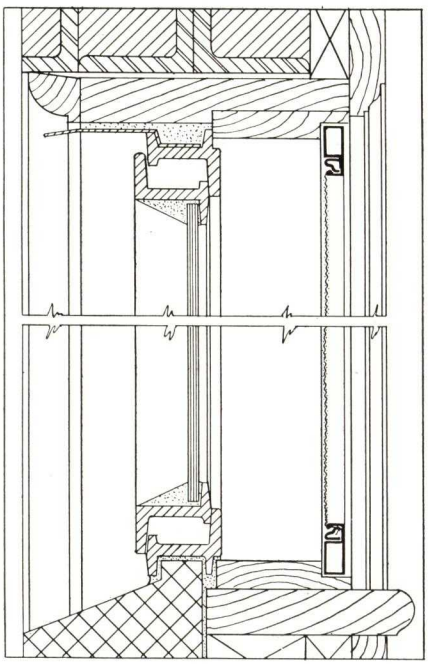
Vertical Sliding Screens

Above: Double vertical sliding screen Equipment No. 210 used to cover double hung windows. While wood is here indicated, the equipment is adaptable to metal. For institutional work concealed locks may be provided in meeting rails. Single screens to cover lower sash only, can also be furnished. These are half sliding screens (Equipment No. 2101). Guides are full height.



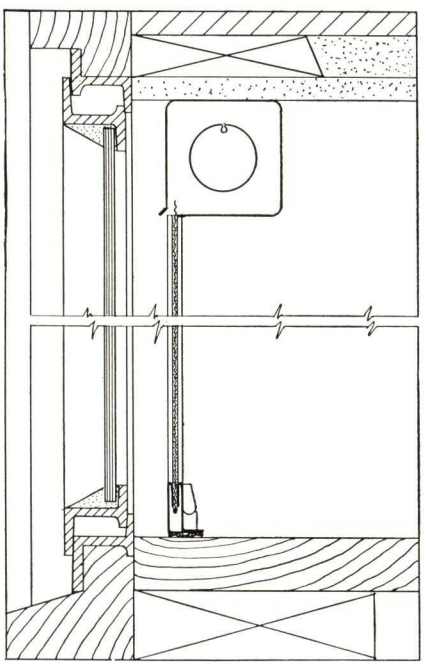
Screens for Projected Sash

Above: Higgin screen Equipment No. 2516 for projected out and No. 2503 for projected in type steel sash. For projected out sash, metal boxes deep enough to clear sash hardware are furnished to receive screens, which are top pivot hung and held at sides with spring bolts. For Projected In sash a flanged screen is attached to window with spring bolts and special keepers.



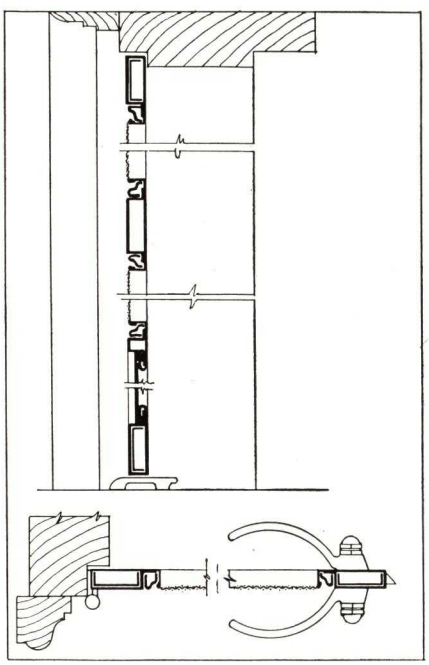
Side Hinged Screens

Above: Inside side hinged screens. Screens have fixed and operative pivots, latches, astragals, etc. Other equipment for same type of window: Horizontal sliding screens, double side hinged screens, stationary screens for use with underscreen operators.



Rolling Screens

Above: Higgin rolling screens are especially recommended for out swinging casements. The screens are adaptable to almost any head, jamb or sill condition. Mostly, rolling screens fasten to jambs, but Higgin Equipment 5070 is especially designed to fasten directly to steel casements.



Metal Door Screens

Above: Section through Higgin Light Section steel or Bronze frame Screen Doors. This door with Paneled bottom rail, bronze hinges and mortise lever latch, reinforced stiles and rails is very attractive in appearance and substantial, but should not be used for openings where traffic is heavy.

KANE MANUFACTURING CORPORATION

Manufacturers of "Kane Quality" Insect Screens, Venetian Blinds, Lightproof Shades, Weather Strips

MAIN OFFICE AND FACTORY

KANE, PA.

SALES OFFICES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

What "Kane Quality" Means

"Kane Quality" Products are the result of more than 45 years' experience in building strong, time resisting window and door appurtenances. These products are distributed throughout the country by competent representatives who are well able to advise intelligently about their uses and suitability under various conditions. These representatives will be glad to estimate any job without obligation.

SINCE "KaneQuality" 1890

"KANE QUALITY" RUSTLESS INSECT SCREENS AND SCREEN DOORS

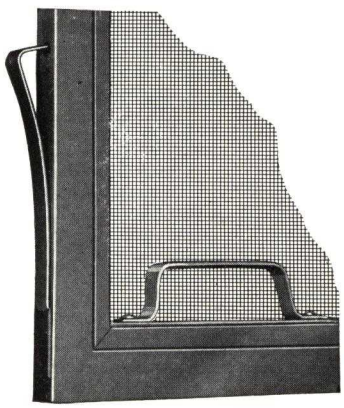
A Type for Every Purpose

"Kane Quality" Screens are made to fit perfectly—thereby assuring absolute protection. They are unusually durable, reliable and, above all, economical. Surprisingly easy to operate under all conditions. Light, yet substantial, they are readily removed and replaced.

Screen cloth is woven of bronze, aluminum, monel or copper in various meshes and gauges, as required. The standard, and most used, is bronze in 16-mesh .0113-in. thick wire, which is impervious to corrosion and unusually strong.

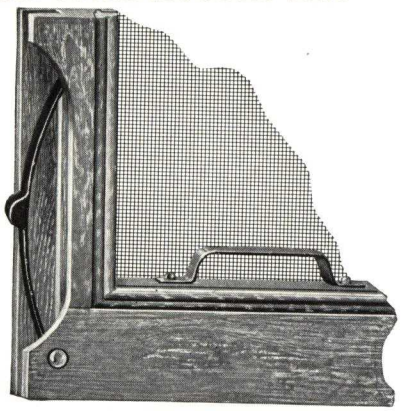
"Kane Quality" Screens can also be furnished in extruded aluminum.

Metal Frame Window Screens and Screen Doors



Frames are rolled from the best grade of galvanized cold rolled steel, bronze or aluminum. Rigidity and resistance to torsion stresses are assured by the use of tubular frames, neatly mitered and well reinforced at the corners when required. Steel screens are finished in baked enamels, of color as selected.

Wood Frame Window Screens and Screen Doors

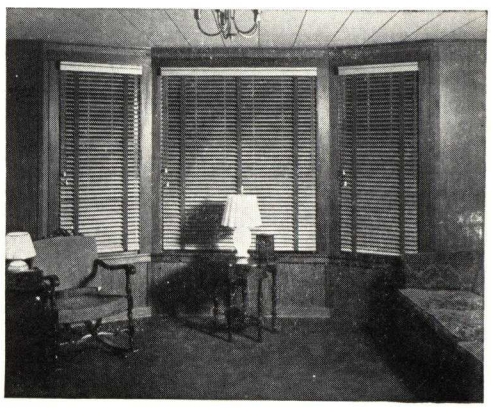


Frames are made from properly seasoned and kiln dried Eastern White Pine (Pinus Strobus). The standard thickness for window screens is $1\frac{3}{16}$ in. and for doors 1⅛ in. They have full mortised and tenon joints, held securely with waterproof glue. They are, also, made from selected domestic or imported woods, designed and finished to meet architect's details. Only the highest type of pure white lead or zinc and pure linseed oil is used in the finishing of wood screens.

Roll Screens

Ruggedly built for long, trouble-free service. As easy to operate as a window shade. The screen fabric is heavy lacquered 16-mesh Anaconda bronze wire and withstands the rolling action without breaking. Readily installed in homes already built. In new buildings, the roller box can be completely hidden.

"KANE QUALITY" VENETIAN BLINDS



Precise and easy mechanical operation, carefully built and installed by skilled workmen. Slats are made of genuine Port Orford Cedar. Head, tilting and bottom bars are neatly moulded and made from straight-grained White Pine, free from any defects.

They are furnished in any desired color, as selected, or in natural or varnished finish.

"Kane Quality" Venetian Blinds are operated by a combined tiltor and automatic cord stop. They can be furnished with channel guides of steel, bronze or aluminum.

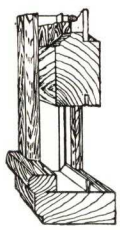
Members of the National Venetian Blind Guild

"KANE QUALITY" SKYLIGHT BLINDS

For controlling light and the hot rays of the sun in skylight and light wells in offices, factories, schools, etc. Slats are thoroughly dried White Pine 2⅞ in. wide, smoothly finished and with end slots for quick assembly. Operated easily and positively by our new worm and gear tilting device with steel sprocket.

"KANE QUALITY" LIGHTPROOF SHADES

For X-ray, projection and photographic development rooms and wherever a *complete* obstruction of light is required.



Shade material is Pantasote, a treated fabric, surfaced both sides. Absolutely opaque, non-inflammable, always soft and pliable. Securely fastened in bar groove by a metal spline. Roller has extra heavy, oil tempered coiled spring.

"KANE QUALITY" WEATHER STRIPS

"Kane Quality" Metal Weather Strips are made in zinc or bronze and all the various types, such as plain ribbed, corrugated rib and interlocking. For doors they include extruded sills with hook strips as required.

"Kane Quality" Weather Strips effectively keep out air and dust. They are sold, installed and served by accredited distributors and representatives.

16
63

JOHNSON

WINDOW SCREENS

JOHNSON METAL PRODUCTS COMPANY -- ERIE, PENNA.

A Johnson Screen FOR EVERY REQUIREMENT

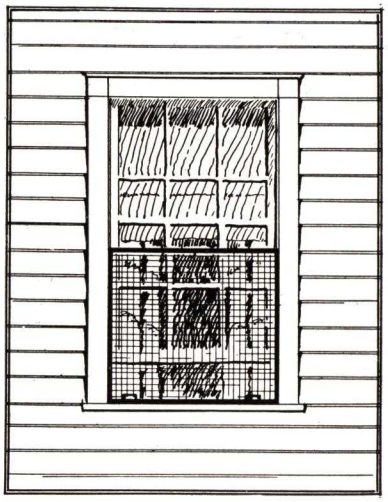
Johnson Screens are furnished custom-built in a wide variety of sturdy types to meet the demands of any window, door or porch installation. Material for their frames may be galvanized or stainless steel, aluminum or bronze. Sixteen mesh .0113 bronze wire cloth is standard, but other commercial weaves are supplied when individual tastes or special conditions dictate.

Materials used in the manufacture of Johnson Screens are the best the market affords. They are fabricated in the most modern of screen factories—and by artisans of many years experience who have furnished over a million screens for many of America's finest public buildings, as well as for thousands of the most comfortable homes.

There is a large variety of conditions under which screens must be installed. They vary to some extent with the type of screen frame to be used but particularly are dependent upon the style of window, whether wood or metal sash, the type of hardware chosen, the expected use of drapes, Venetian blinds, flower boxes, and other accessories.

For conditions out of the ordinary and other than those described below, architects are invited to refer their specific problems to Johnson Engineering Department which is maintained to aid in the solution of these problems.

Sliding Screens



The customary method of installing screens is in channel guides to slide either vertically or horizontally. For double hung sash vertical sliding screens are the traditional application of screens to windows.

No limitations regarding awnings, shutters, Venetian blinds or other accessories to windows are encountered with vertical sliding screens. Economical practice provides a screen for only one-half of a double hung window—the screen placed ordinarily over the lower sash. Full length channel guides allow raising to the upper half for cleaning windows, or when otherwise desired. The screen makes fly-tight contact with the meeting rail—thus allowing its use properly in either position. When full coverage of a double hung window is desired, two screens, sliding in double channel guides, or, for multiple sash, multiple screens and guides, are supplied.

The installation detail of Johnson sliding screens is given on page 8. Guides are rolled channels of steel, bronze or aluminum, and those for one side are shallower than the other, making insertion of the screens and their removal easier. The springs that slide with the screens in the channels are tempered to endure a lifetime of proper service. Handle lifts on the inside of the screens make operation easy.

Top and Side Hung

Screens to swing from the top may be supplied either with pivots or top hangers. These are particularly suited for double hung windows where a single screen is desired.

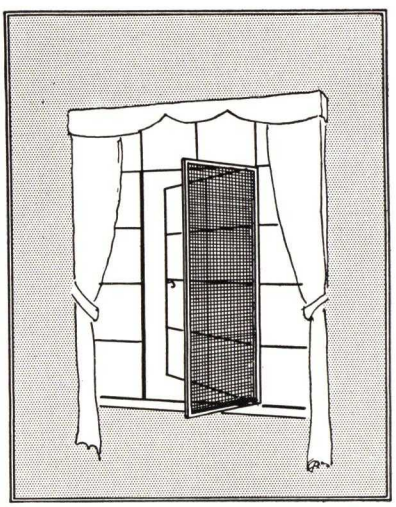
A Top Hung Screen has the further advantage that it is particularly easy to install and take down. With top hangers, all that is required is to slip two metal loops over their corresponding hooks on the upper part of the window frame, and the screen is in place. Pivot bolts on the top, to fit sockets in the jamb, may be used as alternate supports. These are held in place by compression springs, controlled by small finger levers. Rods may be hinged to the side frames to hold the screen open while washing windows.

Side Hung Screens likewise give full window area coverage and can be used in practically every type of installation except where there are shutters on the windows.

This type is sometimes preferred because, when opened, the entire screen is away from the window. Side Hung Screens are the most satisfactory type for use with crowned top, arched or special pattern windows. On double hung windows, screens open outward. For casement windows that open outward, this type screen is installed on the inside and swings inward. However, where window boxes are used, neither this type, nor the Top Hung Screen may be installed to swing out.

Johnson Side Hung Screens may be attached by hinges, or by pivot bolts that snap into recesses at the top and bottom of the window frames. This last type is usually preferred for its greater ease of removal and installation.

For unusually wide or double casement windows, the Johnson Double Side Hinged or Side Pivoted Screen is recommended. The extra sturdy Johnson frame construction permits an unusually large screen area, without the necessity of using unsightly external braces to keep the frames from flexing.

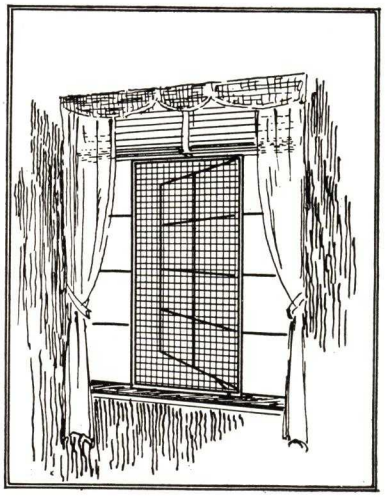


As in the case of Single Side Hung, these screens can be mounted on inside of casement windows that open outward.

On most windows using this type of installation, the left-hand section is held stationary by a lock bolt. Thus —when the spring bolt locking the two sections together is released, only the right-hand portion swings open. A narrow astragal is incorporated in the free moving section to cover the light line where the two screens meet.

This type of screen can also be attached by hinges instead of spring pivot bolts. As in the case of Single Side Hung Screens that open outward, these screens are especially suitable for use with crowned top, arched or special pattern windows not obstructed by shutters or window boxes.

Stationary Screens



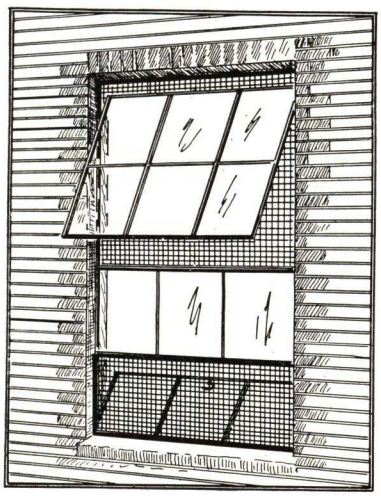
The most satisfactory method of making insect-tight inswinging casements is by stationary screens. Regardless of the type of opening—circular, triangular, bowed, arched or crowned—it can be fitted exactly with a Johnson Stationary Screen. As every Johnson Screen is custom-made to your exact specifications, special designs present no particular problems.

Johnson Stationary Screens are held in place by spring bolts, that will not rust or stick—even after being exposed to the weather all year. On some installations, such as basement windows, or ventilation ducts with metal frames, where permanent all-year installation is desired, the screens can be screwed to the window frames. Special wire guards are often used in addition to standard wire cloth on installations of this type.

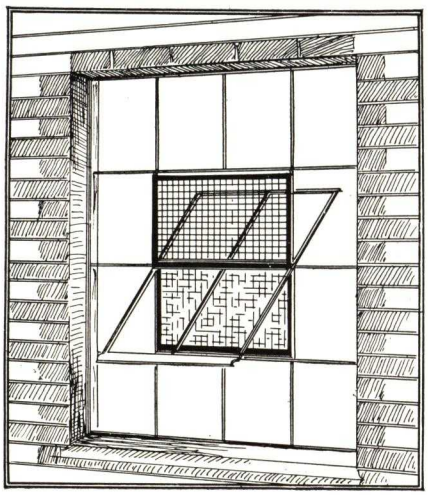
Screens for Industrial Windows

Installation of screens is frequently desired in offices, restaurants, factories, auditoriums, dairies and other places where sash other than the ordinary residential types are found.

The Johnson Company has developed practical methods of screening all the standardized makes of steel and wood sash—whether center pivoted, transom type, extension type or projected.



The illustration below at the left indicates one such special application to a steel horizontal center pivoted sash. The floating baffle at the axis maintains contact at all degrees of opening of the leaf, keeping the vent fly tight under all circumstances. Special clips, easily attached to hold the screen in position, do not interfere with quick and convenient removal of the screens when so desired.



Screened Porches and Doors

Metal frame screen porch enclosures are almost universally preferable to those of wooden structure because of their minimum interference with light and ventilation. While strength and permanency are not sacrificed, artistic design and harmony can be achieved through the use of the frames that are included in the wide Johnson Line.

Whatever the designs of the porch openings, they may be rendered insect-tight with Johnson Custom-Built Screens. Because of the ruggedness inherent in Johnson Frames, the braces which exaggerate the "shut-in" feeling on a porch are seldom needed. Details of construction may be had on reference to the factory.

Johnson has a complete line of metal frame screen doors. They are similar in design to the Cap Type Screen Frames. A typical cross-section is shown on page 11. Because of their sturdiness, they require a minimum of bracing, and are noted for the continuous wear and punishment they will endure.

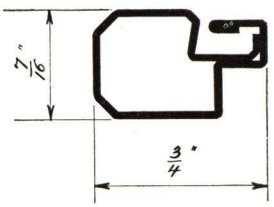
Types of Johnson Screen Frames

DUREVER

For low cost general housing, no other metal frame screen gives more satisfaction than the Johnson Durever line. Every inch and a quarter of the narrow tubular frame is spot welded—thus giving it the benefit of a closed cross section. The narrowness of the frame adds as much as 10% to the ventilating area in many cases.

The Stainless Steel Durever is rapidly displacing larger frame screens of other materials. Though low in cost, because of the minimum material requirement of this type frame, yet, because of the inherent greater strength of stainless steel, this type will endure a lifetime of all year round service without painting or reconditioning.

Construction details on page 6.



Full Size Section Durever Screen

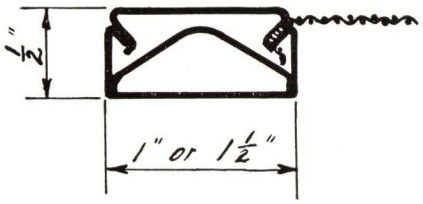
Materials: .020—18&8 Stainless Steel; .023 Galvanized Steel
Finishes: Stainless—Pickled Satin or Natural Bright or painted. Galvanized—Enameled in electric ovens
Size: Without braces up to 36x48; with braces up to 48x72
Rewireable: By respringing of locking lip over cloth
Hardware: To adapt screen to any type of opening

CAP OR "C" TYPE

This type is the highest quality manufactured. The frame consists of a ruggedly braced frame member, and a top cap which snaps into the frame body—holding the screen cloth in position. The patented Johnson internal truss brace, which runs the full length of the frame and is locked by spot welding every inch or by continuous soldering, makes this type the most substantial and the strongest tubular window screen available.

All corners are reinforced by metal inserts, welded or soldered into the frame. Two-tone finishes may be obtained by caps of one color and frame members of another.

For construction details see page 7.



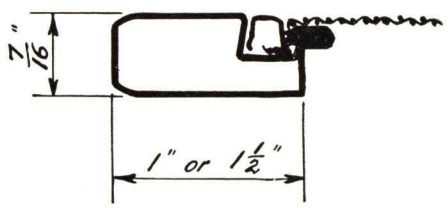
Full Size Section Type "C" Screen

Materials: .020—18&8 Stainless Steel; .026 or .032 Galvanized Steel; .026 or .032 Bronze; .032 or .040 Aluminum
Finishes: As Durever type in steel; Bronze, natural or oxidized. Aluminum, brush finish
Rewireable: Most easily accomplished of any rewireable screen, by resnapping cap over wire cloth
Hardware: All types for any installation

SPLINE OR "S" TYPE

This type is manufactured with the same precision and craftsmanship as the Cap Type. Because this type is not internally braced it is somewhat lighter in weight. The tubular construction, locked its entire length, imparts unusual rigidity to the frame. Johnson Spline Screens positively will not flex or bend out of shape when in use. Corners are made unbreakable by internal braces which are welded or soldered in place. This type lends itself particularly to Aluminum frames when atmospheric conditions justify.

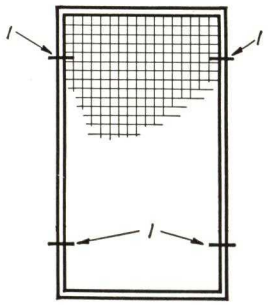
Construction details on page 7.



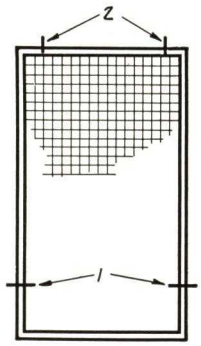
Full Size Section Type "S" Screen

Materials: .026 or .032 Galvanized Steel; .026 or .032 Bronze; .032 or .040 Aluminum
Finishes: Same as Cap Type
Rewireable: By removal and replacing of spline
Hardware: All types for any installation

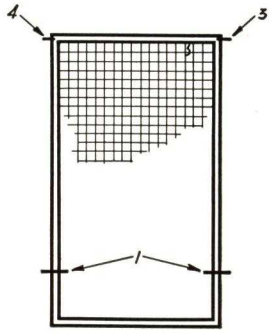
Standard Types of Johnson Screens



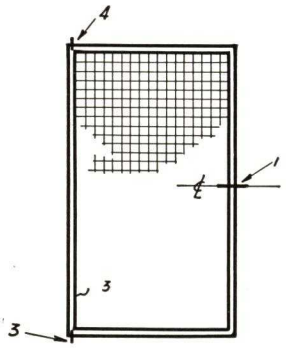
STATIONARY



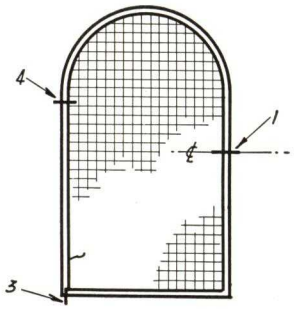
TOP HUNG



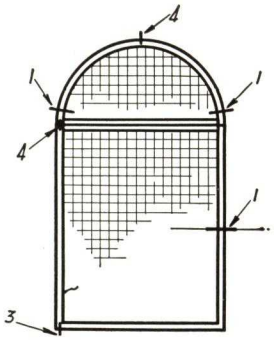
TOP PIVOTED



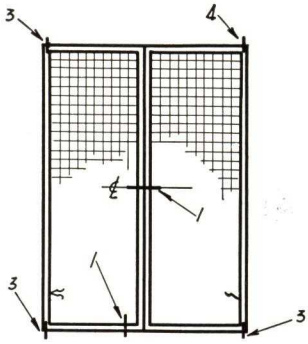
SINGLE SIDE PIVOTED



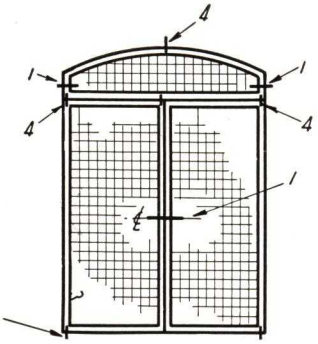
CIRCULAR HEAD
SIDE PIVOTED



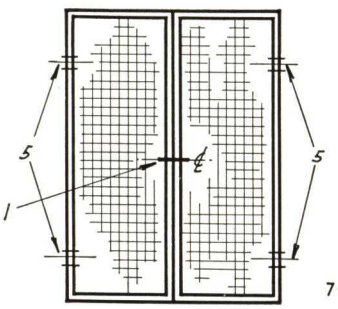
SIDE PIVOTED WITH
CIRCULAR HEAD
FIXED TRANSOM



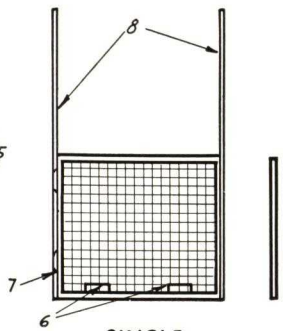
DOUBLE SCREEN
LEFT HAND STATIONARY
RIGHT HAND PIVOTED
ASTRAGAL ON L.H. SCREEN



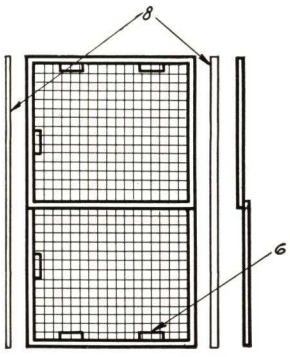
DOUBLE SIDE PIVOTED
WITH SEGMENTAL HEAD
– FIXED TRANSOM
ASTRAGAL ON L.H. SCREEN



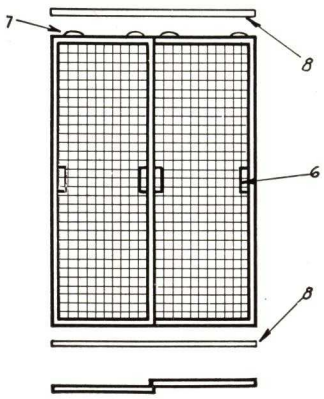
DOUBLE SIDE HINGED
ASTRAGAL ON L.H. SCREEN



SINGLE
VERTICAL SLIDING



TWIN
VERTICAL SLIDING

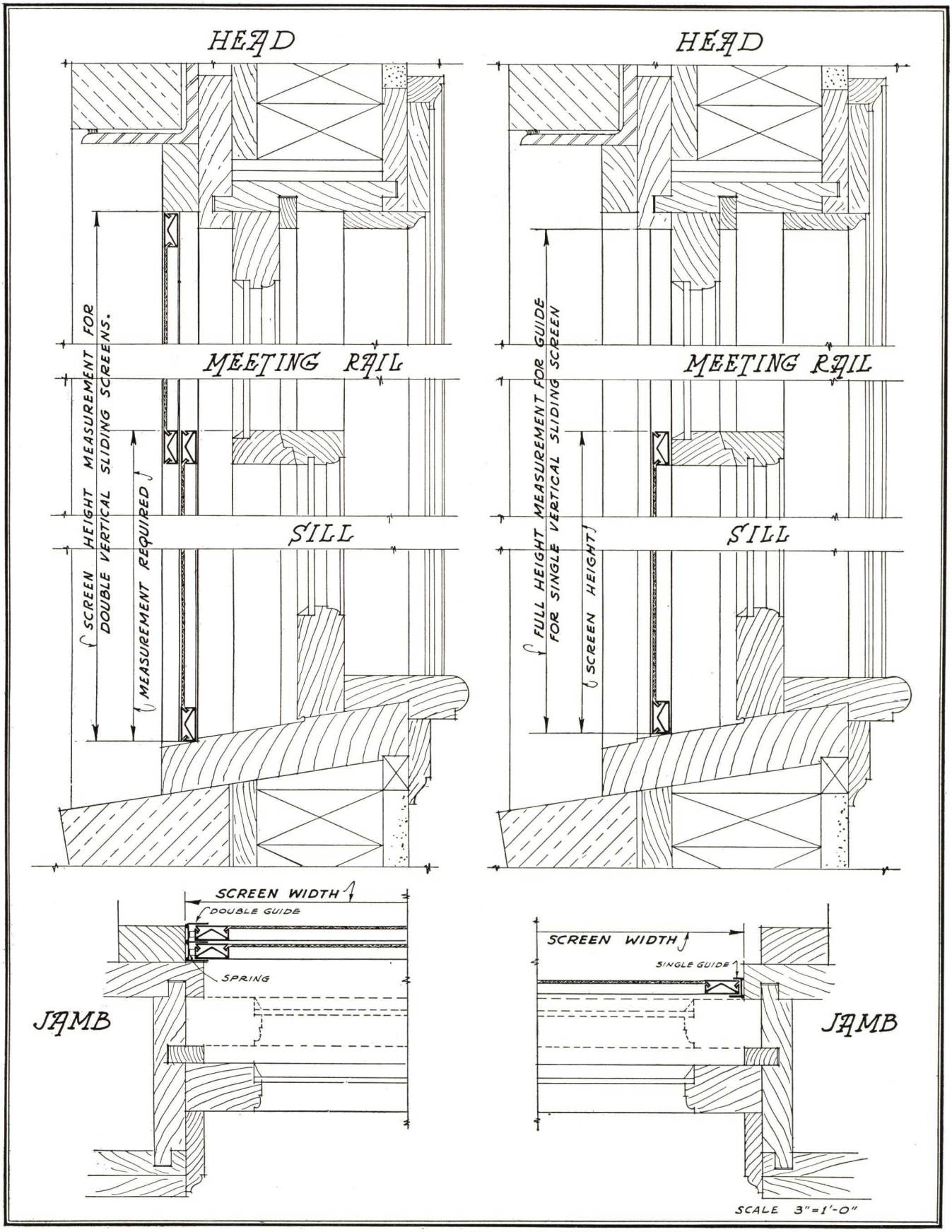


DOUBLE
HORIZONITAL SLIDING

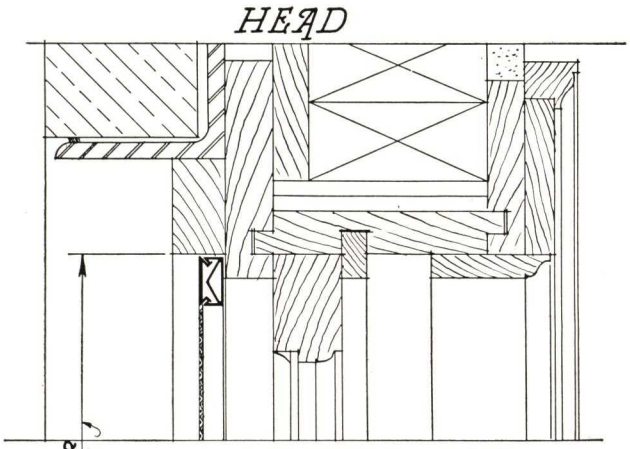
1 SPRING BOLTS
2 TOP HANGERS
3 MOVABLE PIVOTS
4 FIXED PIVOTS
5 HINGES
6 HANDLES
7 SPRINGS
8 GUIDES

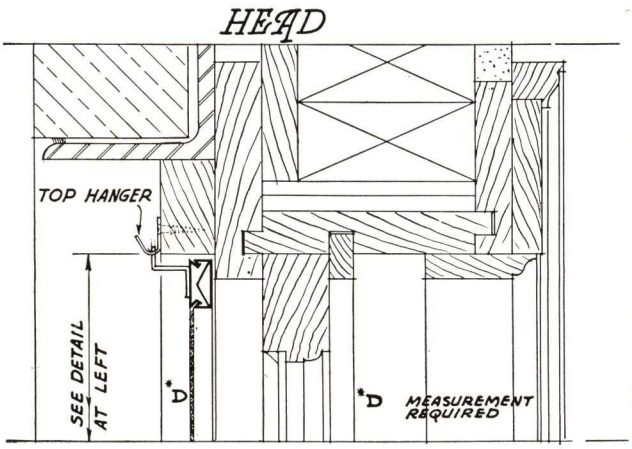
CARD #1378

Installation Details of Johnson Screens

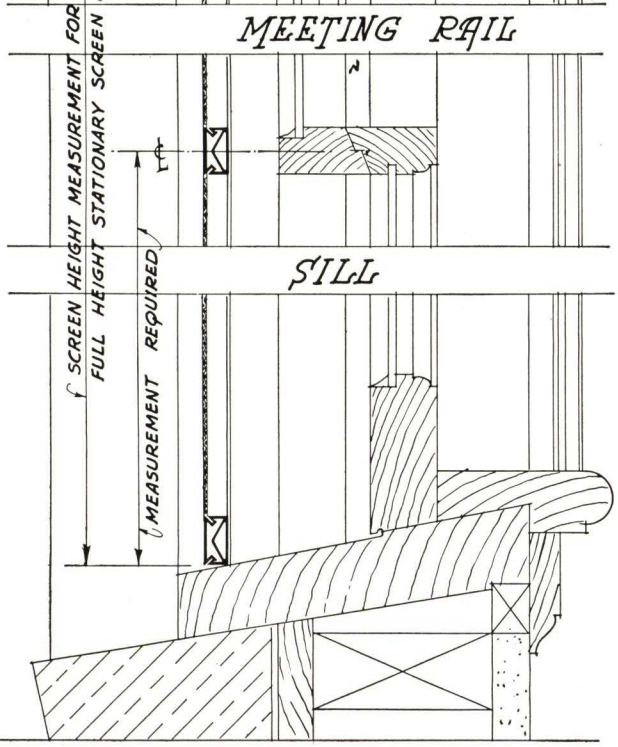


Installation Details of Johnson Screens

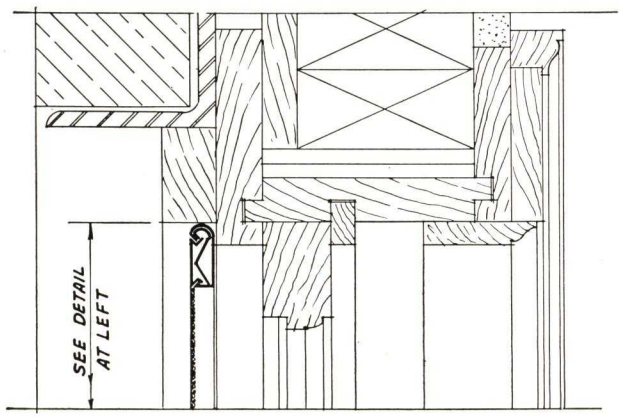




HEAD DETAIL ABOVE SHOWS APPLICATION OF TOP HUNG SCREENS THERE ARE VARIOUS METHODS TO SUIT THE VARIOUS HEAD CONDITIONS. WRITE FOR INFORMATION.



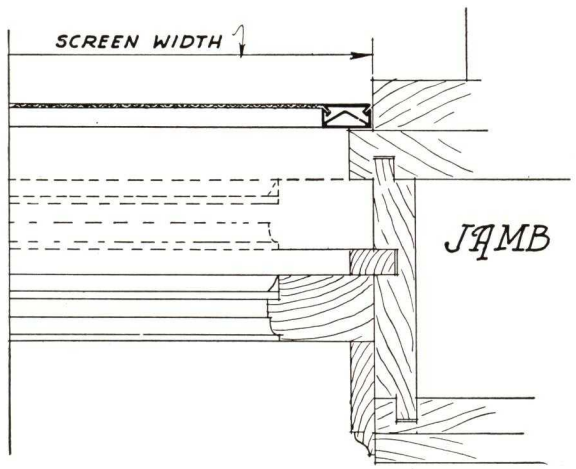
HEAD DETAIL BELOW SHOWS APPLICATION OF TOP PIVOTED SCREENS



VERTICAL SECTION SHOWN ABOVE SHOWS A FULL HEIGHT STATIONARY SCREEN. (WHILE TYPE "C" FRAME IS SHOWN, THE APPLICATION OF OTHER JOHNSON SCREENS IS SIMILAR.)

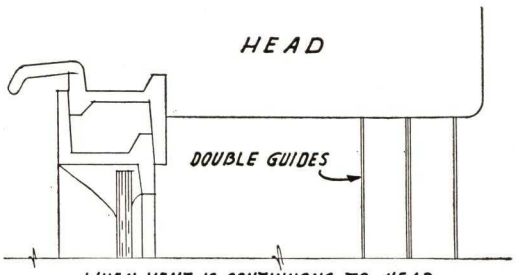
THE TOP HUNG AND TOP PIVOTED SCREENS SHOWN ABOVE AT RIGHT ARE BOTH FULL — SIZE SCREENS AND DIFFER ONLY AT THE HEAD.

THE REWIREABLE BRACE AT MEETING RAILS OF SAME CONSTRUCTION AS SCREEN FRAME. FURNISH ON SCREENS OVER 54" AT ADDITIONAL COST. ROD BRACE MAY BE SUBSTITUTED.



SCALE 3" = 1'-0"

Installation Details of Johnson Screens



WHEN VENT IS CONTINUOUS TO HEAD AND REVEAL, DEEP, AS SHOWN ABOVE FITTING PIECE IS NOT REQUIRED.

SUGGESTED METHODS FOR SCREENING NON SCREEN TYPE CASEMENTS

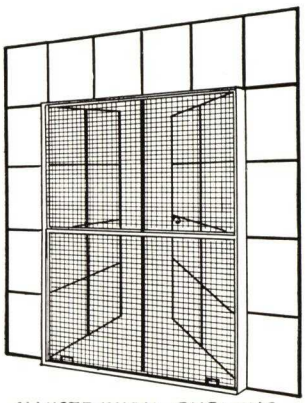
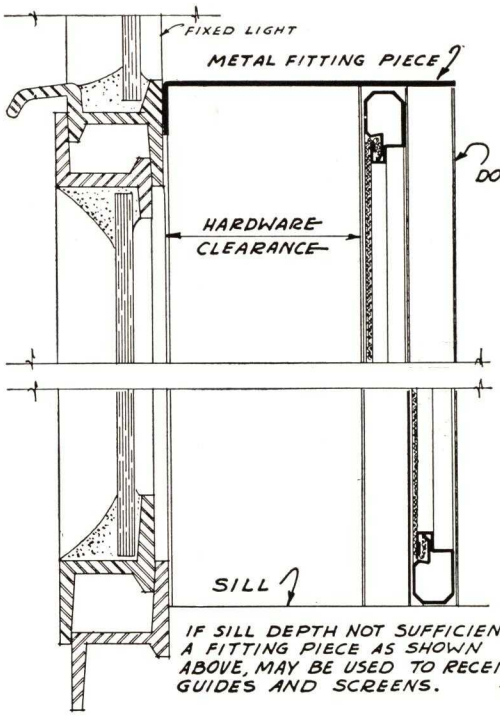
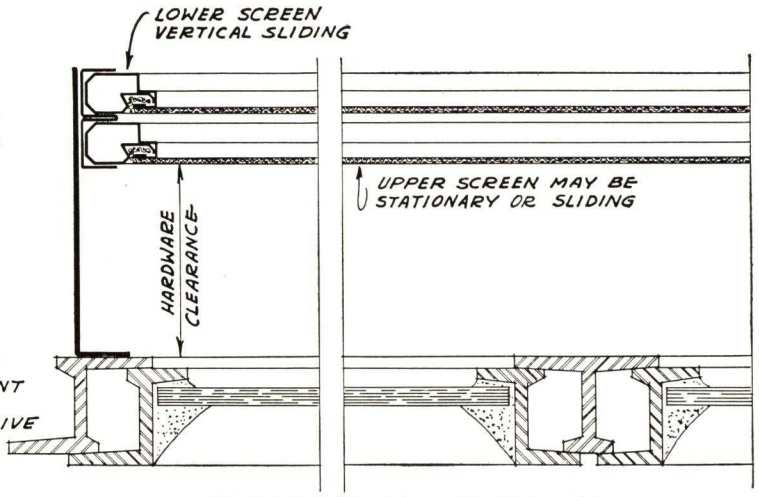


ILLUSTRATION SHOWING DOUBLE SCREENS AND BOX (AS DETAILED) APPLIED TO NON SCREEN TYPE CASEMENT WINDOWS



IF SILL DEPTH NOT SUFFICIENT A FITTING PIECE AS SHOWN ABOVE, MAY BE USED TO RECEIVE GUIDES AND SCREENS.

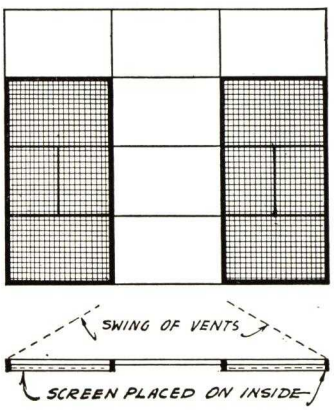
VERTICAL SECTION



HORIZONTAL SECTION
(VIEWED OUTSIDE LOOKING IN)

STATIONARY OR SIDE HUNG SCREEN APPLIED TO "HOUSING TYPE" CASEMENT WINDOW

THE SCREEN HAS A SLIDING ACCESS DOOR WHICH PERMITS OPERATION OF VENTS WITHOUT THE DISTURING OF SHADES, CURTAINS, ETC.



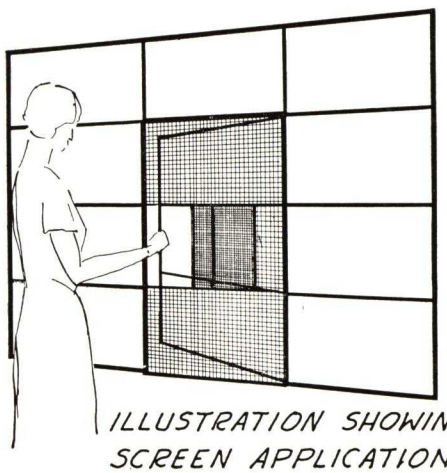
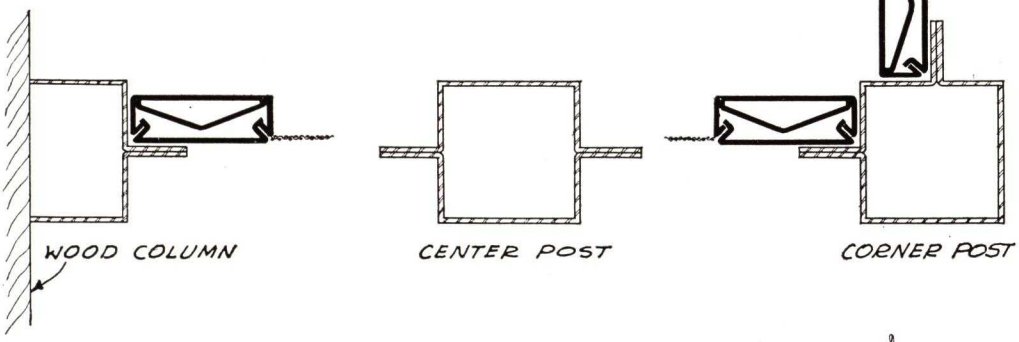


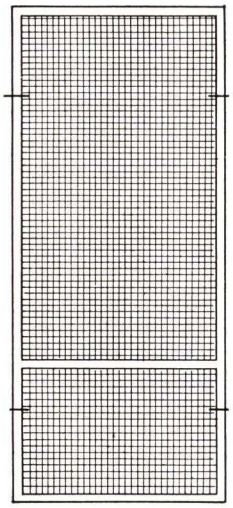
ILLUSTRATION SHOWING SCREEN APPLICATION

Johnson Porch and Door Screens

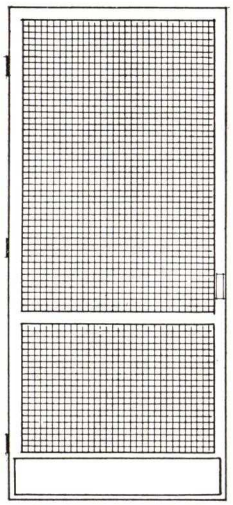
SUGGESTED METHOD OF SCREENING THE PORCH

THE 1/2" x 1½" TYPE "C" FRAME IS BUILT UP INTO PANELS. NOTE ELEVATION AT RIGHT. STANDARD SPECIFICATIONS APPLY. REGARDING THE STANDARD POST SECTIONS SHOWN BELOW, GAUGES ARE DETERMINED BY SIZES.





ELEVATION

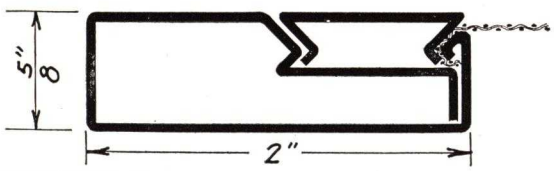


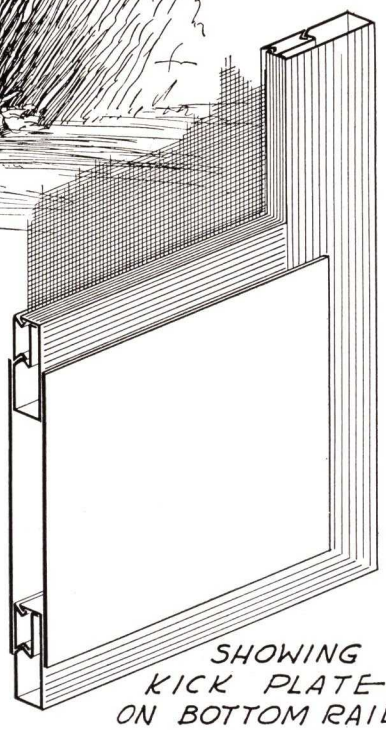
ELEVATION

SPECIFICATION

STANDARD 5/8"x2" DOOR FRAMES ARE FURNISHED IN .032" STEEL OR .032" BRONZE MATERIAL. STEEL FRAME TO RECEIVE ONE COAT BAKED ENAMEL AND ONE COAT FINISH ENAMEL. THE BRONZE TO BE NATURAL FINISH AS STANDARD. WIRE CLOTH TO BE 16 MESH, .011" DIAMETER BRONZE. OTHER MESHES AND GAUGES AVAILABLE AT EXTRA COST. 1/16" THICK, KICK PLATE TO BE STEEL OR BRONZE AS REQUIRED. ALL HARDWARE TO BE BUILT IN BRASS OR BRONZE AS REQ'D. VARIOUS WIRE GUARDS ARE AVAILABLE

FULL SIZE SECTION OF DOOR FRAME





SHOWING KICK PLATE ON BOTTOM RAIL
ONE QUARTER ACTUAL SIZE.

Typical Johnson Installations

New York Hospital, Cornell Medical Center, New York City
Amelia Earhart Putnam, residence, Rye, N. Y.
West Point Academy, West Point, N. Y.
Elbert Hubbard II, residence, Aurora, N. Y.
Washington Hotel, Washington, D. C.
Hillside Housing Project, New York City.
Lakeside Hospital, Cleveland, O.
Andrew Mellon, residence, Washington, D. C.
Shrine of the Little Flower, Detroit, Mich.
Cornell University, Ithaca, N. Y.
Campbell Soup Co., Camden, N. J.
Duke University, Durham, N. C.
Ford Motor Co., Detroit, Mich.
Jeremiah Millbank, residence, Port Chester, N. Y.
French Market, New Orleans, La.
Welfare Island Hospital Group, New York, N. Y.
Eleanor Ryan, residence, Washington, D. C.
Dixie Homes Housing Project, Memphis, Tenn.
U. S. Post Office, St. Thomas, Virgin Islands
Frederick W. Turner, Jr., residence, Midland, Tex.
Albrook Field, Canal Zone

Representatives in Leading Cities

JOHNSON METAL PRODUCTS COMPANY

MAIN OFFICE AND FACTORY ERIE, PENNSYLVANIA

New York Office, 101 Park Avenue

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NORQUIST PRODUCTS, INC.

FORMERLY JAMESTOWN SCREEN & MFG. CO.

Manufacturers of Metal and Wood Screens, Roll Screens Venetian Blinds

JAMESTOWN, NEW YORK

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

INSECT SCREENS for windows, doors and porch enclosures.

SPECIAL SCREENS for all kinds of residential, commercial and industrial steel sash.

ROLL SCREENS.

METAL FRAME STORM SASH.

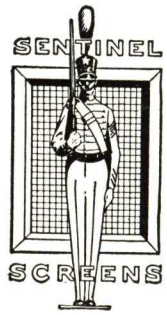
METAL FRAME SCREEN DOORS.

COMBINATION TYPE METAL DOORS with Interchangeable Screen and Glass Panels.

VENETIAN BLINDS.

Facilities

Small orders or large contracts are expeditiously handled entirely within our own plant. Our factory is large and well equipped for both metal and wood manufacture, with modern machinery for all requirements. This includes facilities for electro-plating, and for all the modern baked-on finishes.



Personnel

Our staff includes men of experience with progressive ideas who stand ready to assist and co-operate in working out special screening problems. When desired, our Engineering Department will prepare drawings for submission. Custom work is handled as readily as the more standardized type of product. Competent sales representatives are prepared to submit recommendations and estimates and to handle installation.

A COMPLETE LINE OF DOOR AND WINDOW SCREENS

Types of Screens

Stationary—single or multiple, either vertically or horizontally sliding—side or top pivoted—top hung—rolling—cage—special constructions for various types of residential, commercial and industrial steel sash—doors—enclosures—special purpose screens.

"Jamestown" Metal Frame Screens

The basic metal frame for window screens is especially pleasing in appearance with its smoothly moulded and symmetrical outline. It is $\frac{7}{16}$ in. thick by 1⅛ in. wide, rolled usually of bronze or electro-galvanized steel of .025-in. thickness in a double-tubular truss shaped construction to give extreme strength and rigidity. It can be furnished of .032 stock when so required. All corners are reinforced by tightly fitting interior corner angles extending into adjacent frame members and soldered.

The wire cloth enters the center of the frame and is locked against a flat surface by means of a resilient metal moulding. This is easily removed for rewiring.

Sliding screens employ the ribbed type of guide which engages a groove in the edge of the screen frame. This makes for smoother operation with less rubbing surface and consequent elimination of damage to finish. The tension springs are at all times concealed within the framing, preventing loss or damage.

Heavier Construction — For very large openings and for porch sections a ½-in. thick by 1½ or 2-in. wide frame is used. These are formed of .032 material and are of the side-wired tubular design with a removable tubular spline.

Special Requirements—Other frame constructions are available to meet unusual conditions or particular requirements such as for center-pivoted factory type, projected, casement and all other types of metal sash.

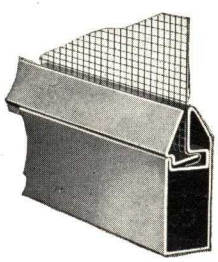
Metal Frame Storm Sash

The 1⅛-in. tubular frame can be glazed with double strength window glass and supplied as storm sash interchangeable with screens. For casement windows a special $\frac{7}{16}$ x ¾-in. tubular frame with embedded felt contact strip is usually furnished.

Wood Screens and Doors

We manufacture a full line in genuine white pine and in any of the fine woods, with three-coat enamel or stain and varnish finish. Bronze hardware is used.

104JT



Roll Screens

Two types are offered. Both have similar construction features but they differ in appearance and adaptation. They are of the highest quality spring-tension type in bronze or galvanized steel with accessible tension adjustment, weatherstripped tubular lift rail, bronze bearings, and other outstanding features.

Sentinel Type—This is used for most general purposes, with guides and square roll case suited for mounting on the surface or concealed by window trim.

Casement Type—Plaster jambs or stationary lights at side or above ventilators often make it desirable to attach roll screen direct to face of the steel casement sash. With hexagonal-shaped roll case and angle strips attached to the guides, this is accomplished in a very practical and attractive way.

Metal Frame Screen Doors

Bronze or steel frame screen doors are supplied in several types to meet specific requirements. All are carefully made and fully reinforced, with standard bronze hardware as regular equipment. Guards and special hardware are available also.

Light—For casement doors and occasional entrances. ½-in. thick with 2-in. wide stiles and cross rails, 3-in. top rails, 6-in. bottom rails, of 22-gauge (.032) stock with 18-gauge (.050) reinforcements.

Medium—For doors with light traffic. Construction is the same as for "Light" doors, except that they are ⅝-in. thick.

Heavy—For fine residences and average general use. ⅝-in. thick with 2-in. stiles and crossrails, 3-in. top rails, 6-in. bottom rails, of 18-gauge (.050) stock with 16-gauge (.062) reinforcements.

Extra Heavy—For severe service in public buildings. 1⅛-in. thick, 3¾-in. stiles and rails, 6-in. bottom rails, of 18-gauge (.050) stock with 16-gauge (.062) reinforcements.

For single-panel doors the bottom rails are regularly furnished 12-in. wide or as specified. All reinforcements are continuous in top and bottom rails and are concealed.

Combination Doors—Any of the metal frame doors listed can be furnished with interchangeable screen and glazed storm panels.

Venetian Blinds

Our blinds embody exclusive features of simplified head construction, with hardware of our own design and manufacture, including worm gear tilt and automatic cord lock. Slats are of basswood, either 2⅜ or 1¾ in. wide, beautifully finished in a variety of colors with Dupont Flintflex Enamels. Further details upon request.

ORANGE SCREEN COMPANY

Stainless Extruded Aluminum Frame Screens*—Bronze, Wood, Steel Frames and Roll Screens — Winter Windows, Wood or Metal Frames

MAPLEWOOD, N. J.

Aluminum Screens are Light, Strong and Rustless

Orange Extruded Aluminum Frame Screens are preferred on account of such advantages as lightness, rigidity and absolute freedom from rusting and staining the building. Their light weight and simplified construction make them easy to install and remove, and they require less storage space.

Orange
EXTRUDED
ALUMINUM SCREENS
Originators and Patentees

Estimating Service

We invite inquiry from owners, architects and builders. Our representatives located throughout the United States will gladly respond to any call for information and price data. (Name and address of nearest representative furnished on request.)

Details and Data for Screen Installations

We will furnish on request a set of standard details showing application of screens to all types of sash. We will detail special requirements to fulfill any unusual situation not included in our present standard sets.

DETAILS OF CONSTRUCTION

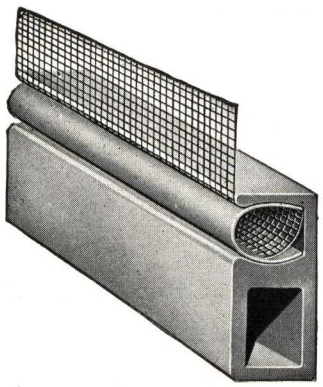


Fig. 1. Wire Locking Detail

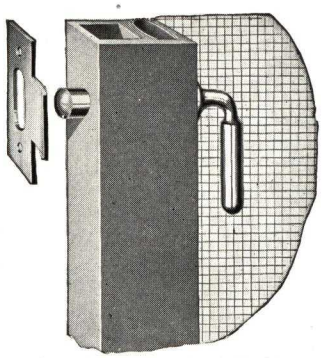


Fig. 2. Spring Bolt Detail

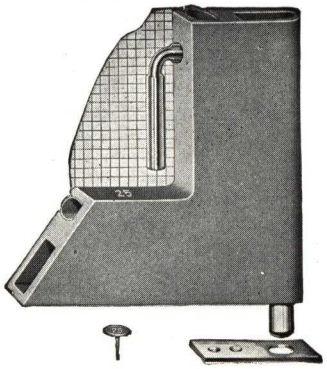


Fig. 3. Movable Pivot Detail

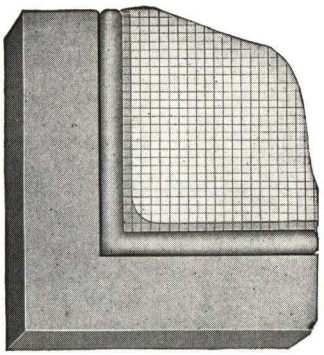


Fig. 4. Welded Corner Detail

Aluminum Screens

Orange Aluminum Screens consist of extruded aluminum frame sections formed by our exclusive dies, and gunmetal finish aluminum screen cloth rigidly fastened to the frames in the manner illustrated above. The gunmetal finish has a darkened effect and eliminates glare.

Welded Corners—Smooth, flawless welding of all corners forms the frame into a one-piece, rigid structure.

Easy to Rewire—Removable mouldings tightly lock the aluminum screen cloth in the frames.

Wire—16-mesh gunmetal finish aluminum wire, .0126-in. diameter. Also furnished in heavier gauge—.015-in. and if required bronze, monel and stainless steel screen cloth may be used.

Door Guards—For lower panels of doors we supply guard screens of flat aluminum strips ¼-in. wide, 1½-in. mesh. We also furnish grilles of individual design.

Bronze Frame Screens

Orange bronze frame screens are made from seamless bronze tubing which accounts for their greater rigidity and strength. They are furnished in natural, wire brush or lacquered finishes. Antique bronze wire in .011 or .0115-in., 16-mesh is standard equipment. All corners are reinforced and soldered.

Orange seamless bronze screens are furnished for all types of sash. They are also well adapted to enclose porches and for fine screen doors.

Frame Members of Aluminum and Bronze Screens

Window Screens — $\frac{7}{16}$x⅝-in.** up to 18 sq. ft. frames. $\frac{7}{16}$x1-in. up to 24 sq. ft. frames. $\frac{7}{16}$x1½-in. over 24 sq. ft. frames.

Door Screens — Light weight $\frac{7}{16}$x1½-in. sections. Medium weight ⅝x2-in. sections. Heavy weight ⅞x2½-in. sections. Extra heavy 1⅛x3¾-in. sections.

Porch Screens — $\frac{7}{16}$x1-in up to 24 sq. ft. frames. $\frac{7}{16}$x1½-in. over 24 sq. ft. frames.

*Full approval has been granted by the Investigating Committee of Architects and Engineers. Report furnished on request.

**This size furnished in extruded aluminum only. Bronze frames for these smaller openings are $\frac{7}{16}$x¾-in.

ORANGE SCREENS ARE ADAPTABLE TO ALL TYPES OF WINDOWS

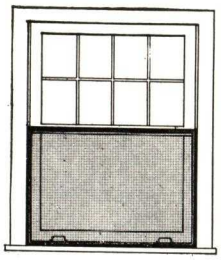


Fig. 1

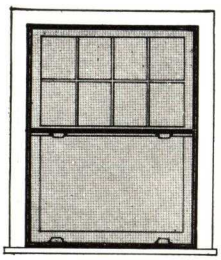


Fig. 2

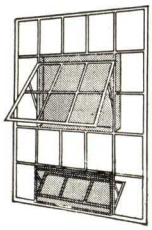


Fig. 3

Figure 1 indicates an outside sliding screen on a double hung window. Screen is easily raised or lowered and may be used at either top or bottom of the window. Thus at low cost complete ventilation may be insured by raising one window in a room and lowering another. (Illustrated on Detail Plate No. 2 furnished on request.)

Figure 2 shows the double sliding screen on a double hung window—a convenient method of providing access to blinds, shutters, awnings or flower boxes. It provides full length screen advantages as well. (Illustrated on Detail Plates Nos. 3, 5 and 6, furnished on request.)

Figure 3 indicates the "Projected In" type, screened with an outside screen hung at top and fastened at sides by spring catches. Flange member extruded as part of aluminum screen frame is for clearance of the "kickout" of sash bottom rail. "Projected Out" sash, if equipped with "under screen" operator, is screened with a flat screen; if not equipped, a box frame is provided and attached to sash frame. Screen is usually top hung within the box frame. (Illustrated on Detail Plates Nos. 17, 22, 23 and 24, furnished on request.)

Figure 4 illustrates the flat screen attached to the sash which has "under screen" operators. All makes of casement sash may be screened with a Standard Orange Aluminum Screen. When you select windows insist upon Orange Extruded Aluminum Screens. (Illustrated on Detail Plate No. 25, furnished on request.)

Figure 5 shows the double hung sash, wood or metal, with outside top hung screen. A spring catch on each side holds the screen securely in place. (Illustrated on Detail Plates Nos. 2, 4 and 28, furnished on request.)

Figure 6 the horizontal pivoted sash is screened with one screen inside at the bottom; one screen outside at the top. The metal rolls at the centre make contact between sash and screen; the angle frame around each screen holds it securely in place. Both are standard equipment for this type of sash regardless of make. We also furnish special locks and chains where required at slight extra cost. (Illustrated on Detail Plate No. 16, furnished on request.)

Fig. 4

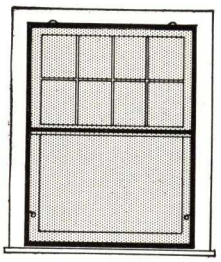


Fig. 5

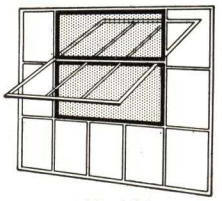


Fig. 6

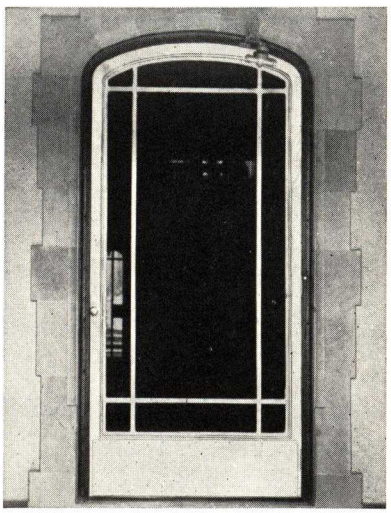
FINE SCREEN DOORS

In Aluminum, Bronze and Wood

Orange Extruded Aluminum Doors and Orange Seamless Bronze Doors are designed with care and precision and built by craftsmen with long experience. Each aluminum corner is carefully welded. Each bronze corner is heavily reinforced and soldered for added strength. The rails are constructed to hold the wire in place. These doors are impressive and add richness and quality to the building.

Orange Wood Screen Doors are attractive because they are carefully designed and well made. Each door is designed to correspond with the architecture and design of the adjacent door. Cross rails will line up, hardware will conform, stain or paint will match.

Wood Doors are mortised and tenoned, then glued with waterproof glue. After being wedged together in large clamping machines they are pinned at each tenon.



Complete details on Orange Screen Doors, aluminum, bronze or wood on request.

ROLL-AWAY WINDOW SCREEN COMPANY, LTD.

MAIN OFFICE

8th and Carlton Streets, BERKELEY, CALIF.

LOS ANGELES OFFICE: 125½ North La Brea Street

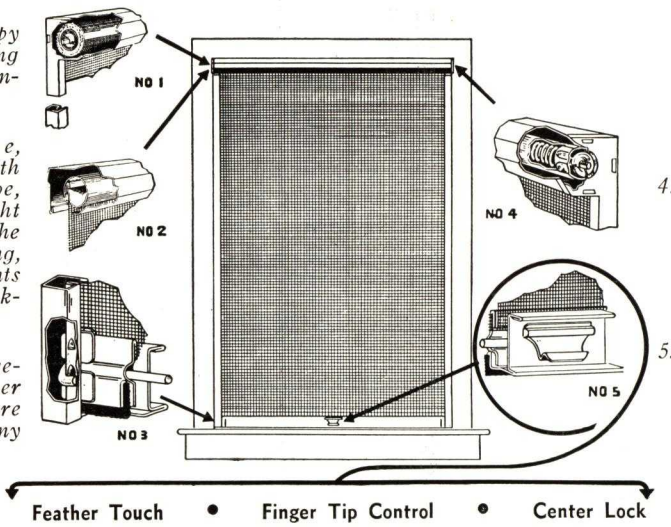
Now, years of research and improvement have made possible a roll screen which adds dignity and beauty, and provides superior protection for homes or commercial buildings. Refinements in design, top quality materials and exact machining of all parts combine to assure long wear under the hardest usage, perfect adjustability (guaranteed to give satisfaction) and lasting beauty.

WE RECOMMEND THESE FEATURES TO YOUR PARTICULAR ATTENTION

1. *Channels telescope into canopy (roller housing) eliminating cutting in the field, easy installation.*

2. *Electro - galvanized tube, seamed and rigid. Wire cloth rolled in the seam of the tube, which holds it uniformly tight by each strand. Eliminates the use of soldering, spot-welding, or crimping and thus prevents corrosion, twisting, or breaking of the wire cloth.*

3. *Frictionless draw bar. Freedom of operation plus center control safety lock feature that stops the screen at any desired height.*



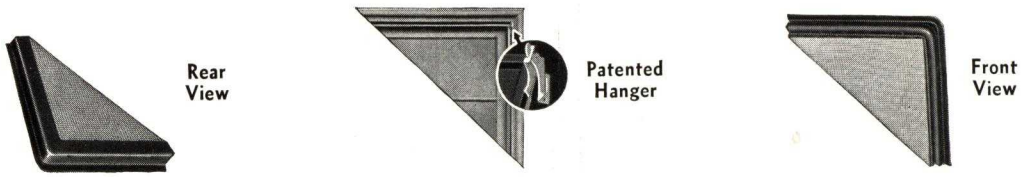
4. *Foolproof and permanent spring and roller assembly.*

5. *Center control safety lock (finger tip control).*

6. *Self-lubricated and trouble free. The mechanical parts are self-lubricated, requiring no attention after installation.*

NU-FRAME METAL SCREENS

An All-Metal Screen Adaptable for Outside Screens (For Double-hung Windows) and Steel Casements



ADVANTAGES OF NU-FRAME SCREENS

All-steel construction
Automatic installation
On and off with ease

Wire cannot sag or bulge
Sizes for all windows
Maximum ventilation and light

Permanent enamel finish
Cannot warp or sag
Install either inside or outside
Wire cloth easily replaced

GUARANTEE

Results in actual service over a satisfactory period of time prove the absolute dependibility of Roll-Away Screens, so that we confidently guarantee them to give perfect satisfaction in both quality of material and workmanship.

AGENTS AND DEALERS

Roll-Away Screen Products really *sell!* There are some desirable territories still available for active agents or dealers. An early inquiry will receive prompt and favorable attention. *Act now.*

ROLLING SCREENS, INC.

MANUFACTURERS OF

MacCormack Springless Rolling Window Screens
And All Types of Bronze Frame Screens for Windows, Doors, Porches

MAIN OFFICE AND FACTORY

Jay and Nassau Streets, BROOKLYN, N. Y.

MacCORMACK SPRINGLESS ROLLING WINDOW SCREENS

Are manufactured from 24-gauge terne plate metal, thoroughly baked inside and outside with Hilo enamel, the final finish matching the window trim.

Pure bronze wire screen cloth 16x18 mesh, specially drawn, evenly woven, with strong selvage edges and great tensile strength, makes our rolling screens strong and durable.

They are operated with flexible side tapes (not by a spring roller) designed to take the strain off the screen cloth, thereby giving smooth operation and long satisfactory service.

In rolling window screens you will find a wide range of quality in materials and workmanship as well as experience and responsibility of manufacture.

If you are in doubt, ask for a demonstration of the actual screen itself.

Installation and Service

MacCormack Rolling Window Screens are readily installed for either casement or double hung windows.

While these details show our screen exposed, the smallness of the case permits the complete concealment of our entire frame without weakening the window frame construction.

Our screens are completely assembled at the factory, with the baked enamel finish applied, so that the time required for installation on the average sized job rarely exceeds one or two days.

Having our factory and main office centrally located in the heart of New York City enables us to give very quick service and prompt delivery by our own trucks within a radius of one hundred miles.

During the past thirty years we have made thousands of installations in exclusive residences from coast to coast, and many of these have come to us either through architects' specifications or present users' recommendations. We always prefer to work with and through the architect because, as a rule, he shows appreciation of quality and service.

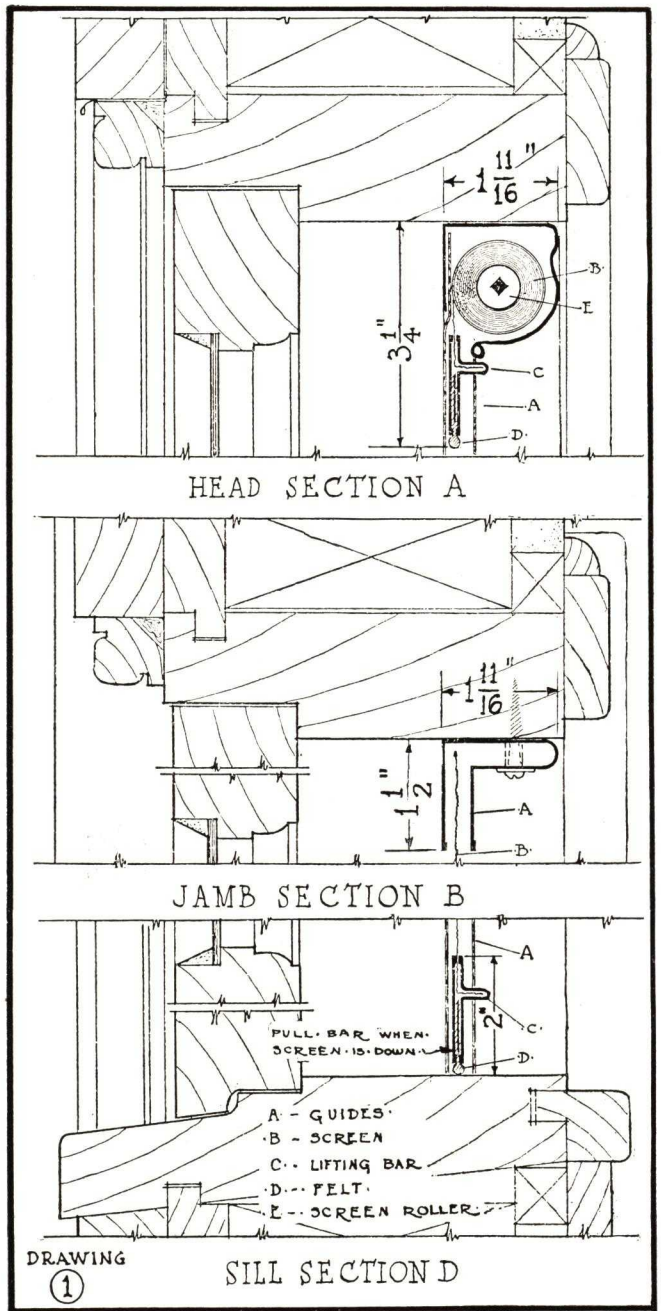
Complete drawings, ready for filing in your A.I.A. file, under section 35-P-1, showing various methods of installing MacCormack Rolling Window Screens in various types of windows, will be sent upon request.

Permanent Exhibit

A permanent exhibit of our rolling window screen is located in the Architects' Samples Exhibit, Architects' Building, 101 Park Avenue, New York, N. Y.

MacCORMACK FIREPLACE ROLLING SCREENS

Made to fit tightly any opening not only as a spark guard but will correct faulty drafts and prevent the intrusion of insects into the room.



Showing Casement Window Opening Out, With Rolling Screen Inside on Flat Jamb

UNIVERSAL ROLLER SCREEN COMPANY

Manufacturers of Roller Screens and Light-Proof Shades

3423 Armitage Avenue, CHICAGO, ILLINOIS

ROLLER SCREENS

Construction

The Universal Roller Screen is constructed with mechanical simplicity, yet it is the leader in technical advancements.

The head case, A, at the top of the window, houses the roller, E, onto which the screen cloth is soldered. Through the box ends, which are fitted over both sides of the head case, runs the rod. The coil spring, attached to the rod, is encased by the roller. At both ends of the roller are bushings to minimize the friction. The tension of the screen is held by the angle key within the box end. The guides, B, fastened to the sides of the window frame, hold the case in place. In each guide channel there is always at least three-quarters of an inch of screen cloth to allow the screen to give under pressure. No ordinary blow will puncture the wire, it is not rigid but self-stretching.

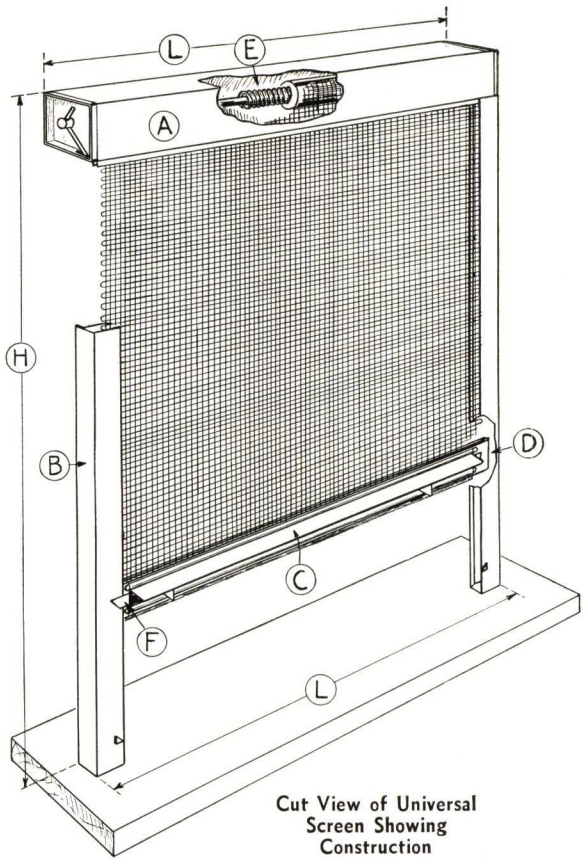
The lower end of the wire is securely fastened to the bottom rail, C. The rail extends across the entire width of the cloth and the slides, D, are fitted into each end. Along the lower edge of the rail is a felt bumper which fits against the sill. To stiffen and for the sake of convenient operation, a lifting bar is attached to the front of the rail. On either end of the rail is an exposed locking device, F, which automatically catches when the screen is lowered. This exclusive feature eliminates any possibility of opening the screen from the outside.

When the screen lock is released, the screen does not fly to the top but stops at a convenient height, where by the touch of the hand the screen may be raised or lowered.

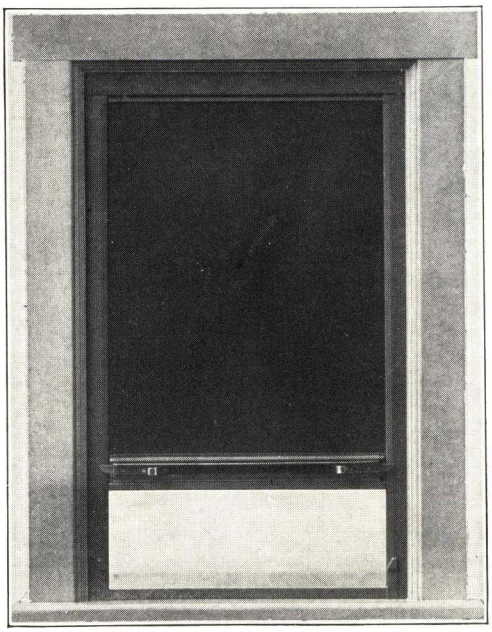
Materials and Finish

The head case, guides, rail, and slides are usually made from heavy lead-coated terne plate or bronze. Electrically welded steel tubing is used for the roller and the coil spring, made of music wire, is lubricated with non-running grease. To insure definite service, brass bushings support the rod of cold rolled steel. Sixteen mesh bronze screen cloth is used because of its durability. The bumper is of a chemically treated felt and the locking device is made entirely of bronze to insure against rust.

To add to the harmony of the room, the roller screen is always blended with the color scheme of the window. A high grade commercial lacquer is sprayed onto the metal, to give the screen a fine, glossy finish.



Cut View of Universal Screen Showing Construction



Universal Light-Proof Shade

LIGHT-PROOF SHADES

In the modern X-ray room where it is essential to have absolute darkness, the Universal Light-Proof Shade has solved the problem to the highest degree of perfection in practicability and design.

The construction of the shade is very similar to that of the screen, except that an opaque shade cloth is used. The cloth, especially manufactured for us, is made of strong double fabric, covered with rubber on one side and with peroxylin on the other. The different coatings prevent the cloth from sticking to itself and keep it soft and pliable under all weather conditions. Metal stiffeners are placed sufficiently across the cloth to re-enforce it. In the head case, a ventilator is incorporated for the purpose of eliminating air pressure between window and shade and also giving some circulation to the room while the shade is drawn. The sill strip which fits into the rail shuts off all light leakage at the lower edge of the shade. Into the narrow lips of the guides, the shade cloth extends sufficiently to eliminate any reflections.

LIGHT-PROOF LOUVRES

To give better circulation to the dark room, the Universal Light-Proof Louvre is widely used. It is the most efficient ventilation where absolute darkness is required. Write for further details.

In Behalf of **BEAUTIFUL WINDOWS . . . ROLSCREENS**

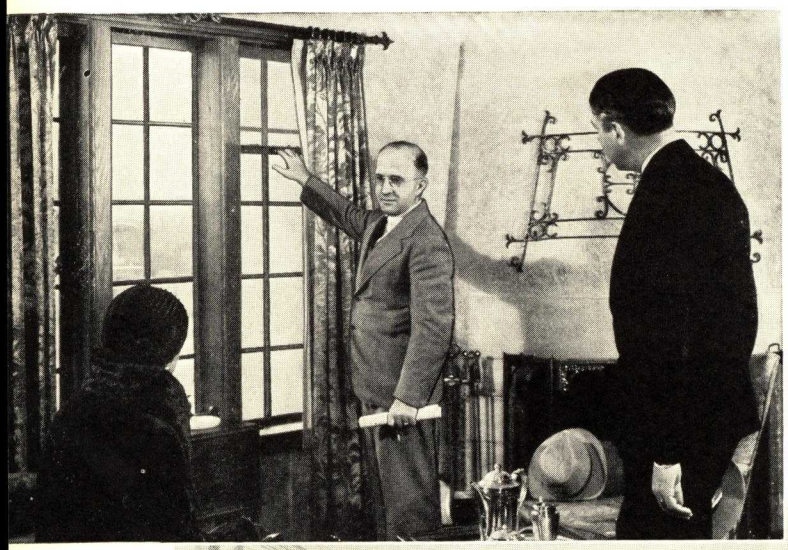
Pella **VENETIAN BLINDS . . . . . *for* YOUR WINDOWS**

Now

Pella **UNIT CASEMENT WINDOWS . . . . *the* WINDOW THAT HAS EVERYTHING**

ROLSCREEN COMPANY
PELLA-IOWA
Dealers Everywhere

Rolscreen PELLA Products

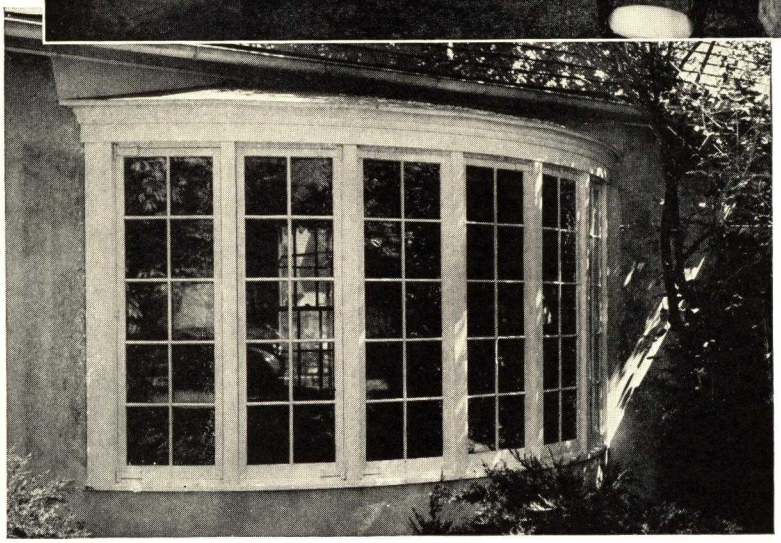


PELLA Rolscreens

They have stood the tests of time. Carefully engineered, fifteen exclusive patented features, and ruggedly built for a lifetime of service. No take-down, no put-up—designed so as not to detract from beautiful windows.

PELLA Venetian Blinds

Now famous as the improved blind—all mechanics are concealed in a hollow metal head bar—compact bundling, no bad looking tilting mechanism, finest materials, skilled craftsmanship, gorgeous color combinations! Beauty predominates!



PELLA Unit Casement Windows

The "five year ahead" window anticipating all requirements of air conditioning. A "jamb width" metal frame, thoroughly insulated, wood sash, weatherstripping, double glazing, Rolscreen, all hardware. Completely factory assembled.

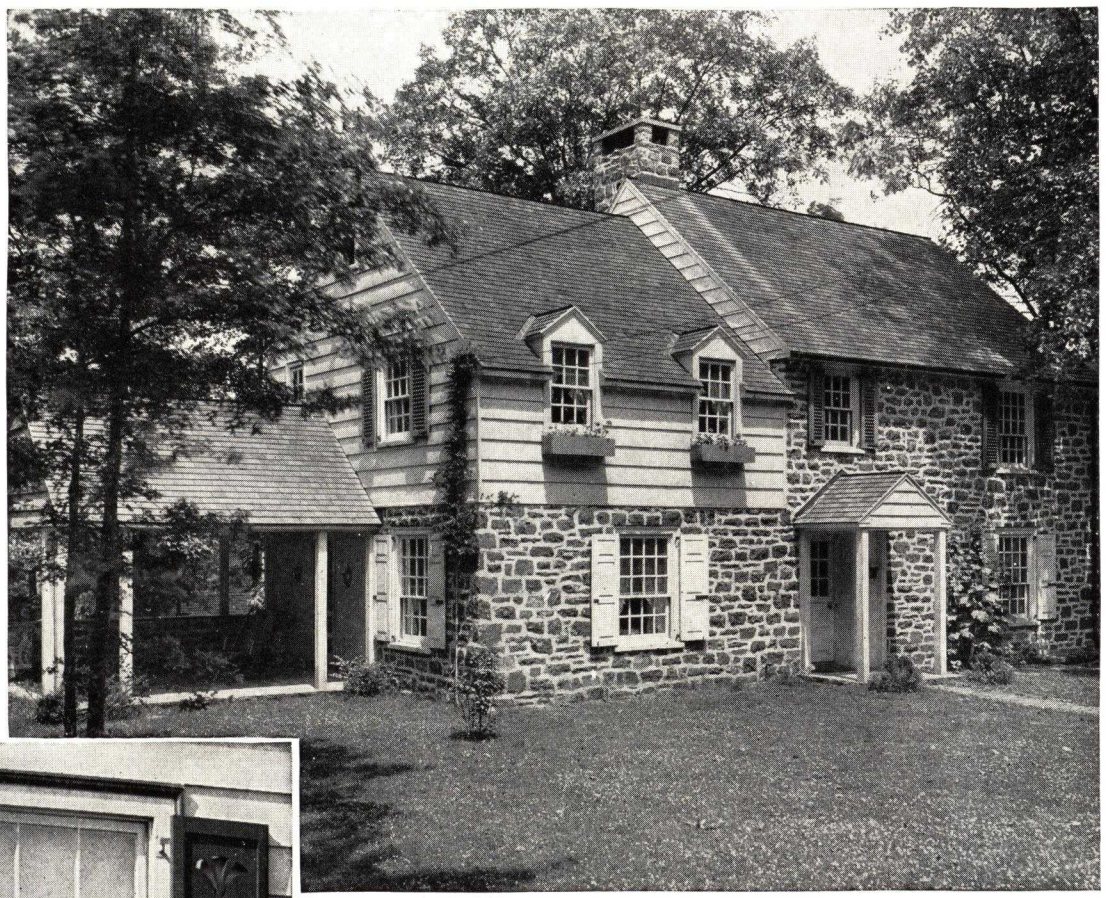
Rolscreens
TRADE MARK

ROLSCREEN COMPANY, PELLA, IOWA

The activities of the Rolscreen Company are concentrated on the work of assisting architects and builders in screening windows efficiently and conveniently without in any way detracting from exterior or interior window beauty. Too often has the appearance of beautiful windows been ruined by careless screening. To fulfill this policy it offers "Rolscreens," a product of proven excellence, engineered to meet the most exacting requirements for all types of windows, casements, double hung, institutional—whether wood or steel. Hundreds of special detailing suggestions are available. Rolscreens are sold with a ten-year guarantee and with a pledge of sincerity that each Rolscreen user must be satisfied.

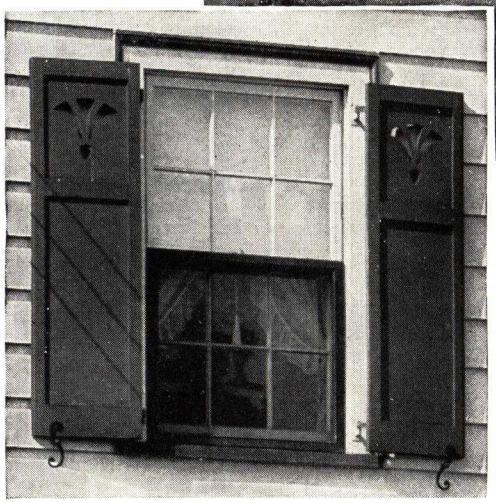
COLONIAL WINDOWS » » » « « « SCREENS BY ROLSCREEN

Rolscreens are as necessary with Colonial windows as they are with casements. How engaging is the beauty of the clear, sparkling glass and the clearly defined muntins! These would be completely blotted out by old-fashioned outside screens.



Rolscreened Home of Leslie I. Nichols, Architect, Larchmont, N.Y.

The Old Way



ROLSCREENS WERE NECESSARY

The fine Early American home shown above was designed and built by Leslie I. Nichols, Architect, for his own use, and was completely Rolscreen equipped. Mr. Nichols makes an interesting comment. He says:

"The old type wooden screens set on the outside of the window entirely conceals the window, hiding the beauty of the paneled divisions. Wooden screens set on the outside couldn't be used for this house. Therefore, the screens must be set inside. Could a wooden screen be used satisfactorily inside? It is a known fact that it can't. The answer was a rolling type screen. The beauty of the windows, both inside and out, has been preserved in the only way possible consistent with the most improved method of screening. This house is just as charming and lovely as its prototype."

ROLSCREEN CONSTRUCTION
STANDARD TYPE

In its engineering activities the Rolscreen Company has always held to the fundamental principles that ROLSCREENS must be easy to operate and easy to install, and of such rigid and durable construction that they will give many years of trouble-proof service under most strenuous conditions. Those features which have made ROLSCREENS a really practical rolling window screen and have led to their adoption by thousands of owners, builders and architects all over the world are exclusive and patented.

ROLSCREENS are built in standard stock sizes to fit all openings from 10 in. to 61 in. wide and up to 120 in. high and are carried in stock ready for immediate shipment.

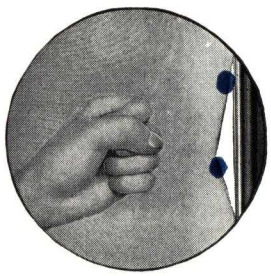
ROLSCREEN FEATURES—GUIDES

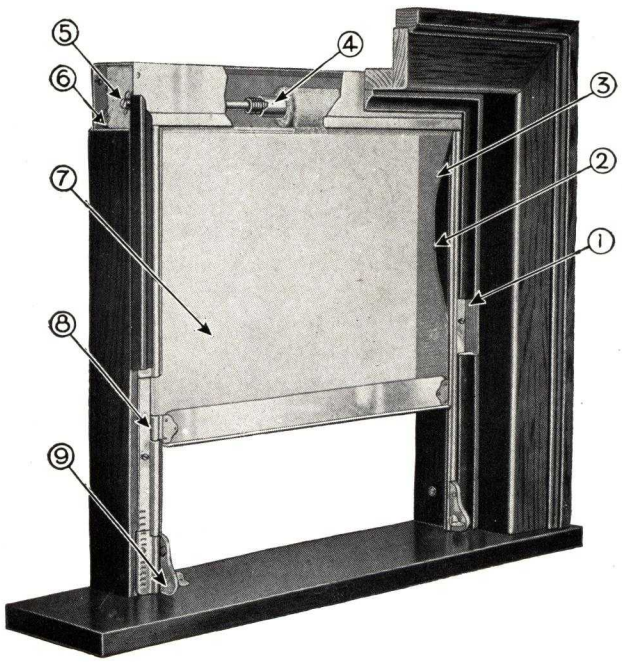
(Numerals refer to features pointed out in cut-away illustration of Rolscreen construction.)

The Rolscreen guides (1) grip lugs (2), fastened in the selvages of the screen wire and prevent its sagging and bagging. Slotted holes in the attaching flanges allow the guides to adjust themselves in case of swelling or shrinking of the woodwork. Blocks on the ends of the operating bar (8) are frictionally engaged in the guides. This frictional engagement prevents the cross bar tilting and regulates the action of the screen preventing its flying to the top when released. When installing Rolscreens, the operating bar, as it is drawn through the guides, acts as a template and automatically adjusts the guides to the opening. Lips at the upper ends of the guides co-acting with the housing, assure accurate installation. The guides are very inconspicuous the only part exposed being a bead the size of a pencil. A specially designed groove along the jaws of the guides prevents paint entering and binding the screens when redecorating them.

ROLSCREENS ARE INDESTRUCTIBLE

Rolscreens are built to stand up under hard service. If the screen wire receives a blow hard enough to tear or bag the ordinary screen, the lugs (2) in the selvages of the cloth are released from the guides (1) without injuring the wire. Upon pushing the entire released edge to the outside and raising the screen its full length, it will re-align itself by riding over the cut-away back side of the guide (3) and will be automatically re-entered and re-stretched when the screen is lowered.





THE ROLLER ASSEMBLY

The roller (4), onto which the screen wire is soldered, together with the spring inside, is built in the Rolscreen factory. The springs are coiled out of extra heavy oil-tempered wire on automatic machines. The entire assembly is very simple and durable and cannot give trouble.

THE HOUSING

The Rolscreen housing is electrically welded and of very sturdy construction. Recessed ends (6) reinforce it and make it rigid. The standard housing is 2⅝ in. square. For openings less than 52 in. high, a 2⅛ in. housing may be used. For openings over 84 in. high, a 2⅞ in. housing must be used.

All of the metal parts of ROLSCREENS, the housing, guides, and operating bar, are constructed of lead-coated terne-plate, which offers a perfect bond for paint.

THE FLOATING ROLLER

A special feature of Rolscreens is the patented "floating" roller (5). As the screen lowers and the roll of screen cloth grows smaller, the entire roller assembly automatically moves forward. The screen wire cannot drag on the lower edge of the housing and cannot wear out.

SCREEN CLOTH

The screen cloth (7) is double-lifed, rust-proofed, triple selvaged AluminA, especially woven and processed for Rolscreens. It is a clean grey color and almost invisible. It has great tensile strength, it is rigid and is built up of materials that are guaranteed not to break or crack under continuous flexing. The mesh is sixteen strands to the inch. It keeps out the smallest insects, yet allows maximum visibility and ventilation.

METAL PARTS

The metal parts of Rolscreens are manufactured from lead coated terne-plate. This metal provides a perfect surface for paint, for Rolscreens are usually to be painted after they are installed so as to harmonize with surrounding trim. If the screens are not to be immediately painted, they can be prime coated at the factory for a very small charge. Or they can be completely finished in fine enamel at a nominal cost.

LATCHES

When lowered, Rolscreens are automatically locked on the window sill by positive latches (9) which are perfectly adjustable and can be unlocked only from the inside. No attachments to mar beautiful sills.

MECHANICAL FEATURES

1—Rolscreen guide—Laterally adjustable, paint proof slide channel.
2—Rolscreen lug in edge of screen cloth.
3—Rolscreen automatic re-entry feature.
4—Rolscreen roller assembly.
5—Rolscreen floating roller.
6—Rolscreen recessed housing and welded construction.
7—Rolscreen practically invisible cloth.
8—Friction block (frictionally controlled operation.)
9—Automatic fully adjustable latch.

ROLSCREEN CONSTRUCTION

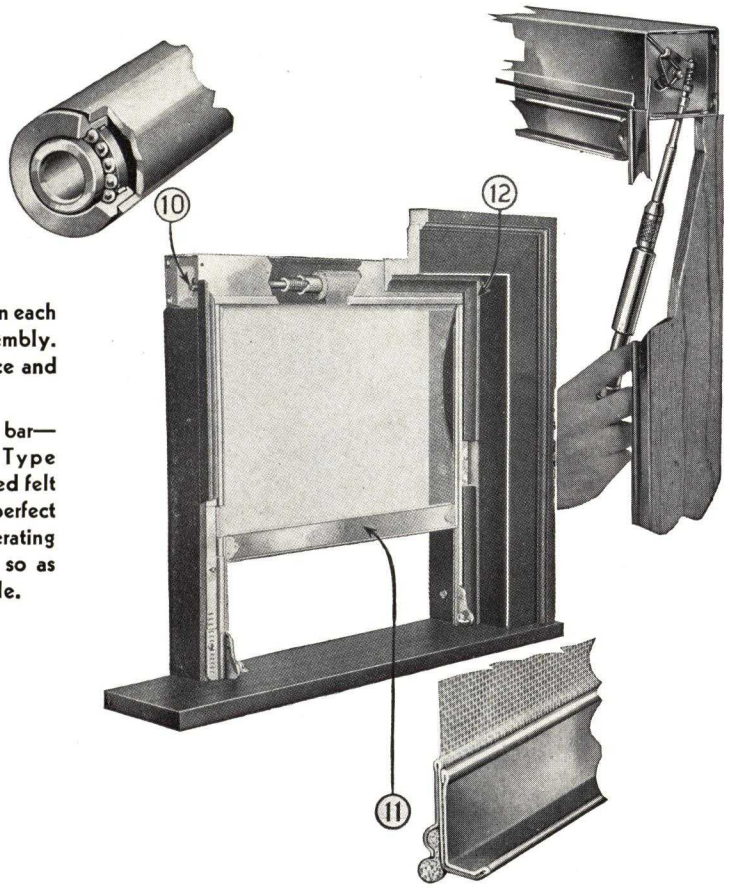
DELUXE TYPE

In designing the DeLuxe Heavy Duty Type Rolscreen, it was the purpose of the Rolscreen Company to build the very best rolling screen that engineering genius and modern manufacturing facilities could achieve. In addition to all of the exclusive patented features incorporated in the Standard Rolscreen assembly,—the patented guide construction, lugs holding the screen cloth in the guides, automatic re-entry of screen cloth into the guides, frictional control of the operation of the screen, the floating roller, clear vision double-lifed AluminA screen cloth, and automatic lever type fully adjustable latches—three important features are added, a roller mounted on ball bearings, a heavy duty operating bar with a resilient rubberized sill contact. And then the most outstanding of all—a Spring Tension Adjuster.

THREE ADDED FEATURES

10—Ball bearings mounted in each end of the roller assembly. They insure long service and easy operation.

11—Heavy rigid operating bar—reinforced DeLuxe Type with Resilient rubberized felt sill contact, insuring perfect closure between operating bar and sill—attached so as to be easily replaceable.



SPRING TENSION ADJUSTER

12—Rolscreen's newest and most outstanding development is the Spring Tension Adjuster. With a ratchet screw driver and socket wrench, tension can be conveniently and instantly increased or decreased without disturbing screen to gain access to the housed roller assembly.

Friction Angle

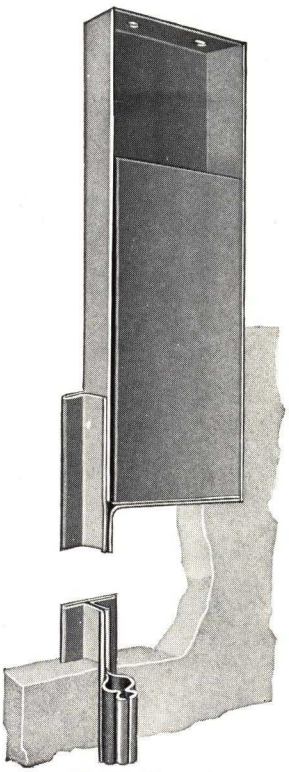
ROLSCREEN MOUNTINGS

FRICTION ANGLES

Friction angles provide a simple means for mounting Rolscreens without special fitting or cutting the wood trim. They support the screen housing and frictionally hold the Rolscreen guides. They are made in varying depths as shown on page 5 so that standard stock size Rolscreens can be fitted into all fractional inch width openings.

PLASTER CHANNELS

Where there is no wood trim around the windows and the plaster is brought around the jamb directly to the sash, Rolscreens can be installed by setting channels on the rough jambs so that they will be embedded in the plaster. A removable filler cap supports the Rolscreen housing and provides for insertion or removal of the assembly.



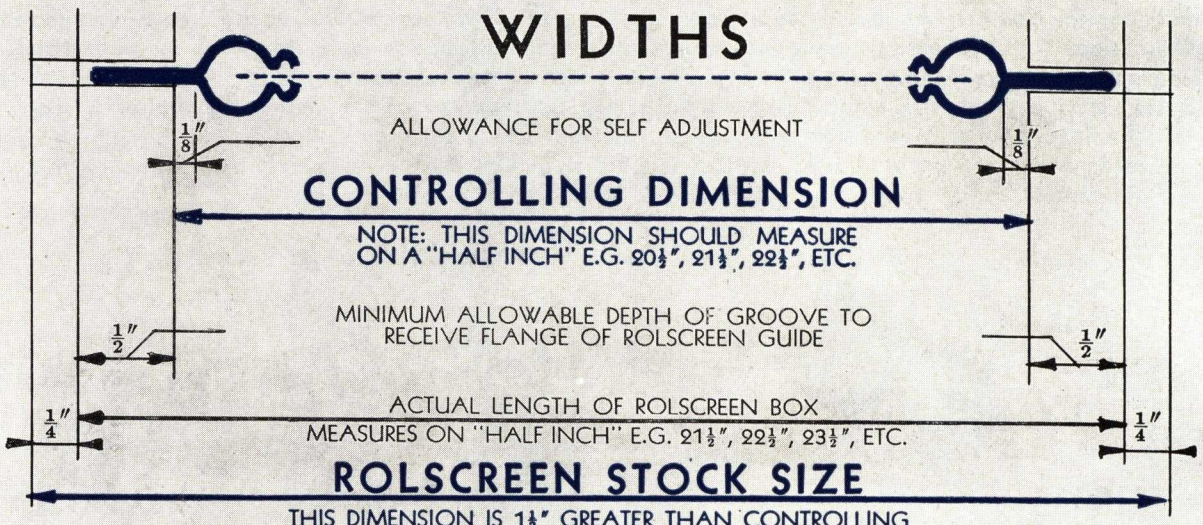
Plaster Channel

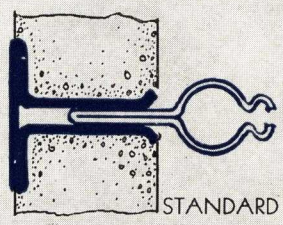
ROLSCREEN GUARANTEE

ROLSCREENS are guaranteed against defects in workmanship and material for a ten year period. A new screen or new parts will be furnished free of charge for any failing under this guarantee. This does not cover damage or abuse to the screen or any other conditions beyond the control of the manufacturer.

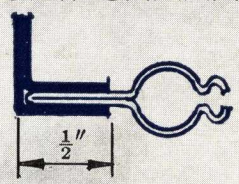
FULL SIZE SECTIONS

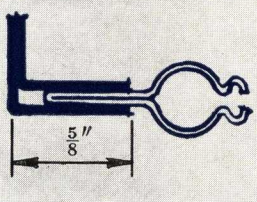
WIDTHS

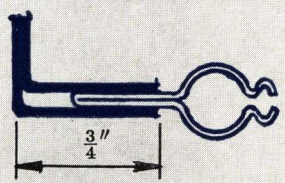


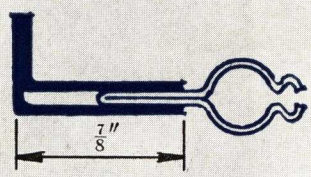


PLASTER CHANNEL



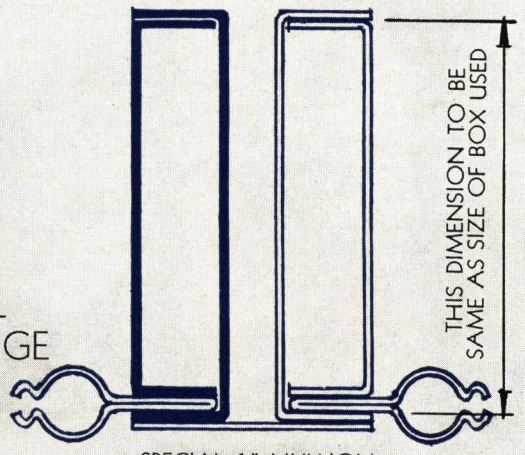






STANDARD
FRICTION ANGLES

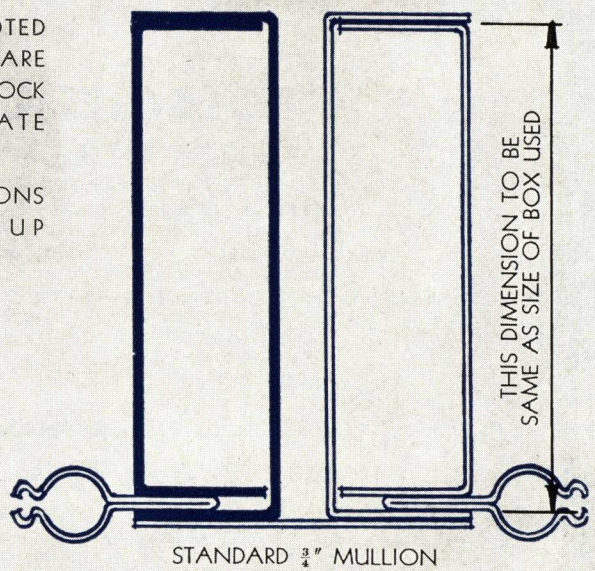
SPECIAL
WIDE FLANGE
GUIDE



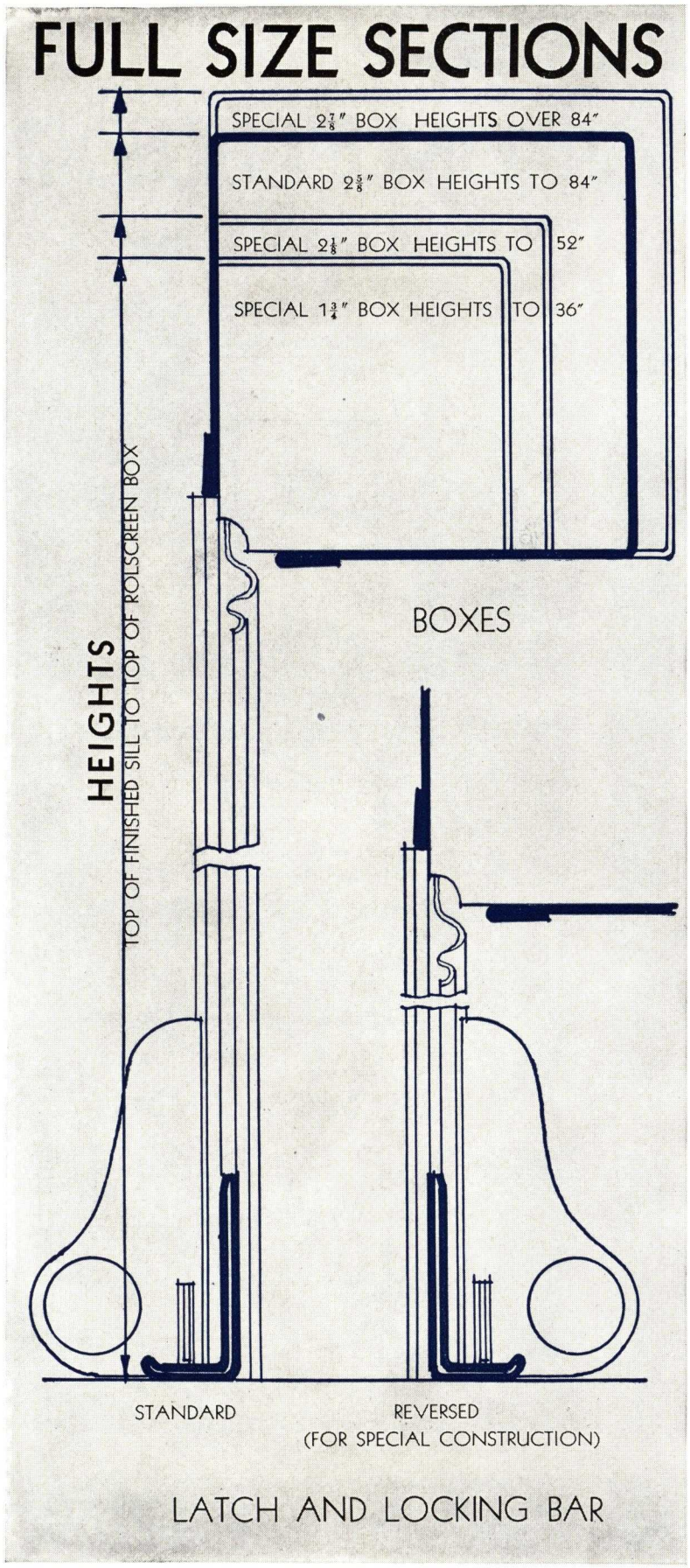
SPECIAL ½" MULLION

SECTIONS NOTED "STANDARD" ARE CARRIED IN STOCK FOR IMMEDIATE SHIPMENT.

SPECIAL SECTIONS ARE MADE UP PROMPTLY.



STANDARD ¾" MULLION
MULLION



ROLSCREEN SPECIFICATIONS

(A) SCREENS

Screens shall be *(DeLuxe) (Standard)* Rolscreens as manufactured by the Rolscreen Company, Pella, Iowa.

(B) WORK INCLUDED

Note:—*List and locate either in schedules on plans or in specifications under this heading. If both double hung and casement windows are included, list or schedule each under separate subheading.*

(C) MATERIALS AND CONSTRUCTION

(C-1) Metal—Housing, guides and locking bar shall be constructed of heavy lead-coated terne plate.

(C-2) Wire Cloth—Screen wire shall be 16 mesh rust-proofed "AluminA" with triple selvage. The screen cloth shall have lugs spaced at regular intervals along the two edges which shall be engaged by the tubular guides.

(C-3) Metal Housing and Roller Assembly—The screen cloth shall be attached to a steel roller encasing a heavy, thoroughly lubricated, oil-tempered spring. The roller shall be *(roller bearing)* contained in a metal housing 2⅝ in. square (2⅞ in. if opening is over 84 in.) Roller mounting shall be of floating type which allows roller to automatically move forward as size of screen roll reduces, eliminating "drag" of screen wire on lower edge of roller housing.

(C-4) Guides—The jamb guides shall be so mounted that they are slidably adjustable when the screen is raised or lowered to compensate for any expansion or contraction in the window frame. The guides shall be provided with lips at their upper ends inserted into slots in the roller housing (to assure proper alignment) with the beaded portion cut away adjoining the housing to allow the screen wire to re-enter the housing when accidentally knocked out of the guides.

(C-5) Spring Catches—Spring catches shall be attached to the lower end of the guides carefully adjusted to automatically lock the cross bar of the screen close to the sill.

(C-6) DeLuxe Operating Bar and Spring Tension Adjuster—Provide DeLuxe Operating Bars with rubberized felt sill contacts and Spring Tension Adjusters.

(D) WOOD JAMB STOPS

The wood stops, to which the screen guides are fastened and which support the roller housing, shall be furnished and installed with stop screws and washers by others.

(E) PLASTER JAMB CHANNELS

Rolscreen guides and housing shall be mounted on plaster jambs in Rolscreen Plaster Channels set in position before plastering. Channels shall be set absolutely plumb and true on each jamb and accurately on some "full inch" dimension back to back.

(F) FRICTION ANGLES

Friction angles shall be mounted on the jambs or window as detailed and shall be set true and plumb. They shall receive and hold in position the Rolscreen housing and guides.

(G) INSTALLATION

Rolscreens shall be accurately installed in strict accordance with the manufacturer's erection instructions. Guides shall be so mounted that the beaded portions and outside edges of guides shall not be in contact with window jambs. Screen shall operate freely and easily.

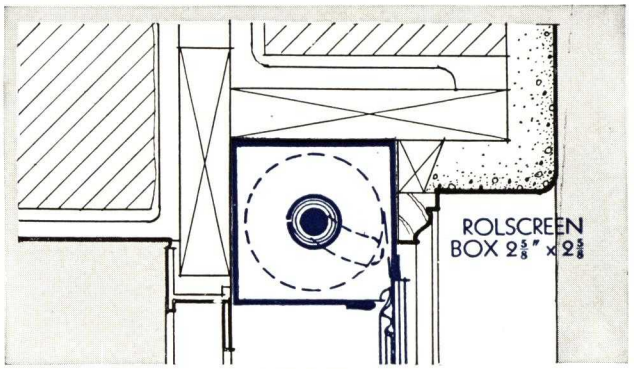
Rolscreens
TRADE MARK

STEEL CASEMENTS

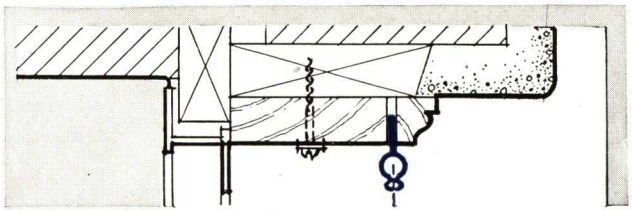
DIRECT ATTACHMENT

Rolscreens allow a new freedom to window opening and a new beauty in complete screen protection.

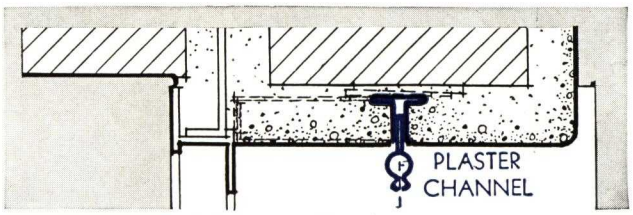
SEMI-WOOD TRIM



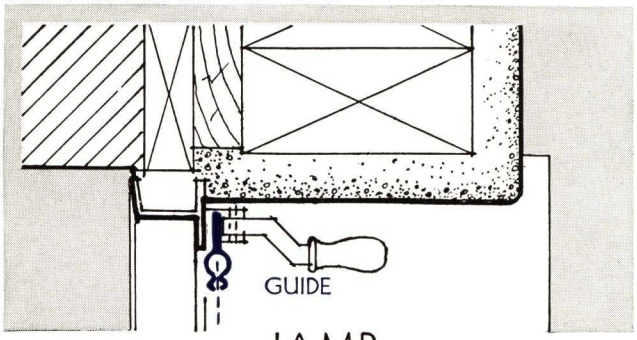
HEAD



WOOD JAMB

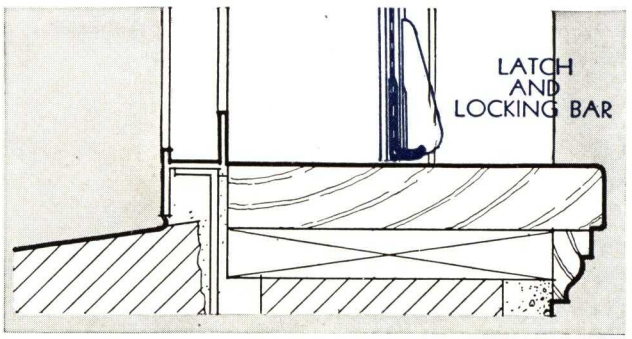


ALTERNATE JAMB



JAMB

ROLSCREENS mounted directly onto frames of casements with Oxford Type locking handles, insure practical installation. Write for F. S. detail No. 908.



SILL

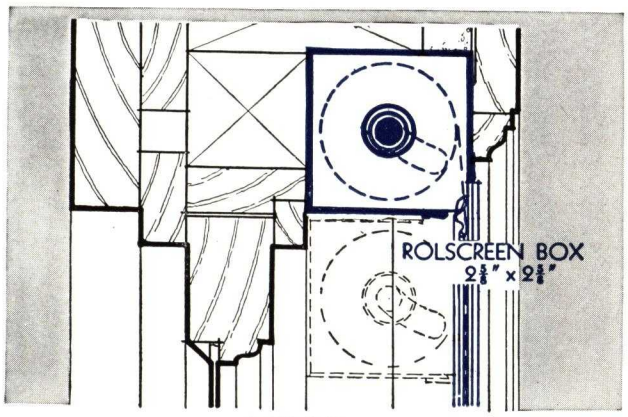
Rolscreen can be instantly removed in case of damage by taking out removable stops and moulds at jambs

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

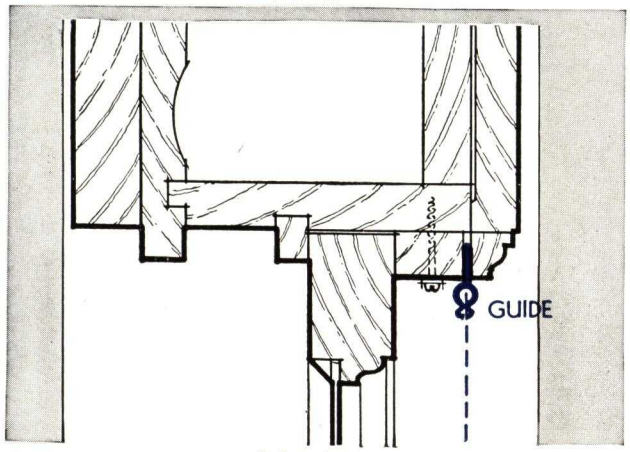
Rolscreens
TRADE MARK

DOUBLE HUNG WINDOWS

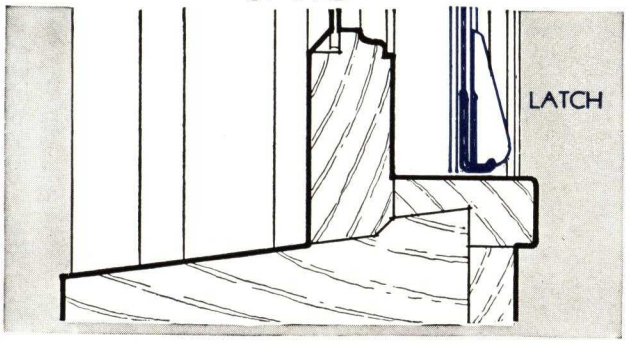
FRAME CONSTRUCTION



HEAD



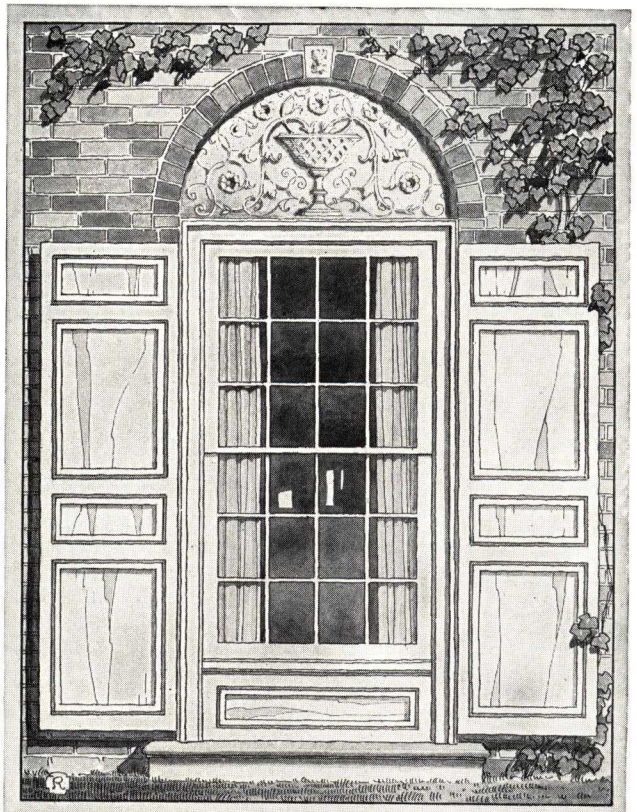
JAMB



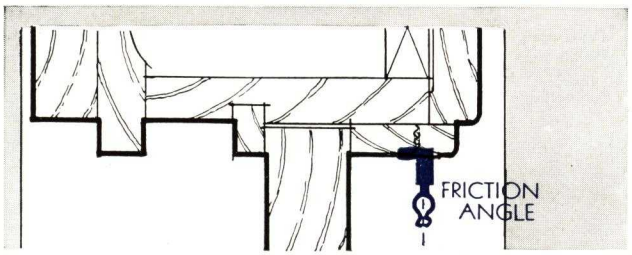
SILL

Rolscreen box may be set directly under head jamb as dotted in and a standard double hung frame used.

FRICTION ANGLE



The rich sparkling lustre of fine glass and the exterior window beauty is not dimmed by screens. » » »



ALTERNATE JAMB

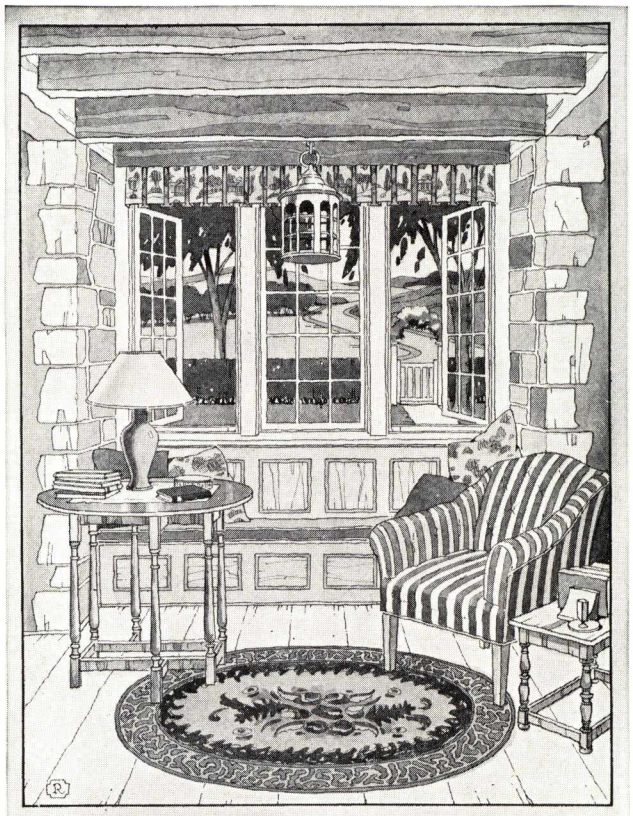
Lift hardware on bottom rail of sash should be held to a minimum projection to clear locking bar on screen.

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

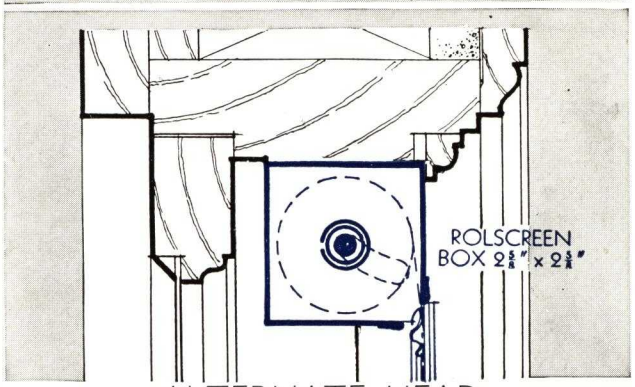
Rolscreens
TRADE MARK

WOOD CASEMENTS

OPEN HOUSING



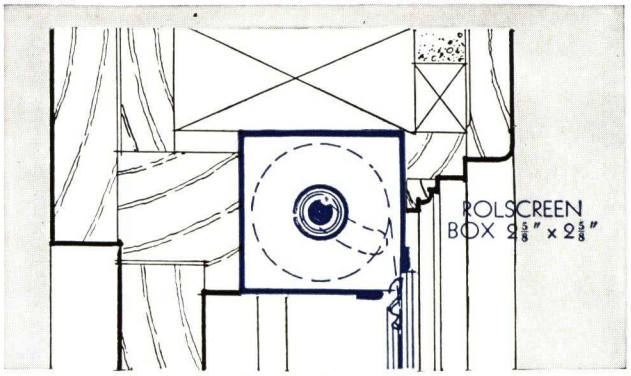
The absence of the screen when the window is closed completes the quiet, architectural dignity. » » »



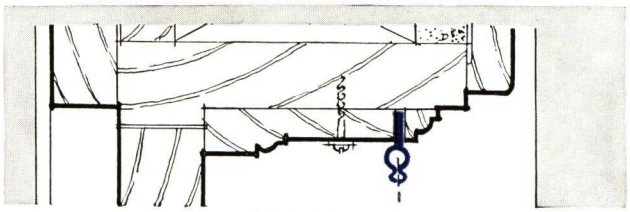
ALTERNATE HEAD

Rolscreen box is very often unconcealed. It is hidden by blinds or drapes. » » » » » » »

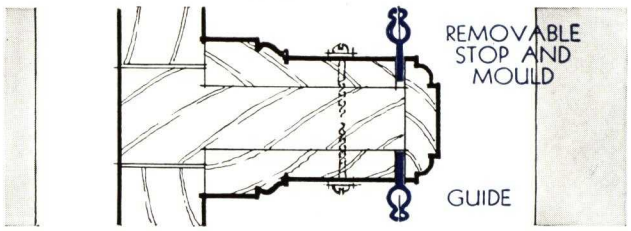
CONCEALED HOUSING



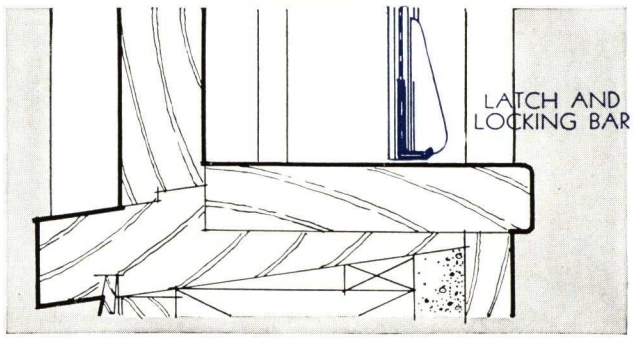
HEAD



JAMB



MULLION



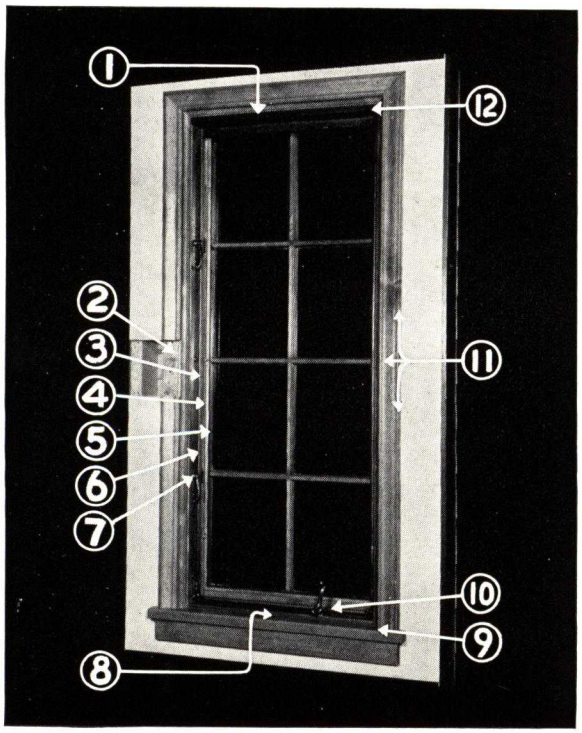
SILL

1⅜" thick sash are shown on the detail. If 1¾" thick sash are used the Rolscreen box serves as stop at the head. » » » » » » » » » »

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

PELLA UNIT CASEMENTS

"The Window that has Everything"



The Pella Unit Casement is a complete unit, designed for practical and simple installation to meet the needs of modern air conditioning and ventilating and is highly efficient as to weathering, air leakage, and heat and cold conductivity.

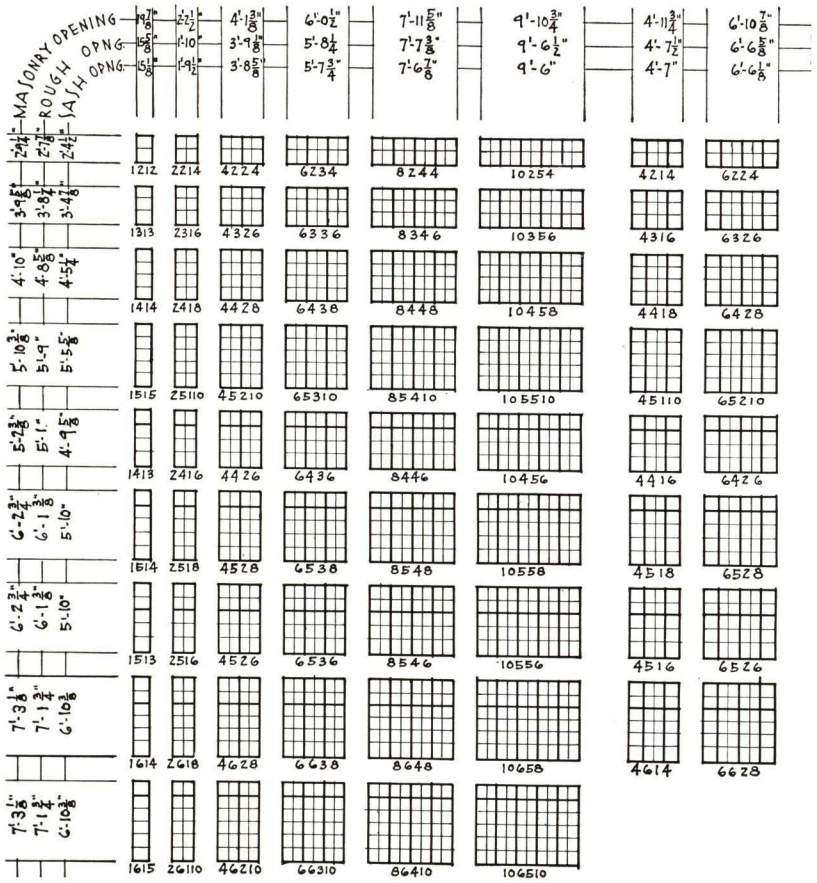
The units are completely assembled at the factory, sash accurately fitted with all hardware, weatherstripping, non-extension cleaning hinges, underscreen sash operator, sash locks, and the famous Pella Rolscreen completely installed. No tedious fitting and assembling on the job.

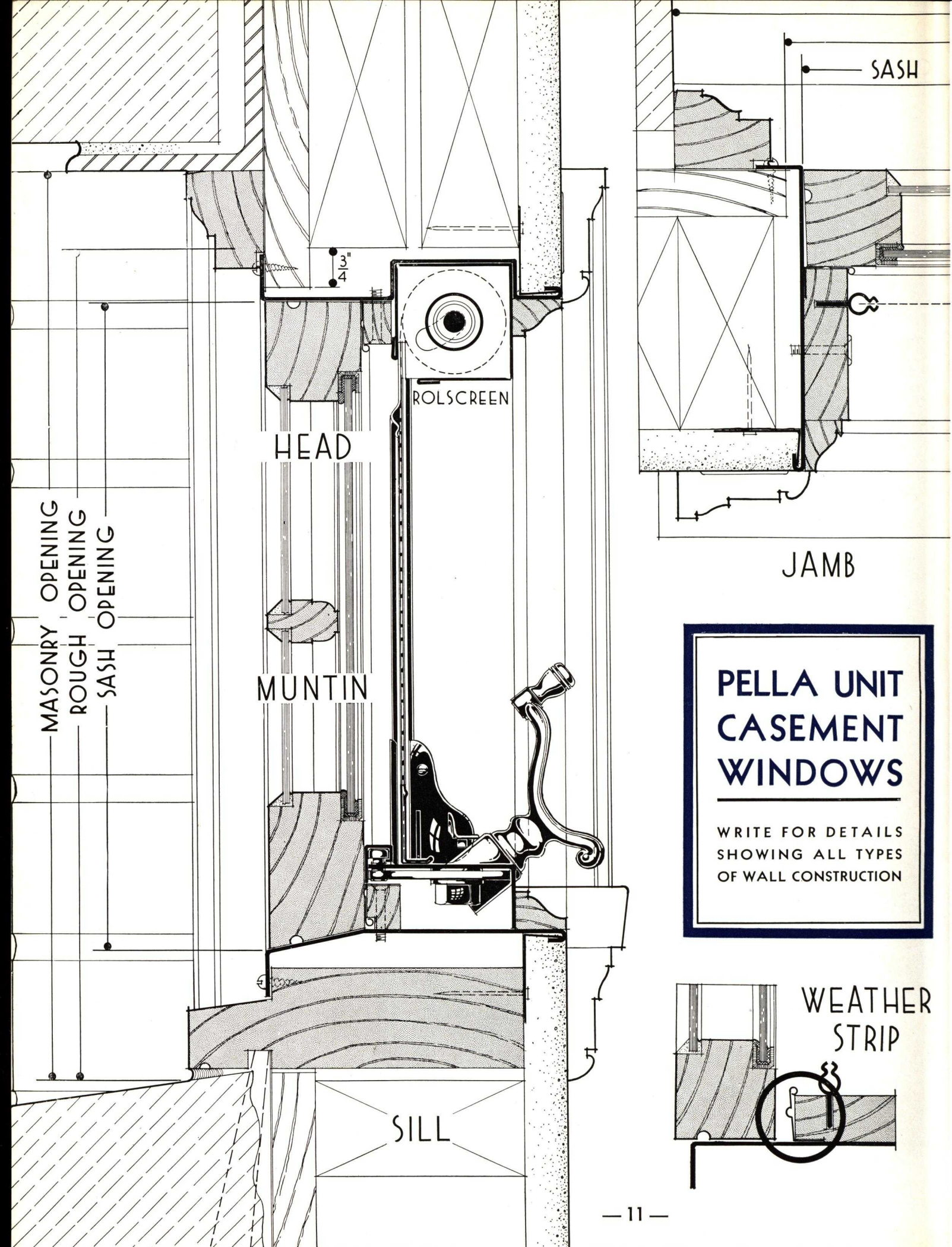
Simple interlocking flange on inside securely locks casement in place. Units can be used singly or joined by simple mullions to form any combinations. Vertical muntin bars can be omitted.

FEATURES OF PELLA UNIT CASEMENTS

1—Heavy "Full Jamb Width" Metal Frame.
2—Metal Interlocking Fin.
3—Wood Trim lines Metal Frame for insulating and beauty.
4—Sturdy Wood Sash.
5—Weatherstripping.
6—Double Glazing Panel.
7—Graceful Hardware.
8—Completely assembled and Factory Fitted.
9—Non-extension Cleaning Hinge.
10—Underscreen Operator.
11—Oversize in light and wall area.
12—Rolscreened.

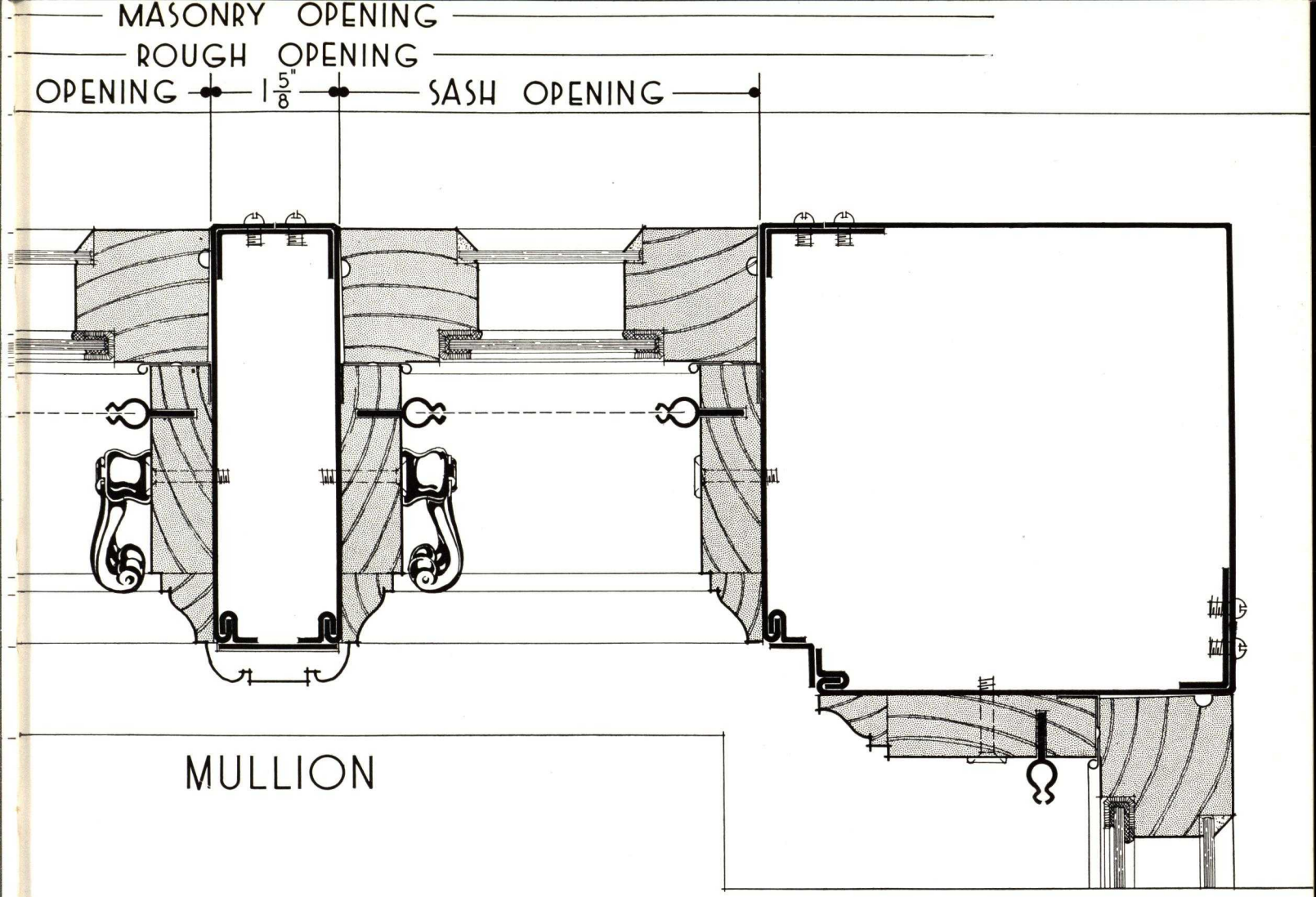
PARTIAL TABLE OF SIZES
ALL OR NONE VENTILATING





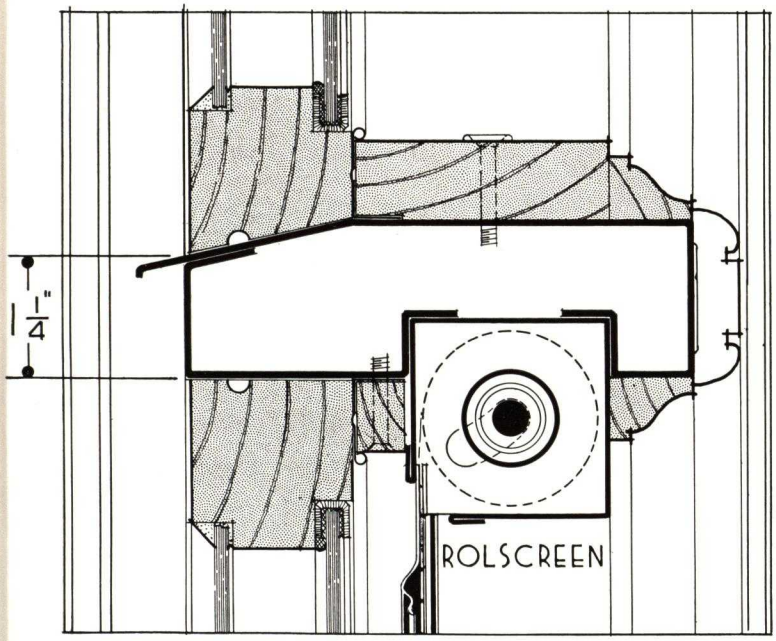
PELLA UNIT CASEMENT WINDOWS

WRITE FOR DETAILS SHOWING ALL TYPES OF WALL CONSTRUCTION

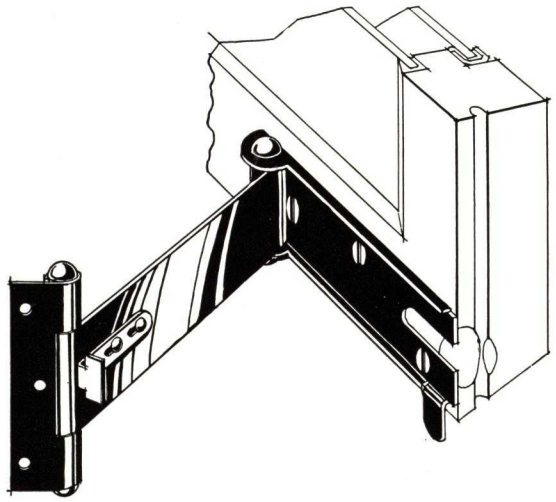


MULLION

CORNER WINDOW SECTION



TRANSOM



HINGE

DETAIL NO 1105

BRICK VENEER WOOD FRAME

PELLA VENETIAN BLINDS

DESCRIPTION

Probably no other appurtenance in the home or office has a more glamorous tradition or has had a more persistent association with the decorative arts and crafts than the Venetian Blind. They are the ideal window shade equipment. They give perfect control of lighting and ventilation.

Decorative possibilities are unlimited. Color combinations in delicate tints may be selected for simple dignity and quiet harmony, or striking color combinations in tapes and slats to suit the tastes of the moderns.

OUTSTANDING FEATURES—Perfect bundling, no brackets, no tilting bar, no unsightly hardware—perfect symmetry resulting from an entirely new principle of tilting, is Rolscreen's outstanding contribution to Venetian Blinds. Instead of using the common type of tilting bar suspended on brackets from a head member for adjusting the tilt of the blinds, the Rolscreen Company has engineered a new mechanism for tilting which is positive, sensitive, easy to operate and is all enclosed in a small steel housing 1⅜ in. by 2⅜ in. wide. The bundle of slats when raised nest snugly against the head member—there are no light-lines! This tilting mechanism consists of a pair of gear-synchronized roller shafts. As the suspending tapes roll up on one shaft they unroll from the other, and this accomplishes the tilting. An adjustable friction shoe holds the blind at any desired tilt. The all-metal housing is rigid.

PULLEYS AND CORD WAYS—This new type of construction makes it possible to use large pulleys 1 in. in diameter which assures easy operation, and to make the cord-ways straight, eliminating rope wear.

AUTOMATIC LOCK—A positive automatic lock which does not wear cords is incorporated in the head member.

INSTALLATION—Mounting is easy on improved type brackets which are furnished to fit any kind of construction. The entire blind can be taken down for cleaning or just the ladder tapes and slats are removable.

COLORS—A selection from a range of 13 standard colors of slats and 12 standard colors of tapes is offered. In addition we can furnish a large variety of gorgeous color combinations, including a new idea of Venetian Blind decoration—the exclusive ROLSCREEN, "Color Edge," which is trade-marked.

SPECIFICATIONS

(A) HEAD MEMBER AND TILTING MECHANISM—Head Member shall be an all metal housing 1⅜ in. deep by 2⅜ in. wide. Tilting Mechanism shall be concealed in head member and shall consist of gear-synchronized rollers for winding and unwinding supporting ladder tapes, adjusted to operate easily and to hold slats in any tilted position.

(B) SLATS AND BOTTOM RAIL—Slats and Bottom Rail shall be made from dry No. 1 grade Port Orford White Cedar *(2⅜ in.) (2 in.)* wide with rounded edges.

(C) FINISH—Finish shall be in Lacquer or Enamel *(semi-gloss) (specify)* in colors as selected.

Note: *Standard fourteen color chart furnished on application.*

(D) LADDER TAPE AND CORDS—Ladder Tape shall be best quality interwoven (imported or domestic) in colors as selected. All Cords shall be heavy-duty, hollow braided and glazed.

Note: *Standard colors of tapes and cords on application.*

(E) PULLEYS—Cold rolled steel 1 in. in diameter.

(F) AUTOMATIC LOCK—All blinds shall be equipped with automatic cord locks concealed in head member which will positively lock the blind in any desired point.

(G) DEMOUNTABLE FEATURES—Blinds shall be constructed so slats, including bottom bar, can be easily removed for redecorating or cleaning. Tapes shall be easily detachable for washing or re-dyeing.

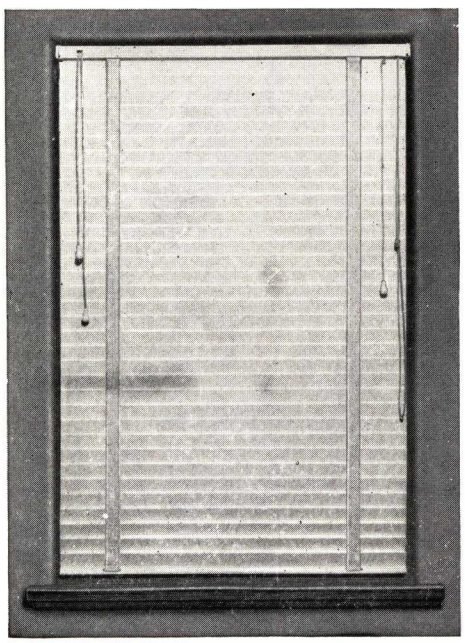
(H) BRACKETS—Heavy steel, finished to match blinds.

(I) SINGLE LIFT BLINDS—Blinds not over 50 sq. ft. and not over 72 in. wide shall be single lift type.

(J) DOUBLE LIFT BLINDS—Cords shall be brought down from head member through slats, along bottom rail over pulleys and again up through slats and brought through head member in regular way.

Note: *Used on blinds larger than single lift.*

(K) GUIDES (When Specified)—Guides shall be cold rolled channels 9/16 x 9/32 in. *(in natural finish) (painted to match blind).* Frictional shoes attached to every 8th slat shall fit channel snugly yet allow sufficient flexibility to prevent binding.



ADVANTAGES

Metal head member encloses all the tilting mechanism.

There are no unsightly brackets, no tilting bar, no bunglesome bundling, no light lines through the bundle when blind is raised.

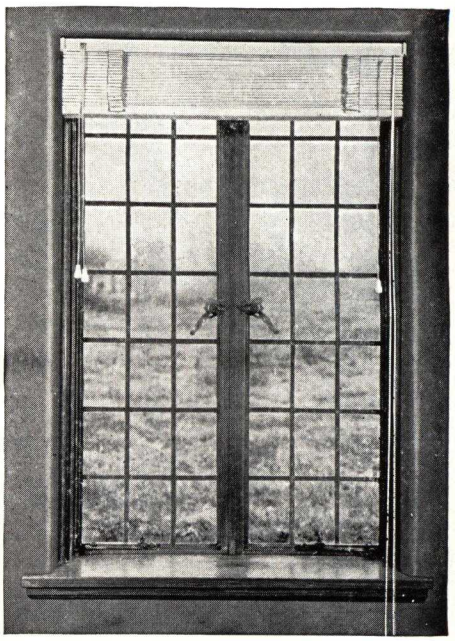
20% reduced bundle size.

Extra large cord pulleys and straight cord-ways eliminate cord wear and afford easy operation.

Blind is perfectly symmetrical both when raised and lowered.

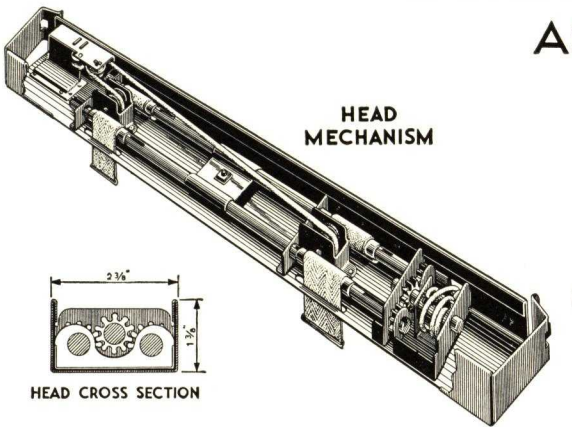
ROLSCREEN SERVICE

The Rolscreen Company offers complete service through its organization of branch offices and dealers in five hundred cities. A Rolscreen Representative near you or the Factory Staff at Pella is always available for service and will gladly render you assistance in preparation of details, submitting estimates and samples, and will assume complete responsibility for a satisfactory installation. A.I.A. Portfolio—Sixteen pages of details on request.



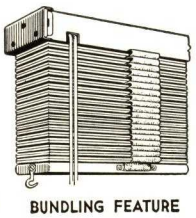
INSTALLATION DETAILS PELLA VENETIAN BLINDS

ASSEMBLY



HEAD CROSS SECTION

DETAILS OF THE ALL METAL PELLA VENETIAN BLINDS. ALL OF THE TILTING MECHANISM IS ENCLOSED. THERE ARE NO EXPOSED BRACKETS. NO TILTING BAR. NO LIGHT LINES. BLIND BUNDLES COMPACTLY.

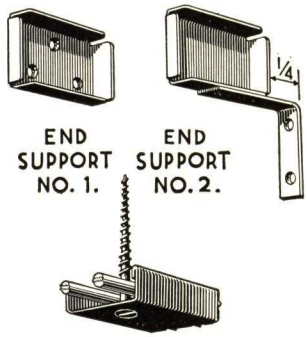


BUNDLING FEATURE

BETWEEN JAMBS

FACE OF WALL SIDE GUIDES

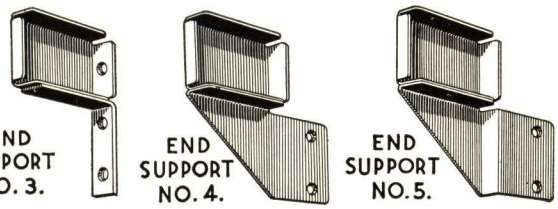
END AND CENTER SUPPORTS



END SUPPORT NO. 1.

END SUPPORT NO. 2.

CENTER SUPPORT NO. 7.

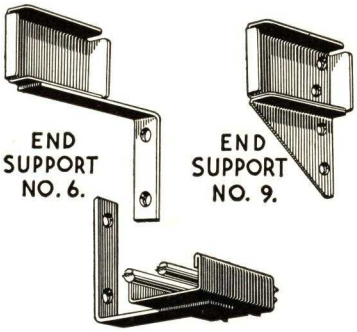


END SUPPORT NO. 3.

END SUPPORT NO. 4.

END SUPPORT NO. 5.

THESE ARE STOCK END SUPPORT BRACKETS FOR PELLA VENETIAN BLINDS. THEY CAN BE ORDERED BY NUMBER. IF THESE BRACKETS DO NOT MEET SPECIAL CONDITIONS, SUBMIT SKETCH AND DIMENSIONS.



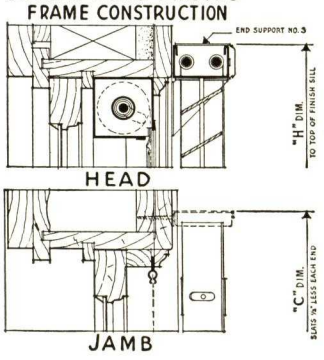
END SUPPORT NO. 6.

END SUPPORT NO. 9.

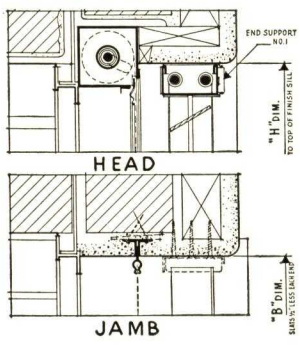
CENTER SUPPORT NO. 8.

ROLSCREENS AND PELLA VENETIAN BLINDS

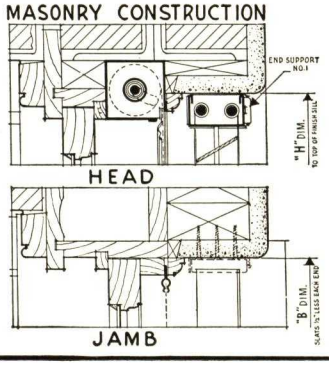
DOUBLE HUNG WINDOWS FRAME CONSTRUCTION



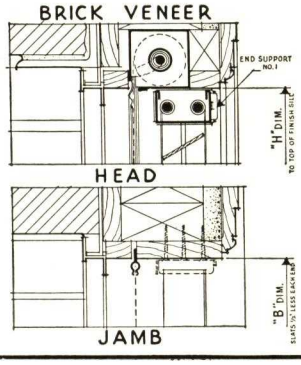
STEEL CASEMENTS



MASONRY CONSTRUCTION

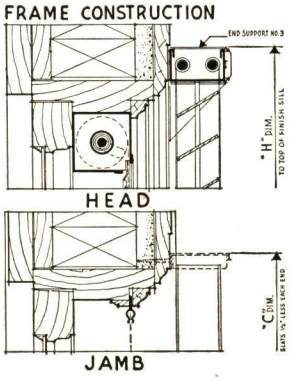


BRICK VENEER

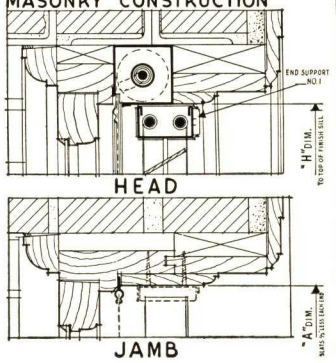


WOOD CASEMENTS

FRAME CONSTRUCTION

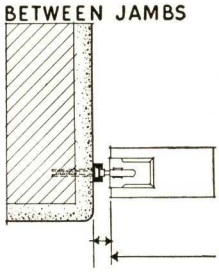


MASONRY CONSTRUCTION



DIMENSIONS FOR GUIDED BLINDS

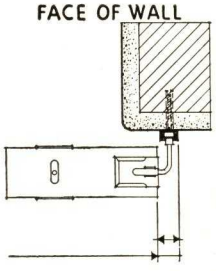
BETWEEN JAMBS



NOTES

ALL FREE HANGING INSTALLATIONS SHOWN ON THIS PAGE CAN BE MADE WITH BLINDS GUIDED AT SIDES OF OPENINGS IF THESE DIMENSIONS ARE OBSERVED. HEIGHT DIMENSIONS FOR GUIDED BLINDS ARE SAME AS FOR FREE HANGING BLINDS.

FACE OF WALL



16
69

Pella VENETIAN BLINDS . . . *That final touch of* ELEGANCE

In Behalf of BEAUTIFUL WINDOWS . . . *and* ROLSCREENS

ROLSCREEN COMPANY
PELLA-IOWA
Dealers Everywhere

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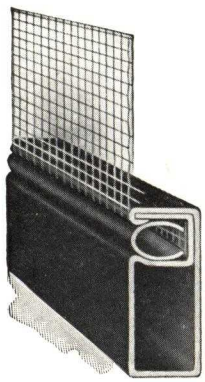
WATSON MANUFACTURING COMPANY, INC.

EXECUTIVE OFFICE AND FACTORY
630 Taylor Street, JAMESTOWN, N. Y.

Experience

Watson products reflect over 50 years' experience in developing, manufacturing and installing products of superior quality. Modern processes, materials, finishes, in conjunction with specially designed up-to-date machinery assure products that are abreast of the times. A sincere desire to satisfy, careful adherence to details and specifications and constant improvements, moreover, have established an enviable reputation for quality and service. A central location provides ideal shipping facilities.

Watson Screens for Doors and Windows



The special feature of Watson Metal Frame Screens is the tubular construction, having great strength, stiffness and rigidity. The wiring edge is rounded, preventing cutting of the wire cloth. The double walls of the groove are soldered or welded together, which gives extra strength to take up the strain of the wiring and prevents twisting of the frame.

Standard wire cloth used is 16-mesh, regular weight, commercial bronze; heavy bronze cloth or cloth of other metals can be supplied when specified.

Twentieth Century Screens—Frames made of bronze, steel or other metals. Framework furnished in several widths for screens of all types.

Economy Screens—Frames of steel and with square edges, of welded construction and furnished in various types.

Note: All steel frame screens made of cold-rolled copper-bearing steel, hot electro-galvanized after fabrication. Wire cloth attached by splines of rustless Milloy metal (an alloy of zinc).

Bronze Frame Screens (Rustproof)—Finished in any of the bronze, brass or copper finishes or, if left unfinished, will eventually oxidize to a statuary bronze color.

Other Frame Metals—Aluminum, inconel, monel and other nickel and copper alloys, stainless steel, etc., may be furnished.

Roll Screens—Furnished in two types; namely, Twentieth Century and Efficiency. Furnished in bronze, steel or other metals. Bronze screens finished to match interior hardware. Steel screens enameled any color or grained to harmonize with interior trim.

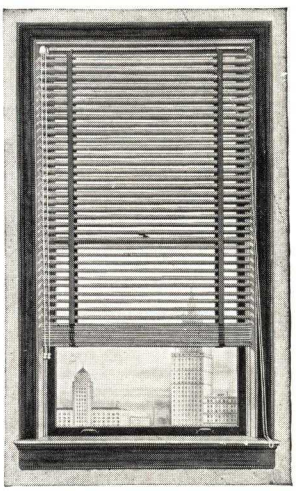
Watson Wood Frame Insect Screens and Screen Doors—Frames are made of white pine with doweled corner construction. The wire cloth is held in the wiring groove by means of rattan splines. They are finished with three coats of synthetic enamel in any color selected.

Watson Metal Screen Doors—Carefully designed door construction, are manufactured in extra heavy, heavy, medium and light weights each of ample strength, stiffness and durability, and made of bronze, steel, aluminum, inconel, monel, stainless steel, etc.

Watson Venetian Blinds

Watson Venetian Blinds are made in the following types: Single Lift, Double Lift, Plain Roller and Ratchet Roller.

Watson Venetian Blinds are made of basswood, with metal brackets and hardware. The slats are supported by woven fabric ladder tapes. All pulleys operate easily on hardened steel roller bearings, which are standard construction and provide for a minimum of effort in operation.



The slats are tilted by means of a worm and gear tilting device. The tilting bar is supported from the head bar by metal brackets.

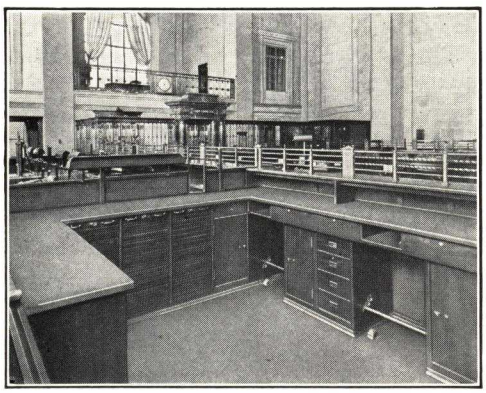
Watson Blinds are equipped with automatic cord locks and cord equalizers.

Bottom bar holding brackets, channel or rod guides, and other accessories can be supplied.

Watson Metal Furniture and Interior Equipment

The Watson Company manufactures a stock line of metal office furniture and special built-to-order interior metal equipment.

We maintain a large force of trained engineers to help architects, contractors and owners solve their



interior equipment problems. We are particularly interested in Steel and Bronze Equipment for Banks, Courthouses, Hospitals, Libraries and Public Buildings, including counters, desks, tables, filing cabinets and partitions.

Watson Metal Access Panels

Watson Access Panels are constructed of heavy gauge steel, with rounded corners in two types: "Standard" and "Hinged." Finished in one light primer coat unless other finish is specified.

ALLMETAL WEATHERSTRIP CO.

(Name "Allmetal" Copyrighted U. S. Pat. Off.)

Illinois and Franklin Streets

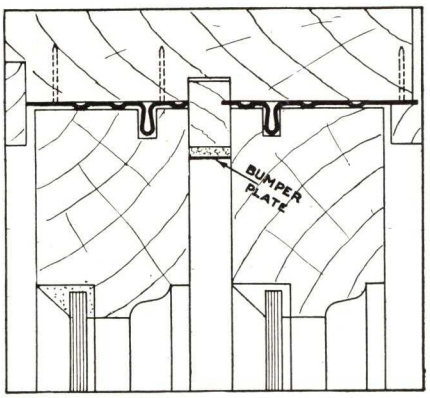
CHICAGO, ILL.

PRODUCTS

Allmetal Weatherstrip
Calking Compound
Thresholds and Saddles
Kickplates
Nosings and Edgings
Snap-on Mouldings

TIME TESTED DESIGN

Allmetal Weatherstrip for over twenty years has fulfilled every requirement for efficient protection against wind, rain, cold and dust. Scientifically correct in design and durably made from wear-resisting and non-rusting metals. It will render dependable service year after year, free from adjustments or repairs.



Jamb of Double Hung Sash

Material Specifications

Allmetal products are made from sheet and ribbon zinc, cold rolled bronze, spring bronze, architectural bronze, brass, and aluminum — all non-ferrous metals — of sufficient gauge to insure adequate strength and long life.

Weatherstrip Installation Specifications

Double Hung Sash
Allmetal Equipment No. 100

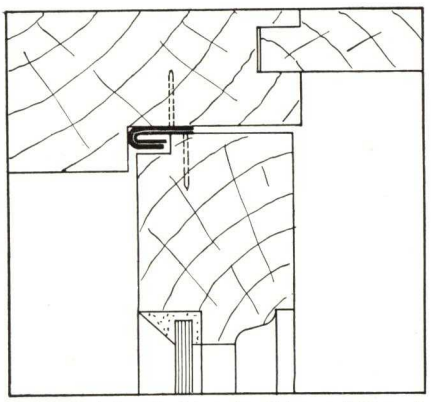
Doors
Allmetal Equipment No. 300

Casement Sash
In-opening
Allmetal Equipment No. 200
Out-opening (Flat Sill)
Allmetal Equipment No. 201
Out-opening (Rab. Sill)
Allmetal Equipment No. 202

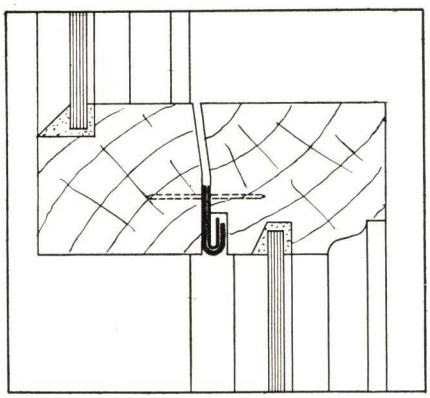
Architectural Details and Samples

Mounted samples and details showing standard weatherstrip installations furnished free upon request.

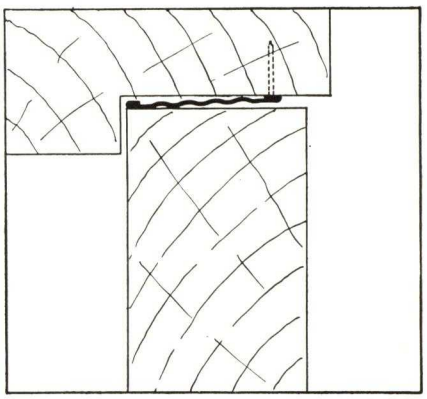
Complete information and samples of other products in our line will also be forwarded upon request.



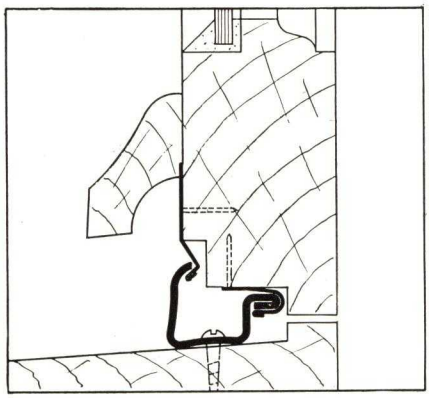
Concealed Interlocking for Sides and Top of Casements and Doors



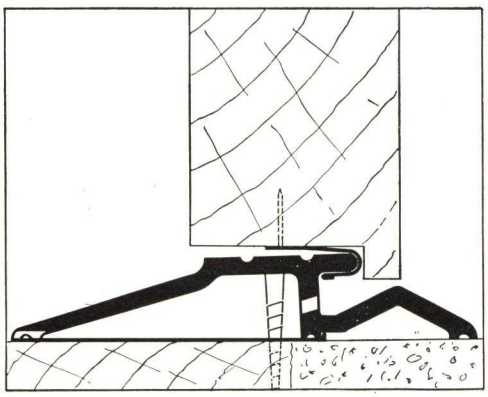
Meeting Rails
Double Hung Sash



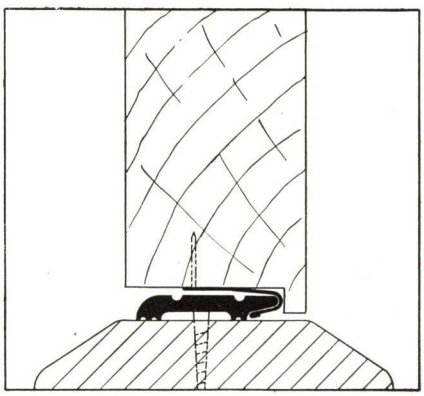
Double Hemmed Spring Bronze for Sides and Top of Casements and Doors



3-piece Trough Assembly for Sills of In-opening Casement



Waterproof Door Bottom



Standard Door Bottom

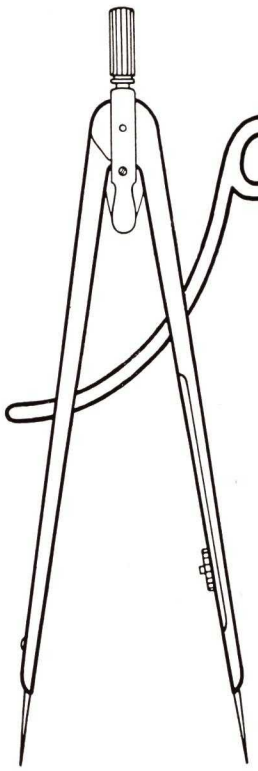
1938

Accurate METAL WEATHER STRIPS

FOR WINDOWS AND DOORS

TRADE MARK
ACCURATE
REG. U.S. PAT. OFF.

ACCURATE METAL WEATHER STRIP CO.
New York N. Y.



Accurate

METAL WEATHER STRIPS FOR EFFICIENT WEATHER PROOFING OF WINDOWS AND DOORS . . .

We have endeavored to illustrate in the following pages the most widely used types and combinations of ACCURATE Metal Weather Strips for windows and doors. In addition to these types, we have numerous special strips designed for unusual requirements and we are also in a position to make special dies and equipment for rolling strip to individual specification at a minimum cost.

While zinc and bronze are the two metals most commonly used for metal weather strips, we can also supply our equipment in other metals such as brass, aluminum, stainless steel, etc.

The zinc metal used is of purest quality, specially rolled and tempered to our own specification. In fabrication, the zinc is sheared and formed across the grain, therefore, giving it considerable more rigidity than regular ribbon zinc in addition to greater resistance to extreme temperature changes.

AN IMPORTANT FACTOR IN AIR CONDITIONING

The importance of dependable weather stripping is accentuated by its absolute necessity as a part of AIR CONDITIONING and TEMPERATURE CONTROL operations. The wide range of types and sizes of ACCURATE Metal Weather Strips, adapted to practically any type of window or door, places us in an ideal position to co-operate with you in meeting your requirements.

DISTRIBUTED THROUGHOUT THE UNITED STATES

The ACCURATE Metal Weather Strip Co. maintains an experienced engineering department in connection with its Main Office at New York. In addition, the company is nationally represented in the principal cities. All agents are thoroughly experienced and equipped to render efficient service through trained mechanics. Write to us for address of our nearest agent.

SPECIFICATIONS

In order to insure a clear interpretation of your weather strip requirements, we suggest that you always incorporate in your specifications the series number of the equipment. Detailed specifications and full size details will be gladly furnished upon request.

ACCURATE CAULKING COMPOUND

This compound contains the highest grade of required ingredients. It will remain pliable indefinitely. Furnished in several colors in Knife Grade and Gun Grade. Highly efficient for sealing joints between masonry and windows and door frames.

How to Specify: All joints around outside window and door frames shall be caulked with "ACCURATE" Caulking Compound in accordance with manufacturer's standards.

ACCURATE METAL WEATHER STRIP CO.

216 EAST 26th STREET NEW YORK, N. Y.

WEATHER STRIPPING DOUBLE HUNG WINDOWS

SERIES No. 10 EQUIPMENT

This type is adapted to all types of sliding sash. Most generally used on stock sash.

Covers full width at head, sill and pulley stiles.

SERIES No. 10 CORRUGATED						
Furnished as standard in No. 9 Gauge Zinc (Thickness .018)						
No.	Head Strip	Sill Strip	Meeting Rail	Upper Sides	Lower Sides	Sash Thickness
10A	No. 2	No. 3	No. 7 and 8	No. 2CX	No. 4C	1⅜
10B	No. 3	No. 6	No. 7 and 8	No. 3CX	No. 5C	1¾
10C	No. 6	No. 10	No. 7 and 8	No. 10CX	No. 9C	2¼
Can be furnished in heavier material where required.						

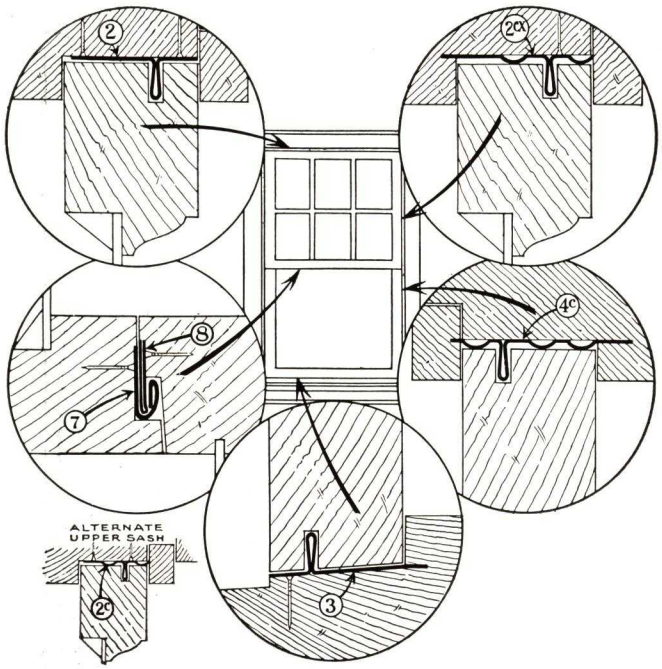
SERIES No. 20 EQUIPMENT

A higher efficiency is obtained with this type of equipment due to actual contact at sash cord borings and on pulley stiles. The pulley stile strips are attached with screws permitting easy removal.

After sash are squared, variation in alignment is corrected by packing out the No. 11 type strip with waterproof Ruberoid strips so that the pulley stile members are parallel.

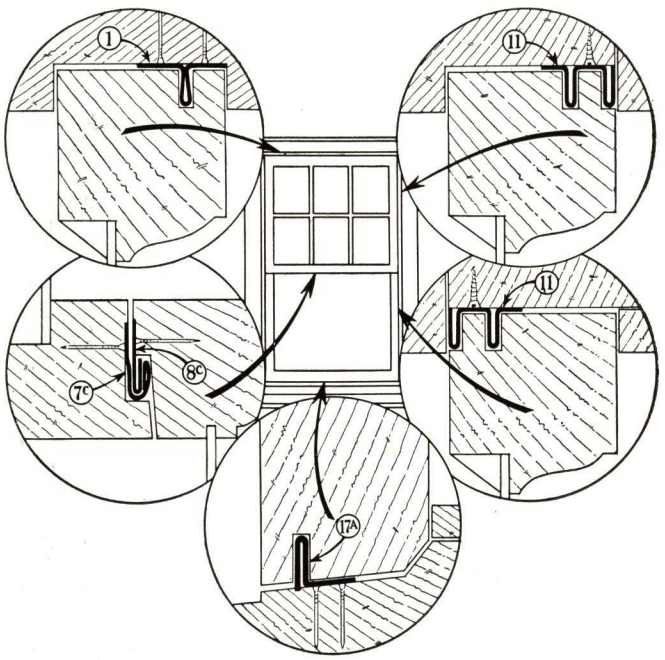
SERIES No. 20 EQUIPMENT				
	Type	Gauge	Thickness	Attached
Head	1	9	.018	Nailed
Sill	17A	12	.028	"
Meeting Rail	7C 8C	11 9	.024 .018	"
Pulley Stiles	11	9	.018	Screwed

SERIES No. 10 EQUIPMENT



How to Specify—All double hung windows shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 10 equipment, cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

SERIES No. 20 EQUIPMENT

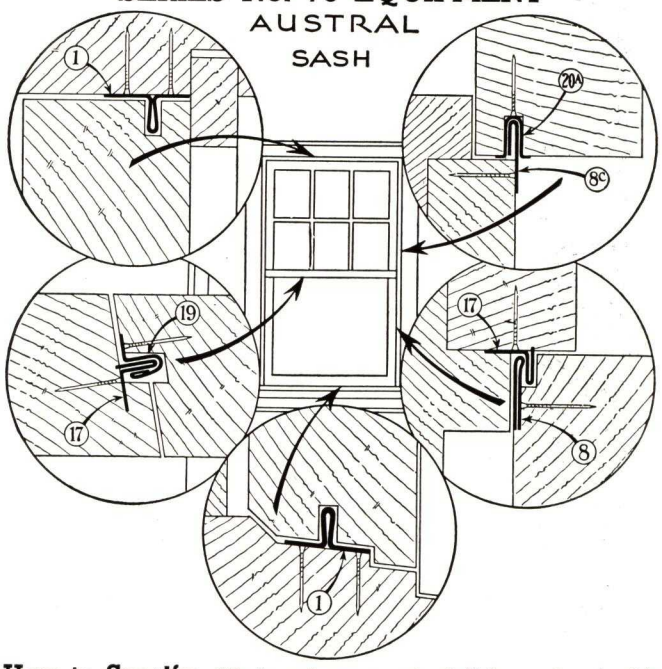


How to Specify—All double hung windows shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 20 equipment, with heavy duty 12 gauge sill member and double tongue side members, all cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

3

WEATHER STRIPPING AUSTRAL TYPE SASH AND IN SWINGING WOOD CASEMENT WINDOWS

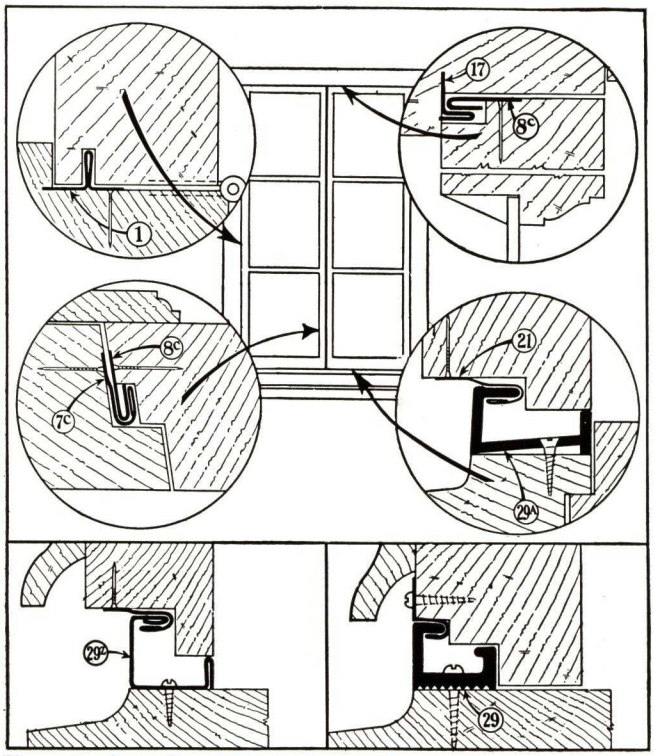
SERIES No. 70 EQUIPMENT



How to Specify—All Austral types sash shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 70 equipment, all cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

Note: Specify thickness of sill desired.

SERIES No. 80 EQUIPMENT



How to Specify—All inswinging wood casements shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 80 equipment with special extruded bronze (or zinc) sills to prevent any possible water leakage, all in accordance with manufacturer's standards.

SERIES No. 70 EQUIPMENT

Austral type sash can be thoroughly weather proofed with equipment as shown in sketch at right.

We have equipped many windows of this type and obtained high efficiency in results.

Other types of balanced or revolving sash require varying weather strip members. We will submit shop drawings showing weather strip applied on such other types of sash upon request.

SERIES No. 70 EQUIPMENT					
Head Strip	Sill Strip	Meeting Rail	Upper Sides	Lower Sides	
No. 3	No. 1	No. 19 & No. 17	No. 8C & No. 20A	No. 17	No. 8
.018	.018 .028	.024	.018	.024	.018

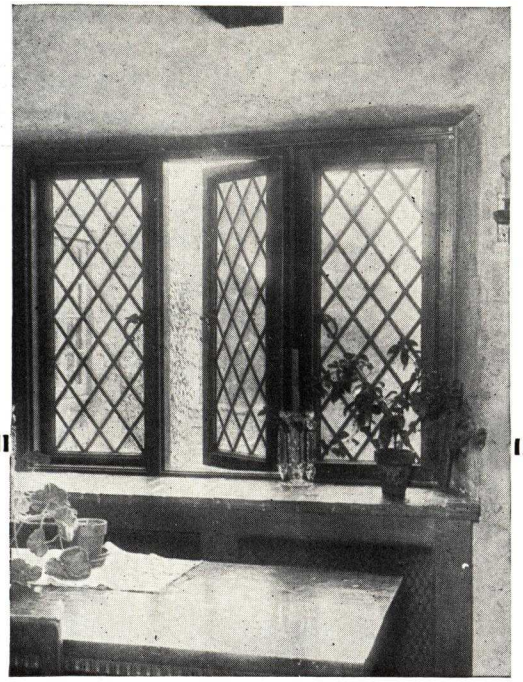
SERIES No. 80 EQUIPMENT

WEATHER STRIPPING IN SWINGING WOOD CASEMENT WINDOWS

Special attention is given to in swinging casement windows to prevent water leakage. Trough type equipment at sill is essential to effect proper drainage.

SERIES No. 80 EQUIPMENT					
No.	Head and Lock Stile	Hinged Stiles	Sill	Meeting Stiles	Sash Thickness
80A	17 & 8C .024 | .018	No. 1 .018	29A extruded	7C & 8C .024 | .018	1¾ to 2¼
80B	17 & 8C .024 | .018	No. 1 .018	29 extruded	7C & 8C .024 | .018	1⅛ to 1⅜
80C	17 & 8C .024 | .018	No. 1 .018	29ZINC .031	7C & 8C .024 | .018	1⅛ to 1⅜

WEATHER STRIPPING OUT SWINGING CASEMENT WINDOWS AND STEEL SASH



SERIES No. 90 EQUIPMENT

This style equipment for weather stripping out swinging wood windows, although simple in design is thoroughly effective.

Where it is desired to use a brass saddle at sill, we recommend the No. 23 as illustrated on page 8.

SERIES No. 90 EQUIPMENT								
Head Strip		Sill Strip		Meeting Stiles		Hinge Stile	Lock Stile	
No. 17 & 8C		No. 17 & 8C		No. 17 & 8C		No. 1	No. 17 & 8C	
.024	.018	.024	.018	.024	.018	.018	.024	.018

ERIES No. 100 EQUIPMENT

STEEL SASH WEATHER STRIP

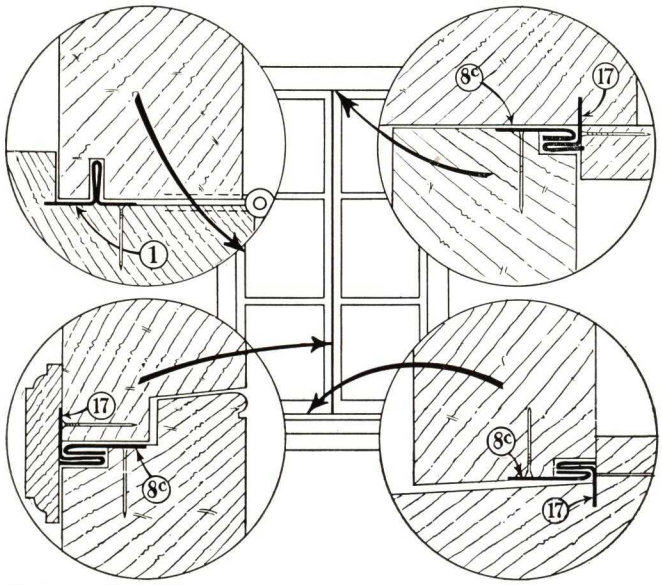
There are many varying details in construction of steel sash, requiring bronze members of different sizes and shapes.

Send full size details or sash Manufacturer's name and type for shop drawing.

The drawing at left illustrates the most efficient type of Accurate Steel Sash Equipment for average conditions.

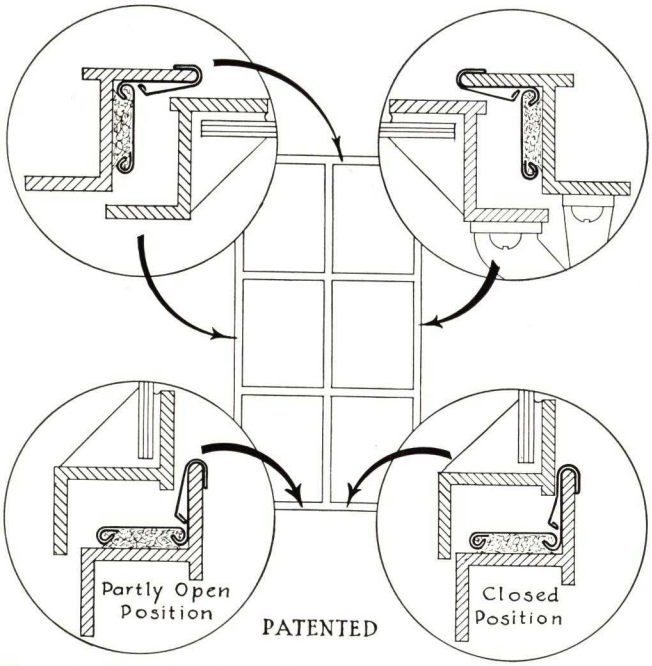
SERIES No. 100 EQUIPMENT
Submit detail and name of manufacturer of sash to be weather-stripped. Strip is in one piece with double thickness at clamping point. Felt attached to frame prevents leakage around it.

SERIES No. 90 EQUIPMENT



How to Specify—All out swinging wood casements shall be equipped with "Accurate" Metal Weather Strips, Series No. 90 equipment, all cross grain zinc, in accordance with manufacturer's standards.

SERIES No. 100 EQUIPMENT



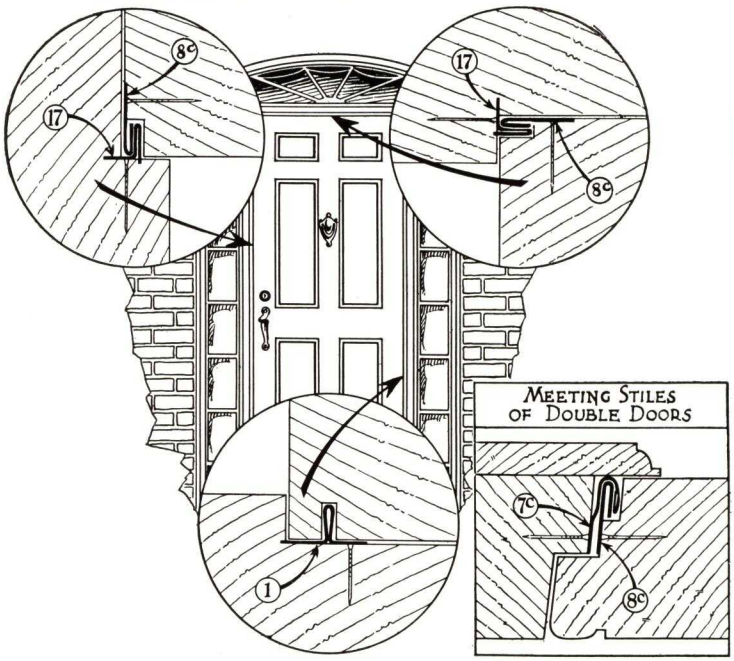
How to Specify—All steel casements shall be equipped with "Accurate" Metal Weather Strips, Series No. 100 equipment, special spring bronze, in accordance with manufacturer's standards.

ACCURATE

WEATHER STRIPPING ENTRANCE DOORS

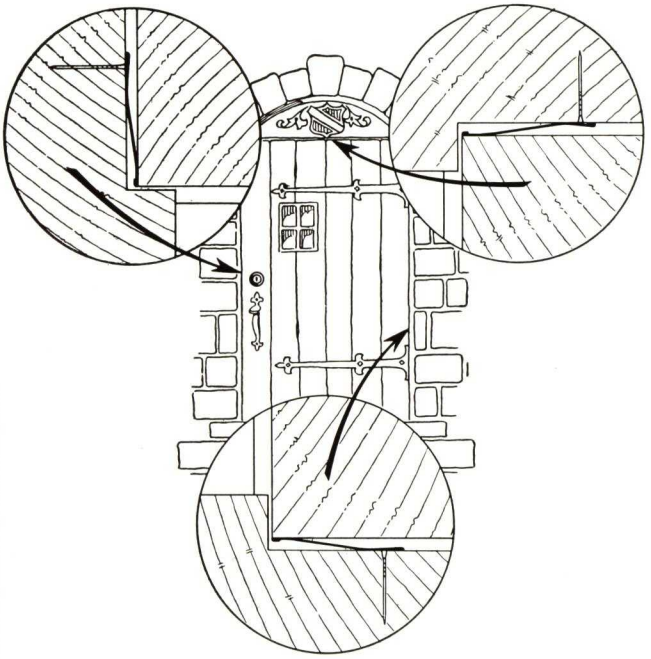
SERIES No. 500 EQUIPMENT

INTERLOCKING TYPE WEATHER STRIPPING



SERIES No. 600 EQUIPMENT

SPRING BRONZE TYPE WEATHER STRIPPING



WEATHER STRIPPING FOR JAMBS AND HEADS

Above are shown two types of weatherstripping for entrance doors opening in. While the Interlocking Type is preferable, Spring Bronze Strips are used in some sections of the country for doors, transoms and hinged windows instead of interlocking weatherstrip. Spring Bronze is furnished in widths of ¾ in., 1 in., 1⅛ in., 1¼ in., 1⅜ in., 1½ in., 1¾ in. and with double hemmed or beaded edge for heads and jambs.

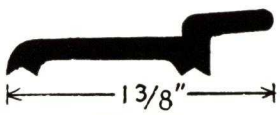
How to Specify— (Specify equipment number, with width of spring bronze strip for jamb and head, also number of saddle section desired.)

BRASS SILL PIECES (Extruded)

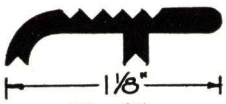
Adapted principally for application on top of existing thresholds and where the doors are protected. Under normal conditions these sill pieces are weatherproof.

FOR DOORS OPENING IN

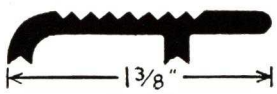
No. 24



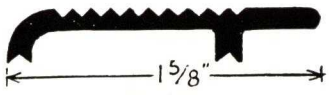
No. 26A



No. 25



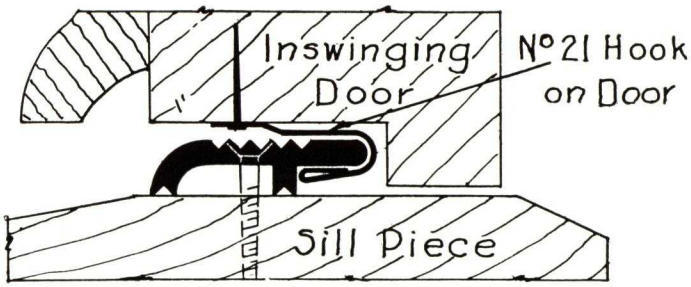
No. 26



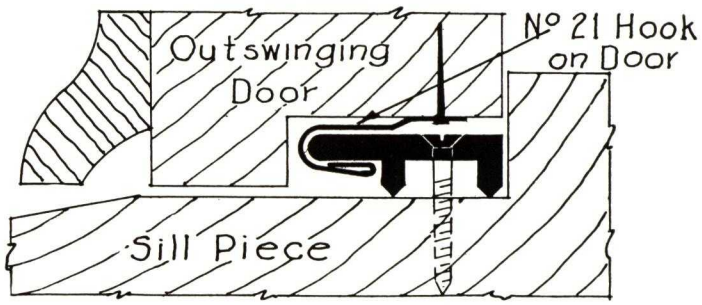
No. 27

FOR DOORS OPENING OUT

No. 23



APPLICATION TO INSWINGING DOORS



APPLICATION TO OUT SWINGING DOORS

"ACCURATE" SECTIONAL EXTRUDED SADDLES

FOR EXTERIOR DOORS OPENING IN

(Note: For One Piece Extruded Saddles See Page 10)

ADVANTAGES OF SECTIONAL EXTRUDED SADDLES

Accurate Sectional Extruded Saddles combine features of flexibility not obtainable in the one piece type rigid saddles. The extension members are interchangeable and are carried in stock in standard widths of 1 in., 2 in., 3 in., 4 in., 5 in., 6 in. and 7 in., making it possible to extend or decrease the width of interior or exterior members to meet practically all conditions. For example, the width of saddles 28B, 28C, 32C and 32B may have extensions of 7 in. on each side of the main member or the entire saddle reduced to 4½ in.

Self-Leveling Principle—Another feature is the Self-Leveling Principle of the pivoted extension members. This is particularly important when floor and sill levels vary. The extension members are screwed in place or the inner extension member may be left so that it will extend over the edges of rugs, runners, mats or similar floor coverings to hold them in position.

SADDLES FOR NORMAL EXPOSURE

Under normal conditions, we usually recommend a wide saddle, the width depending on the conditions in the building.

No. 28B—This saddle, besides having the interlocking water stop, also has an outside groove which acts to stop rain from driving under the door.

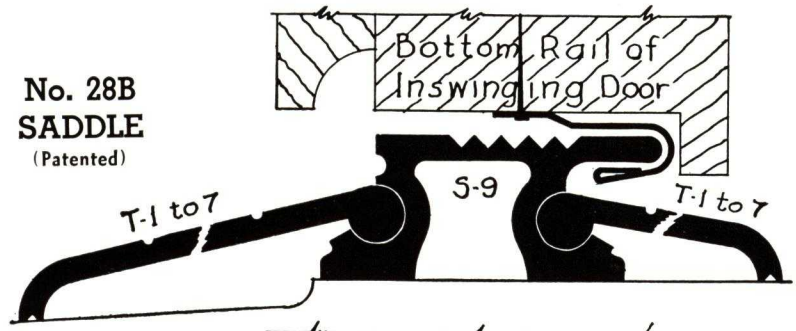
No. 28C—This is similar in construction to 28B but does not have the outer water stop and in many cases is preferred by some architects.

No. 32C—For use similar to 28B but has a water stop in the middle of the center member, which is ¾ in. high.

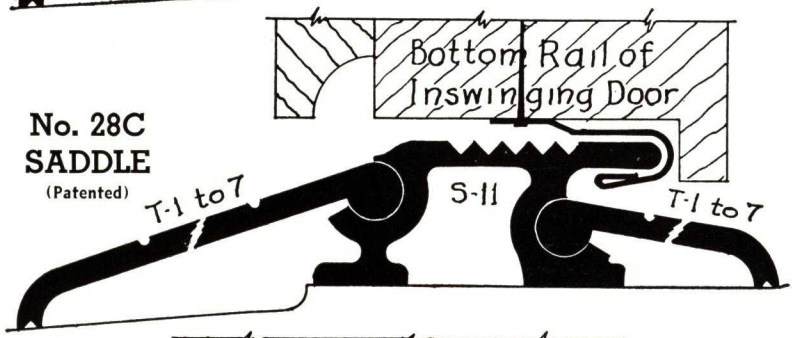
No. 32B with Screen Door Stop—This is similar to 32C except that the exterior extension member has a stop which is adjustable for use with outside screen doors, permitting maximum space of 7 in. between doors and the center member is ⅞ in. high.

SADDLES FOR EXCEPTIONAL EXPOSURE

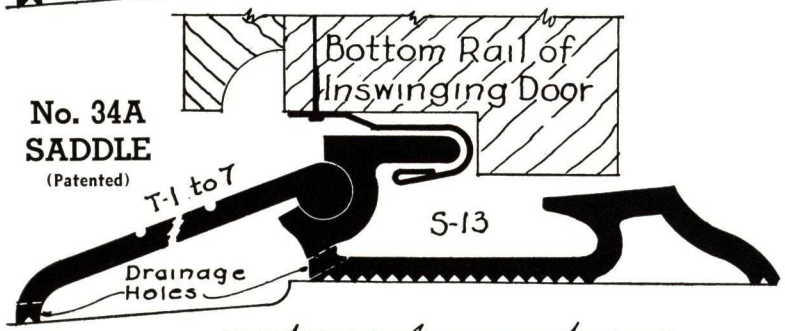
No. 34A—This is designed so that any water which might pass the weatherstrip seal is caught by the trough and passes out through the drainage holes. Staggered drainage holes only release the water outward.



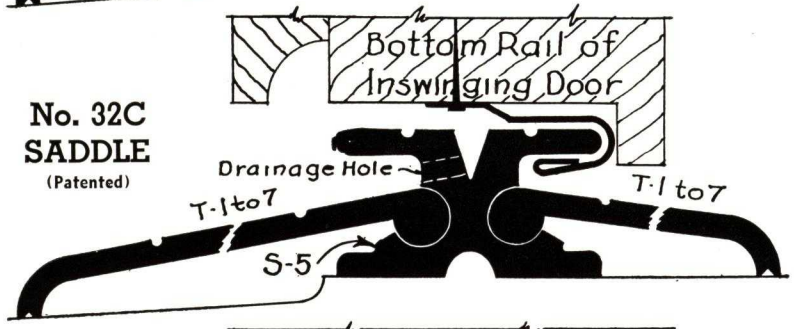
No. 28B SADDLE
(Patented)



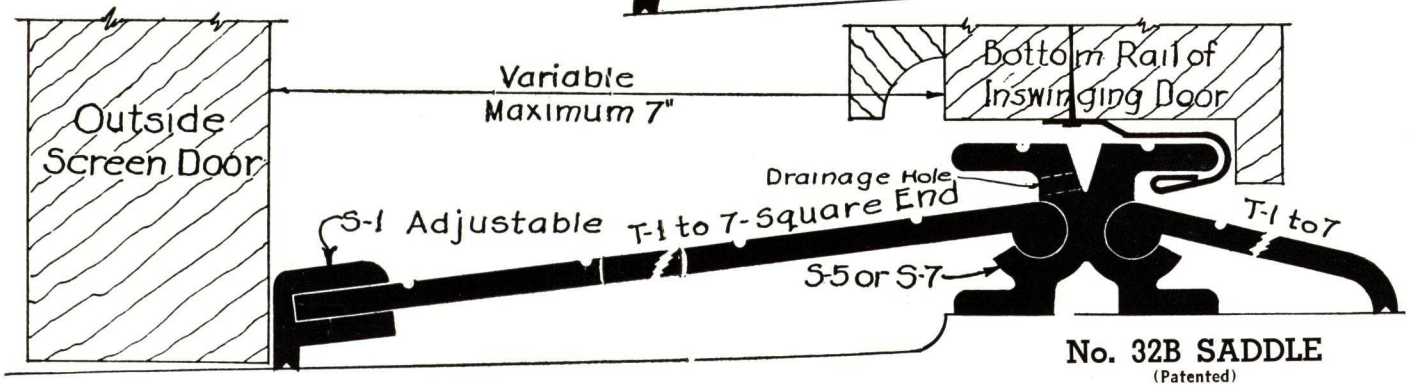
No. 28C SADDLE
(Patented)



No. 34A SADDLE
(Patented)

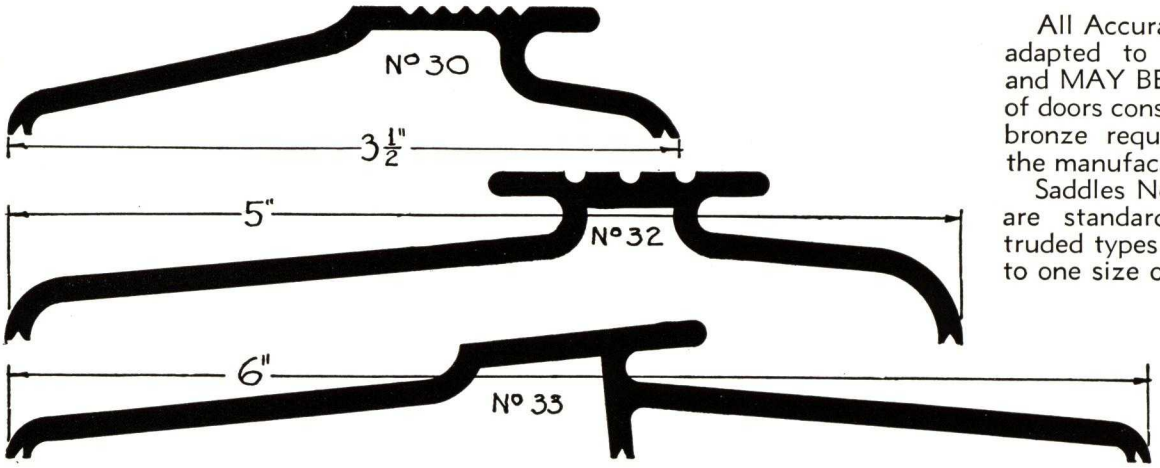


No. 32C SADDLE
(Patented)



No. 32B SADDLE
(Patented)

"ACCURATE" (One Piece) EXTRUDED SADDLES
FOR EXTERIOR DOORS OPENING IN



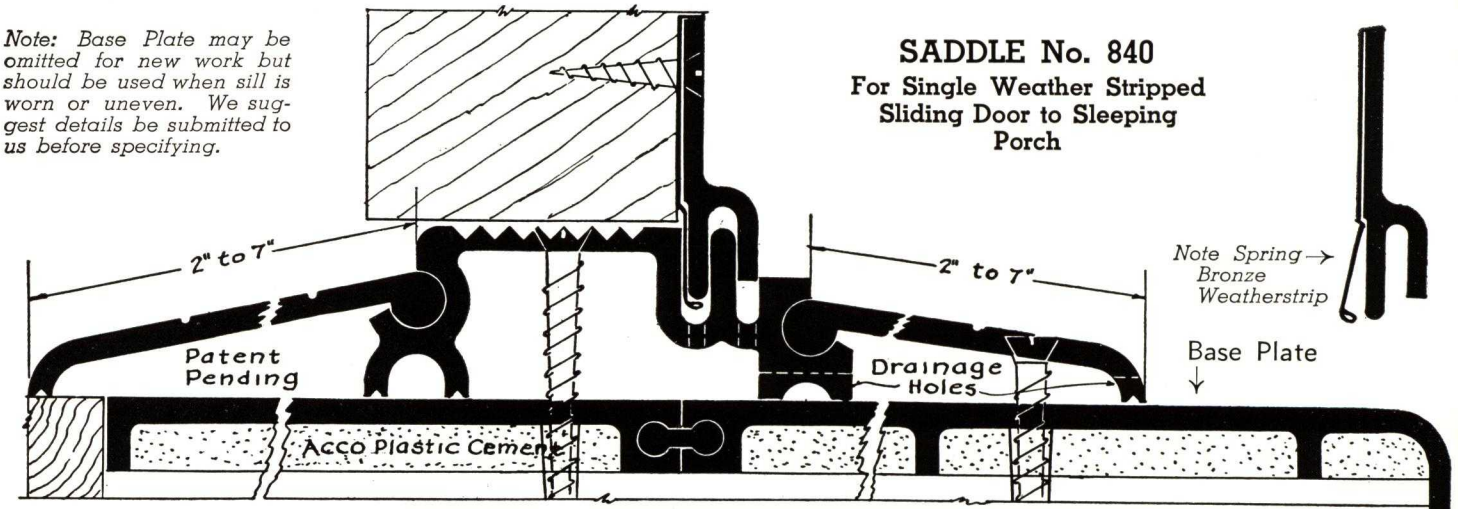
All Accurate Saddles can be adapted to all French doors and MAY BE USED at the sills of doors constructed of steel or bronze requiring detailing by the manufacturer.

Saddles Nos. 30, 32 and 33 are standard one piece extruded types which are limited to one size only.

"ACCURATE" SECTIONAL UNIT SADDLES
FOR EXTERIOR SLIDING DOORS TO PORCHES, ETC.

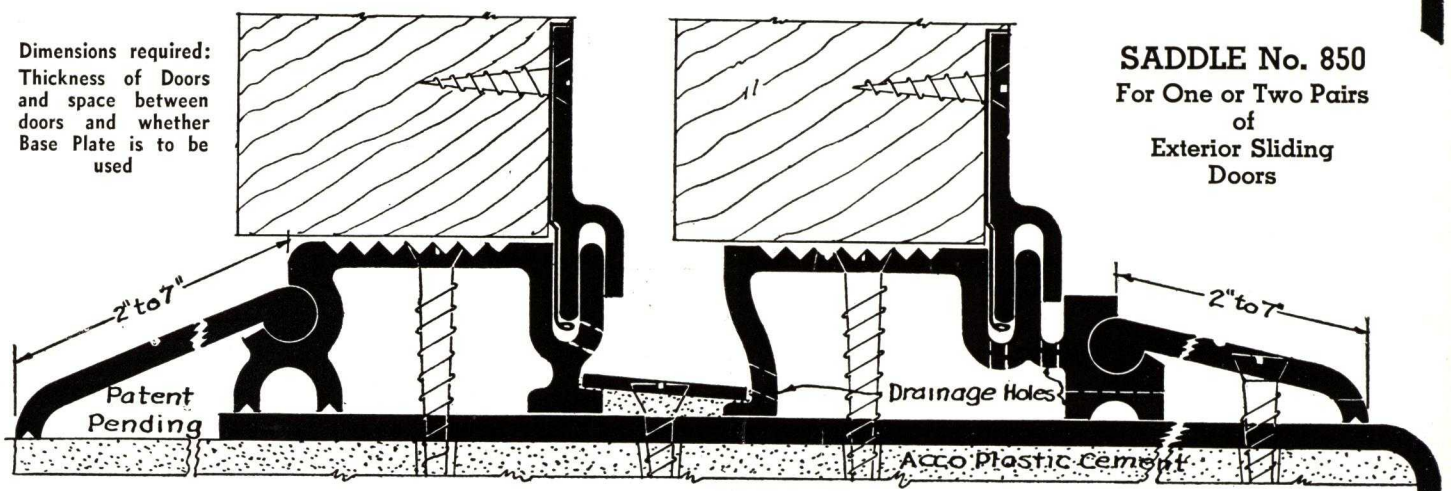
Note: Base Plate may be omitted for new work but should be used when sill is worn or uneven. We suggest details be submitted to us before specifying.

SADDLE No. 840
For Single Weather Stripped Sliding Door to Sleeping Porch



Dimensions required: Thickness of Doors and space between doors and whether Base Plate is to be used

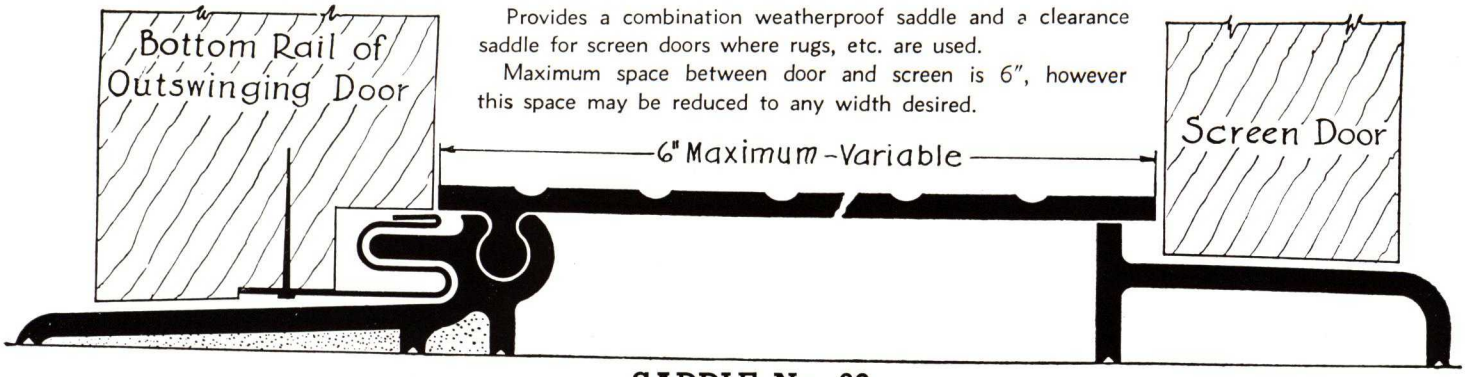
SADDLE No. 850
For One or Two Pairs of Exterior Sliding Doors



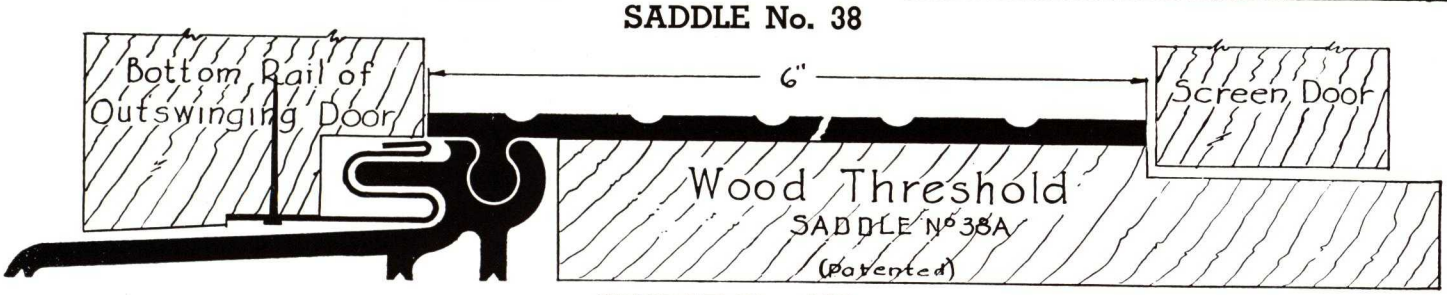
"ACCURATE" SECTION UNIT SADDLES
FOR EXTERIOR DOORS OPENING OUT

Provides a combination weatherproof saddle and a clearance saddle for screen doors where rugs, etc. are used.

Maximum space between door and screen is 6", however this space may be reduced to any width desired.

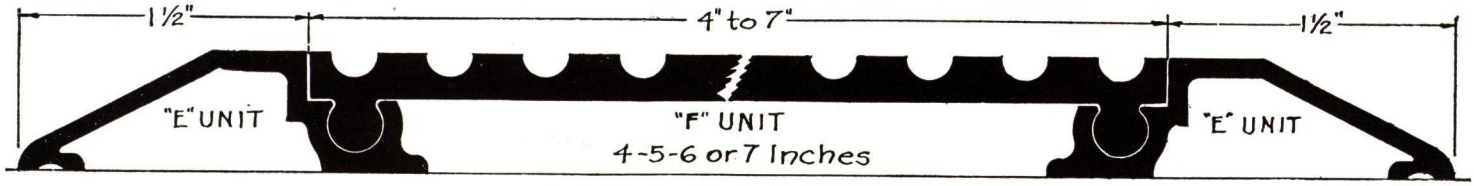


SADDLE No. 38

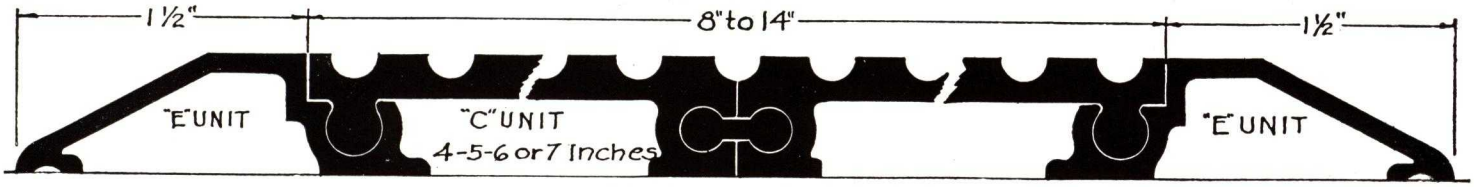


SADDLE No. 38A

"ACCURATE" SECTIONAL UNIT FLAT SADDLES
FOR COMMERCIAL BUILDINGS



TYPE "F" UNIT SADDLE
Maximum Width for this Combination 10"



TYPE "C" UNIT SADDLE
This Saddle can be furnished to any width desired

WEATHERSTRIPPING INSIDE DOORS

For Inside Doors such as bedroom doors, where it is desired to prevent drafts from coming under the doors, the ACCO Automatic Door Bottom should be used. This contains a felt strip which drops as the door is closed and is automatically raised as the door opens. Complete details sent on request.

SPECIAL WEATHERSTRIPPING PROBLEMS

We will be glad to submit our suggestions for the weatherstripping of unusual door conditions on receipt of details. Our experience of many years in solving all types of weatherstripping problems is at the service of the architect.

Odd floor and sill conditions may require special treatment. Send details to us for study and we will furnish shop drawings. Changing sill details slightly, before frames and sash are made, often lessens the cost of construction and produces a better job.

TRADE MARK
ACCURATE
REG. U.S. PAT. OFF

METAL WEATHER STRIPS

Representatives in Principal Cities of the United States and Canada -:- -:- -:-

THE COMPANY—The ACCURATE Metal Weather Strip Co. has been manufacturing equipment of this kind for thirty-four years, starting in a very modest way and successfully building the business until today it is among the outstanding in the industry.

MANUFACTURING FACILITIES—Due to unusually efficient manufacturing facilities making possible personal supervision and complete control of every step in fabrication, purchasers of all ACCURATE Metal Weather Strips are assured of dependable workmanship and prompt service. All departments are located under one roof in a completely equipped modern seven story fireproof building which is owned by the company.

ARCHITECTURAL SERVICE—Satisfactory results from weather strip depends upon three major factors—(1) quality of equipment; (2) selection of equipment designed to meet the individual conditions and requirements and (3) proper installation. Where time permits, we strongly urge that you permit us to submit complete and specific recommendations.

ACCURATE METAL WEATHER STRIP CO.

216 East 26th Street, New York, N. Y.

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ATHEY COMPANY

Cloth Lined Metal Weatherstrip—Sealtite Caulking Compound

6035-6045 West 65th Street, CHICAGO, ILL.

PRINCIPAL BRANCHES AND AGENCIES

ATLANTA, GA., Floyd Bros. Co., 535 Flat Shoals Avenue
BOSTON, MASS., Walsh-Spencer Co., 400 Boylston Street
BUFFALO, N. Y., H. T. Cary, 293 Voorhees Avenue
CASPER, WY., E. H. Fritchell, 163 No. Durbin Street
CHICAGO, ILL., W. L. Van Dame Co., 820 Tower Court
CLEVELAND, OHIO, Consolidated Screen Co., 202 Columbia Building
COLUMBIA, S. C., A. A. Bradford
DAYTON, OHIO, Glawe Manufacturing Co., 515 E. Herman Street
DECATUR, ILL., C. J. Gandy, 245 No. Westlawn
DETROIT, MICH., W. O. LeSage & Co., 1720 12th Street
HARTFORD, CONN., Hartford Wire Works, 90 Allyn Street
KNOXVILLE, TENN., Chas. M. Allen Corp., 2221 White Avenue
LOUISVILLE, KY., H. A. Bohn, 814 Baxter Avenue
MEMPHIS, TENN., Chears Building Specialties Co., 884 Adams Street
MILWAUKEE, WIS., Willer Screen & Weather Strip Co., 1459 No. 40th Street
OMAHA, NEB., Lew Wentworth, 415 Karbeck Block
PHILADELPHIA, PA., Wolfe & Adams, 1000 Architects Building
PITTSBURGH, PA., Northern Screen & Weatherstrip Co., 3856 East Street
PUEBLO, COLO., Athey-Beaman Co., 711 W. 12th Street
ROANOKE, VA., J. C. Clemmer, 1114 Stewart Avenue
SHARON, PA., F. A. Leipheimer, 66 Wengler Avenue
SPOKANE, WASH., Ace Weatherstrip Co., 411 W. Sprague Avenue
SPRINGFIELD, ILL., A. H. Krebs Co., 2201 So. 8th Street
SPRINGFIELD, MASS., The Meyer Company., 100 Alderman Street
ST. LOUIS, MO., A. A. Klutho Co., Syndicate Trust Building
ST. PAUL, MINN., Metal Weatherstrip Co., 619 Minnesota Mutual Life Building
TORONTO, CANADA, Cresswell Pomeroy Co., 989 Bay Street
TULSA, OKLA., Merry Screen Co., 219 So. Madison Street
YAKIMA, WASH., B. F. Mann, 515 No. Naches Street
YOUNGSTOWN, OHIO, Youngstown Hardwood Floor Co., 100 W. Rayon Street

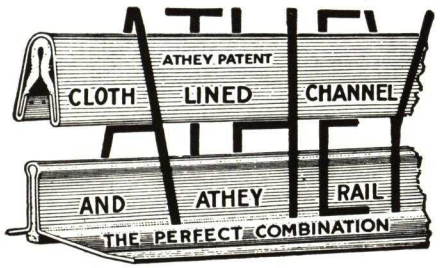
CANADIAN OFFICE AND FACTORY: Cresswell-Pomeroy Ltd., 604 De Courcelles Street, MONTREAL, QUE.

For our page on Window and Skylight Shades, see File Index

ATHEY CLOTH LINED METAL WEATHERSTRIP

Athey Cloth Lined Metal Weatherstrip, the only weatherstrip using the cloth to metal feature, has been on the market for nearly 30 years. It has been installed on many of the best buildings in the United States and Canada for owners and architects who desire the best, even though the initial cost is higher than for ordinary weatherstrip. Of our early installations we can point to the St. Anthony's Hospital of St. Louis and the Blackstone Hotel of Chicago, who are still obtaining the maximum in efficiency after twenty-six years of service, making the yearly cost lower in comparison with cheap, inferior weatherstrip.

Unlike the ordinary channel used in many two-piece strip installations, the Athey channel is double the usual width and lined with a cloth made especially for this purpose, which not only prevents air leakage but is a dust preventive and soundproofing as well. Rail members are also backed with felt which prevents leakage at the jamb, a common weakness in weatherstrip installation due to infrequent nailing of the rail member. All cloth and felt used is chemically treated, guarding against rot or deterioration, so this part of the weatherstrip as well as the metal is guaranteed for the life of the building. All Athey Weatherstrip is made of sheet zinc cut across the grain, the most expensive but assurance against cracking.



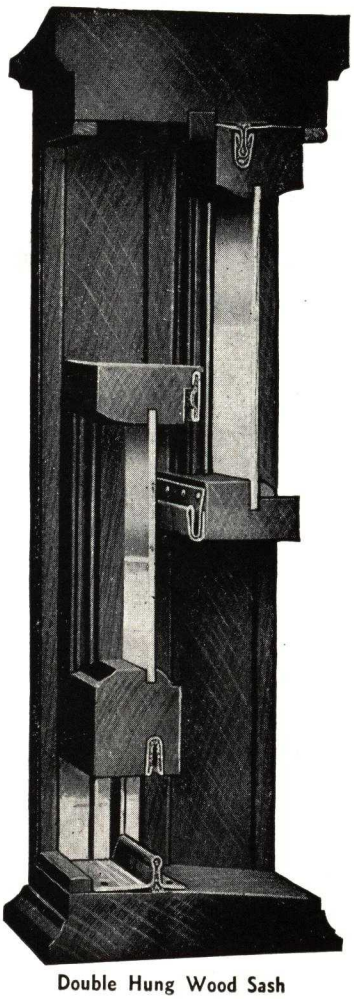
In using Athey strip a continuous contact is afforded all around the window, the strip being mitred at all corners, a result not obtained by many metal to metal contact strips where it is necessary to revert to a rib strip at the head and sill.

Athey Weather Strip is sold and installed by one hundred and twenty representatives, those in the larger cities listed above. Write to us for our latest catalogue, showing details of installation for every type of window or door, whether wood or metal. Samples of strip will be furnished when requested.

This Illustration at the Left

Shows the largest sanitarium in the United States which has been operated—the main building for sixty years, the wings for over twenty years—with this enormous waste of fuel.

The entire cost of the weatherstripping was absorbed by the savings in fuel, blankets and janitor service in the first winter. A $30,000 boiler was eliminated—the cloth to metal contact accomplished it.



Double Hung Wood Sash

Department of Public Welfare
CITY OF ST. LOUIS

OFFICE OF
DIRECTOR OF PUBLIC WELFARE
329 MUNICIPAL COURTS BLDG.

February 16, 1929.

The Athey Company,
Gentlemen:--

You will perhaps be glad to know that through the weather-stripping job handled by your people at the City Sanitarium recently, we were able to discontinue the use of one 350 horse-power boiler, a saving to the City of about $1500.00 a month in coal. We were also able to cancel an order for about $2000.00 worth of blankets, which had been requisitioned for use during the present winter.

Feeling that this information would be of interest to you, we gladly submit it.

Yours very truly,

H. L. Dalisbury
Director of Public Welfare

106T

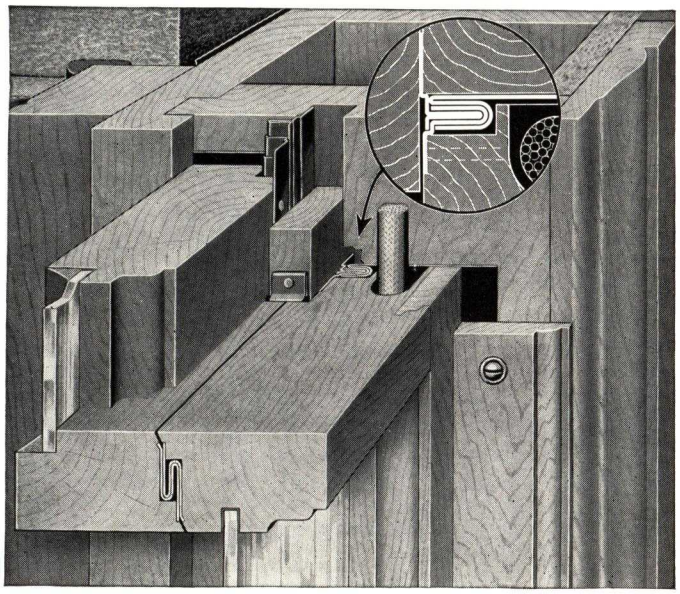
MEMORANDA

BARLAND WEATHERSTRIP MATERIAL CO.

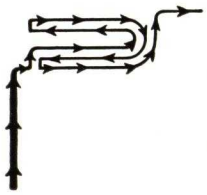
5600 Curtis Avenue, CLEVELAND, OHIO

KNIGHT TRIPLE-INTERLOCKING WEATHERSTRIP FOR DOUBLE HUNG WINDOWS

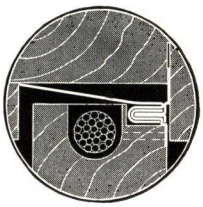
For Trouble-free, Easy Working Windows with Full Efficiency at the Pulley Cord Grooves of Each Sash

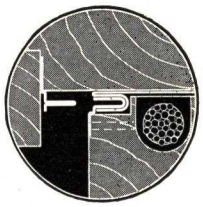


Triple Interlocking—Greater Efficiency



Showing the path and four complete reverses of direction that air would have to travel between accurate close fitting members before it could reach the inside of the building.





Left: Self-adjusting to expansion and contraction of sash with no loss of efficiency. Right: Easy removal of sash without damage to strip or cutting of parting bead.

Sliding metal to metal surfaces are completely enclosed, armored against paint and dirt.

Smooth metal sliding surface for the sash covers the entire runway eliminating wood to wood contact and need for paint, helping to insure easy working windows.

Strip is entirely concealed from the inside, when window is closed.

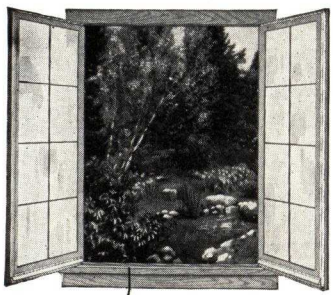
Bearing surfaces are equalized in all directions insuring long life and easy working sash.

Window cannot rattle, the strip holds the sash in proper place regardless of amount of clearance between sash and stops.

Made of free sliding cross grain sheet zinc for both strength and flexibility where needed.

Handled only by carefully selected dealers.

POSITIVE WATER PROTECTION FOR CASEMENTS WITH BARLAND SUPER-SEAL CHANNELS

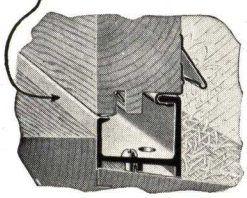


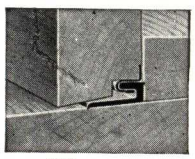
Durable and airtight. Aluminum alloy, heat treated.

For the ideal installation without cutting off and weakening the sash, remove the wood sash drip commonly used under the sash and replace it with the *deep sloping base channel* shown at the left.

No. CA4—1⅜" wide
No. CA5—1¾" wide

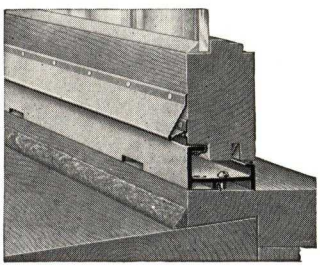
When sash construction will not permit installation shown at left, use channel shown below.



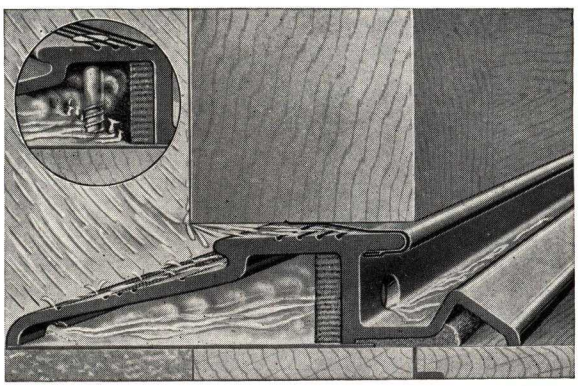


Outswing Casement Bar

Strong–Simple. Water cannot get back of bar because of sharp embedded edges



Horizontal Base Channel
No. CA1—1⅜" wide
No. CA2—1¾" wide



SUPER-SEAL BEAUTY TREAD THRESHOLDS

Water can flow out but air cannot enter.

Should water be blown in around the hook or sides of the door under extreme weather conditions it is carried back outside through the weep holes and the concealed strip of special felt which prevents the entrance of cold air, dust or insects.

Sizes—3"x¾", 4"x⅞", 5"x⅞" and 6"x1¼" (to clear heavy rugs).

There are also 30 other important sizes and styles.

Note: If you do not have our catalog filed under No. 35-P-6 in your architectural file, please let us send it to you.

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

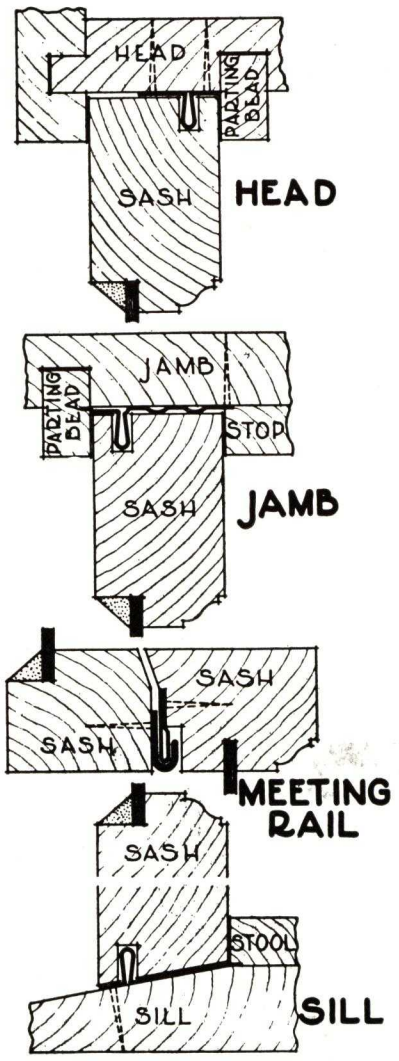
DETROIT, MICH.

BRANCH OFFICES THROUGHOUT THE UNITED STATES

Members of The Producers' Council, Inc.

For Catalogs on Screens and Lightproof Shades, see File Index

No. 100
For Double Hung in Residential Buildings
1⅜" and 1¾" Sash



During the 45 years the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC. has been in the weather strip field, numerous changes in design and materials have been made, when practical experience found them more efficient and durable.

One example: Number 100-A equipment recommended for public buildings where larger clearances and careless usage usually exist.

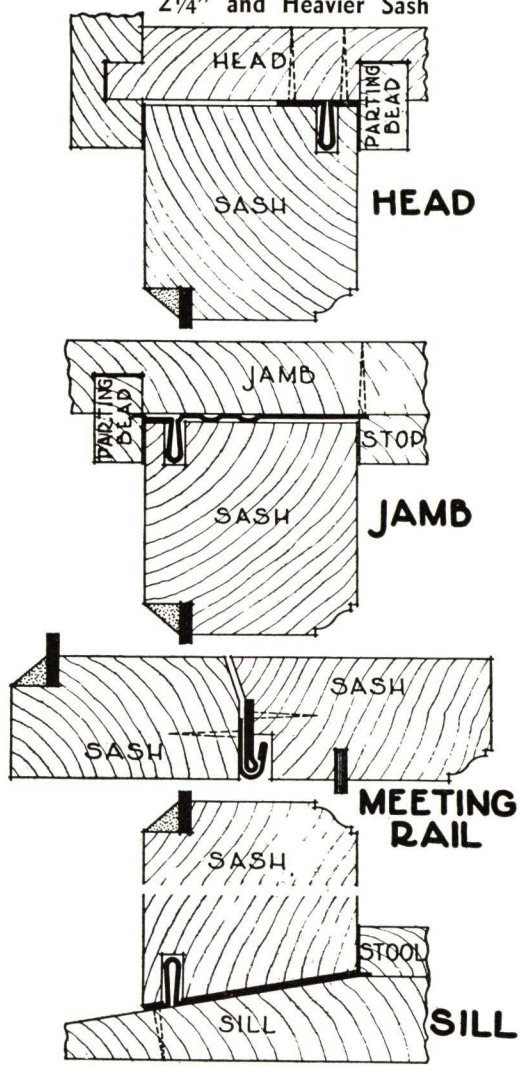
Experienced Chamberlin Field Service Men will willingly assist you in specifying equipment requirements to insure satisfactory results.

General Specification for Number 100 Equipment — Double hung windows shall be equipped with Chamberlin weather strips (zinc or cold-rolled bronze). Type 100 installed in accordance with specific specifications and by mechanics in the employ of the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

Note: Substitute Type 100-A in above specification when heavy duty equipment is desired.

(Details Half-Size)

No. 100A
For Double Hung in Hotels, Schools, Institutions, Office Buildings
2¼" and Heavier Sash

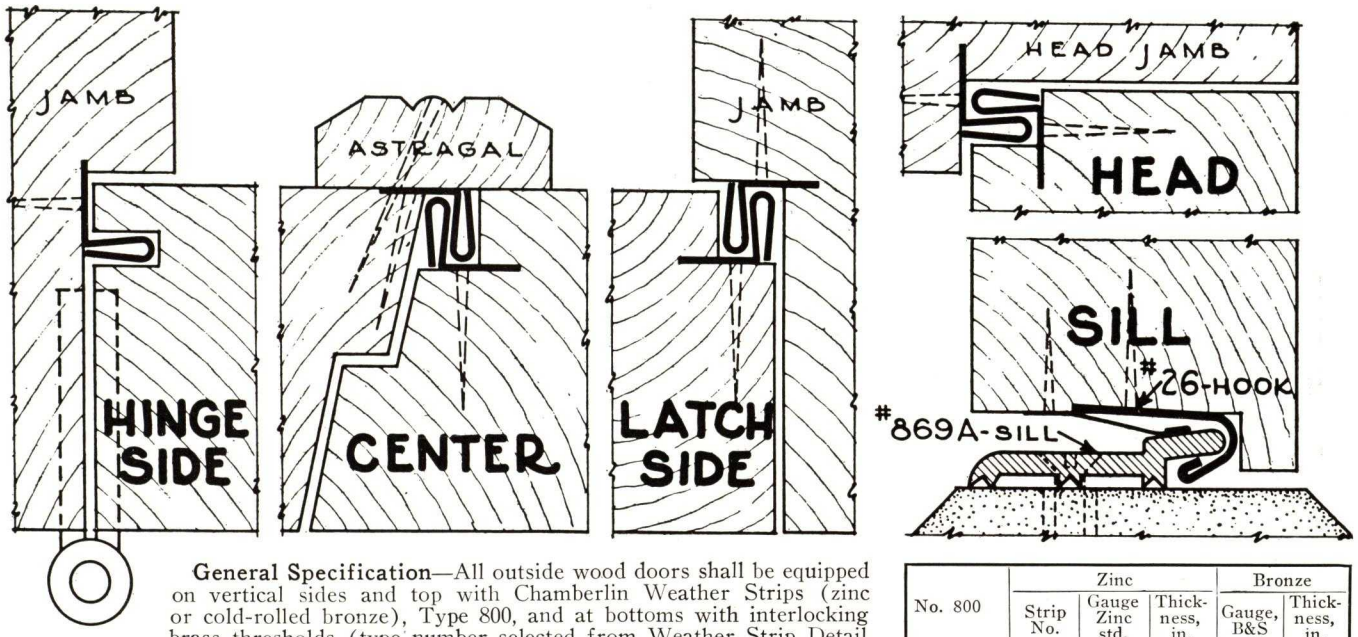


No. 100	Zinc			Bronze	
	Strip No.	Gauge, zinc std.	Thickness, in.	Gauge, B&S	Thickness, in.
Head	6	10	.020	25	.0179
Sill, 1⅜" sash	7	10	.020	25	.0179
Sill, 1¾" sash	8	10	.020	25	.0179
Sides, upper, 1⅜" sash	1A	9	.018	25	.0179
Sides, lower, 1⅜" sash	1	9	.018	25	.0179
Sides, upper, 1¾" sash	2A	9	.018	25	.0179
Sides, lower, 1¾" sash	2	9	.018	25	.0179
Meeting rail, male	5	9	.018	25	.0179
Meeting rail, hook	5	8	.016	26	.0159

No. 100A	Zinc			Bronze	
	Strip No.	Gauge, zinc std.	Thickness, in.	Gauge, B&S	Thickness, in.
Head	76	12	.028	23	.0225
Sill	79	12	.028	23	.0225
Sides, upper	73A	10	.020	25	.0179
Sides, lower	73	10	.020	25	.0179
Meeting rail, male	75	12	.028	23	.0225
Meeting rail, hook	75	12	.028	23	.0225

Since 1907, the Company has operated on its present Branch Office System with centralized responsibility for service and installation. The personnel of each branch office consists of experienced representatives who are thoroughly familiar with Chamberlin Products and Chamberlin Service. Perhaps equally important as design of equipment is supervised installation in accordance with specific specifications. Chamberlin Weather Strip Installers are skilled mechanics, careful, accurate, and neat before they are permitted to do any actual installing "on the job." These combined factors are the controlling influence in establishing the maximum in efficiency and satisfaction from a weather strip installation.

CHAMBERLIN EQUIPMENT No. 800—OUTSIDE WOOD DOORS



General Specification—All outside wood doors shall be equipped on vertical sides and top with Chamberlin Weather Strips (zinc or cold-rolled bronze), Type 800, and at bottoms with interlocking brass thresholds (type number selected from Weather Strip Detail Catalog) installed in accordance with specific specifications and by mechanics in the employ of the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

No. 800	Zinc			Bronze	
	Strip No.	Gauge Zinc std.	Thick-ness, in.	Gauge, B&S	Thick-ness, in.
Head	21	10	.020	25	.0179
	21	10	.020	25	.0179
Center ...	21	10	.020	25	.0179
	21	10	.020	25	.0179
Hinge side	21	10	.020	25	.0179
Latch side	21	10	.020	25	.0179
	21	10	.020	25	.0179

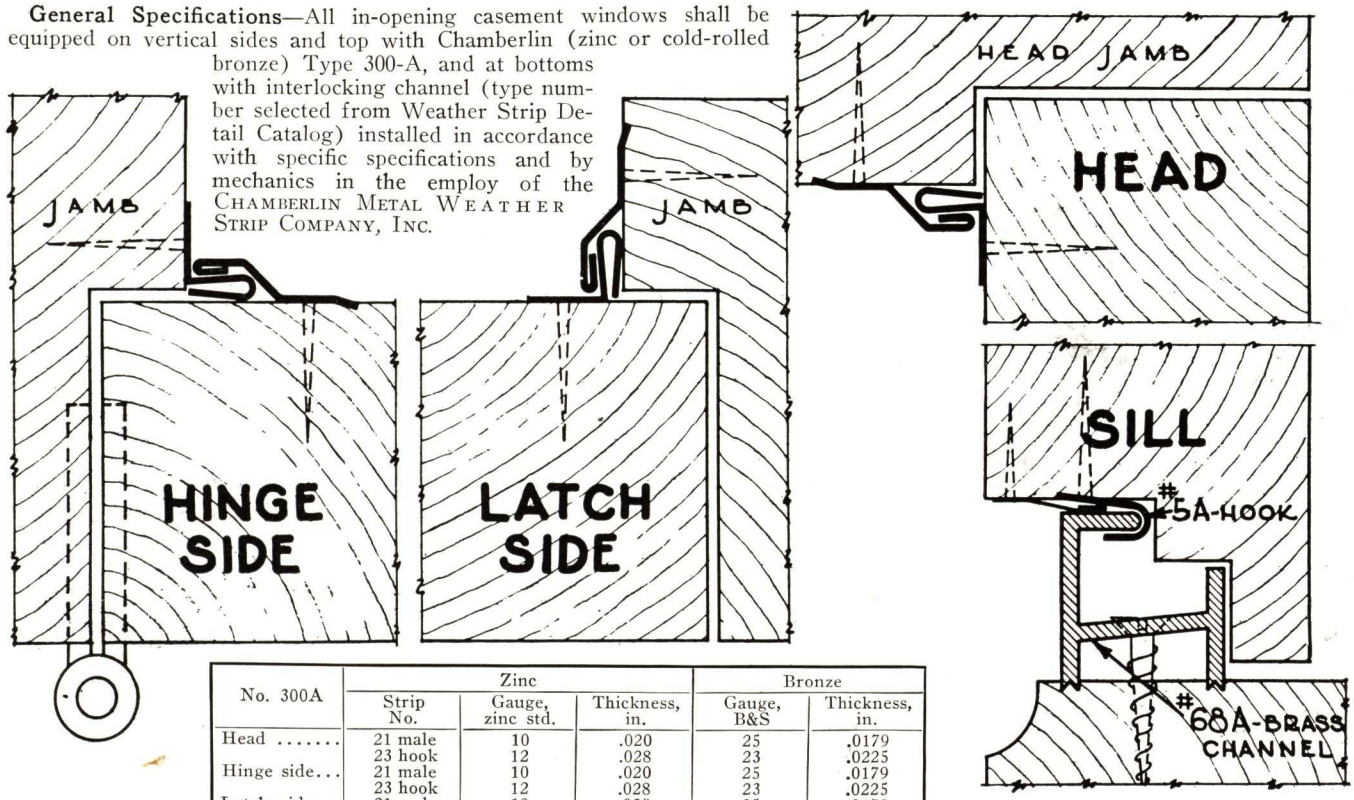
Handbook

Architects' Handbook for Calculating Heat Losses Due to Air Leakage at Doors and Windows together with Weather Strip Detail Catalog containing 24 pages of details and specifications of various types of equipments, also thresholds and caulking, are available by communicating with our Main or Branch Offices.

(Office addresses shown on back of Screen Catalog in this issue of Sweets'.)

CHAMBERLIN EQUIPMENT No. 300-A—IN-OPENING CASEMENT WINDOWS

General Specifications—All in-opening casement windows shall be equipped on vertical sides and top with Chamberlin (zinc or cold-rolled bronze) Type 300-A, and at bottoms with interlocking channel (type number selected from Weather Strip Detail Catalog) installed in accordance with specific specifications and by mechanics in the employ of the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.



No. 300A	Zinc			Bronze	
	Strip No.	Gauge, zinc std.	Thickness, in.	Gauge, B&S	Thickness, in.
Head	21 male	10	.020	25	.0179
	23 hook	12	.028	23	.0225
Hinge side...	21 male	10	.020	25	.0179
	23 hook	12	.028	23	.0225
Latch side...	21 male	10	.020	25	.0179
	23 hook	12	.028	23	.0225

W. J. DENNIS AND COMPANY

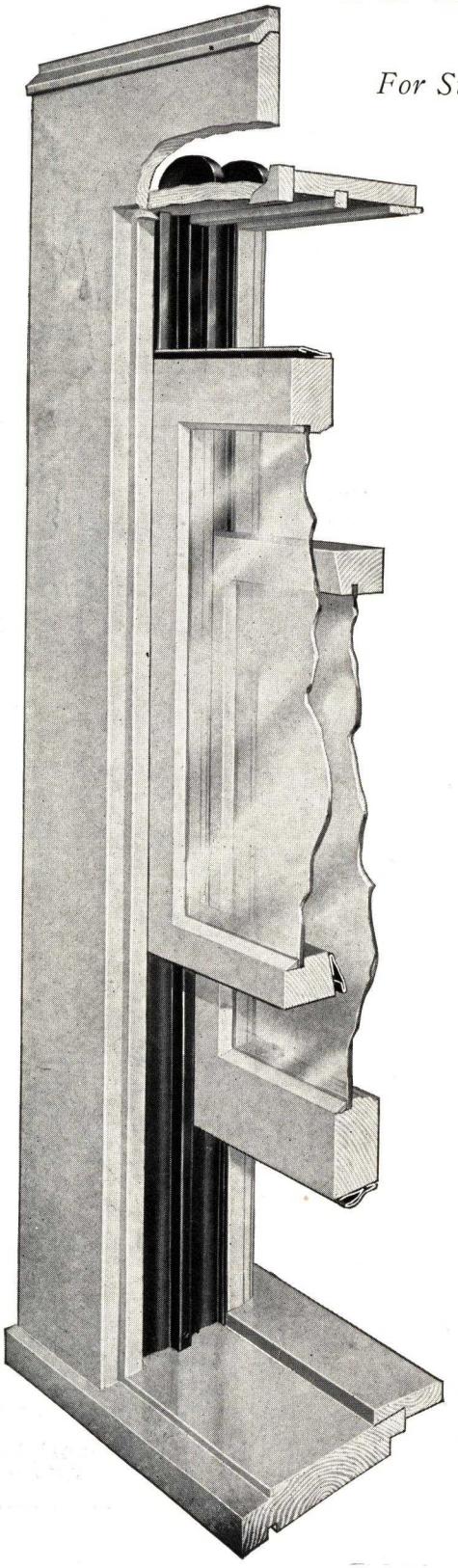
2110-2120 West Lake Street, CHICAGO, ILLINOIS

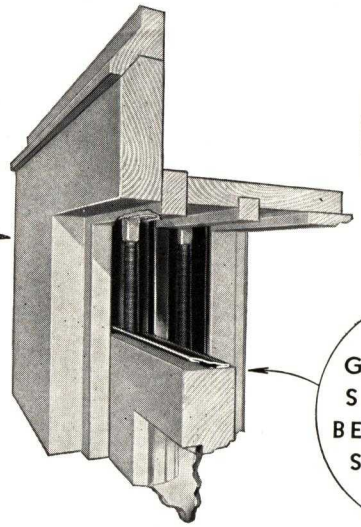
DENNIS

WING FLEX

TRADE MARK

The Modern Weather Strip
For Standard Double Hung Wood Windows



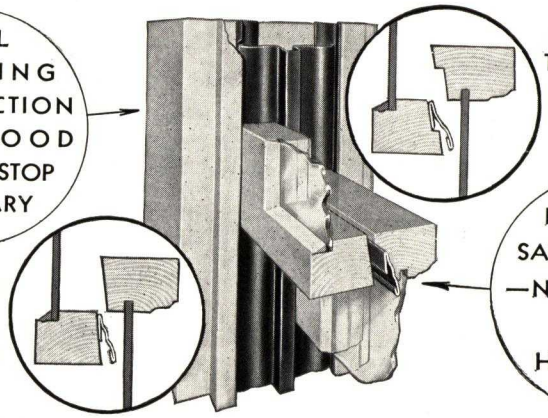


CAN BE USED WITH VARIOUS MODERN BALANCES

ALL PARTS ARE PHOSPHOR MIX SPRING BRONZE AND GUARANTEED FOR LIFE OF BUILDING

REDUCES INFILTRATION TO MUCH LESS THAN AVERAGE WEATHER-STRIPPED WINDOW

NO EXTRA GROOVING OF SASH—CAN BE USED WITH STANDARD FRAMES

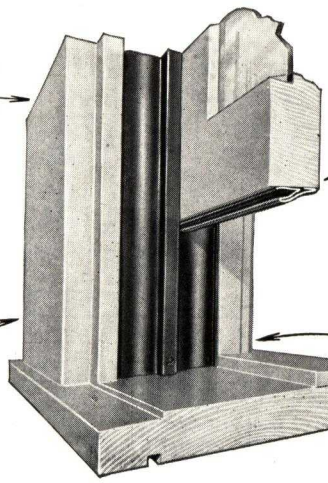


FULL FLOATING CONSTRUCTION —NO WOOD PARTING STOP NECESSARY

AS APPLIED TO RABBETED CHECK RAIL

AS APPLIED TO PLAIN CHECK RAIL

PREVENTS SASH RATTLING —NO SINGING OR HUMMING



MAINTAINS AIR SEAL BY CONFORMING TO EXPANSION AND CONTRACTION OF SASH AND FRAME

NO EXTRA GROOVING OF SASH . . . EASY TO INSTALL . . . EASY TO REMOVE SASH

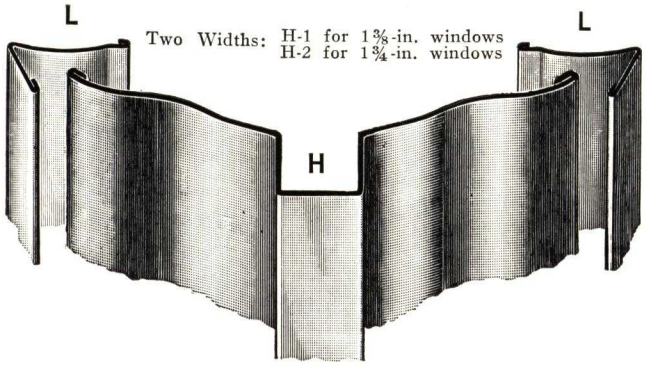
WOOD TO METAL CONTACT ELIMINATES STICKING OR BINDING

ONE SCREW AT BOTTOM, AND PARTING STOP AT TOP, HOLD ENTIRE WEATHER STRIP INSTALLATION IN PLACE

DENNIS WING FLEX

TRADE MARK

Full Floating Construction Maintains 6-Point Contact
Makes Resilient, Impervious, Weatherproof Seal

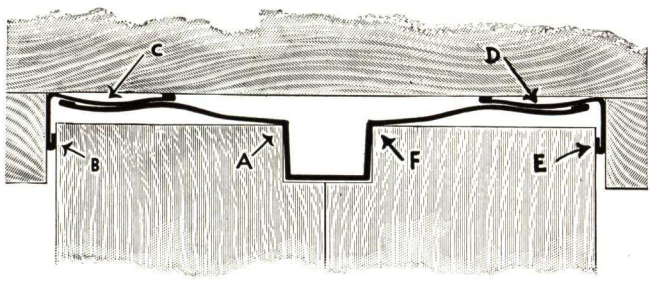


Two Widths: H-1 for 1⅜-in. windows
H-2 for 1¾-in. windows

Patented and Other Patents Pending

This three-member, all-metal Weather Strip is made of finest quality phosphor mix spring bronze, a rust-proof metal that retains its resilience in any climate for the life of the building. All three members are double-hemmed for added strength and to provide smooth bearing surfaces.

Above illustration shows simple method of installing Style H-1 double-wing center strip, and Style L side strips, in frame. All members are at rest.



Note strips under compression, with A-B-C-D-E-F illustrating contact points that maintain air seal regardless of expansion or contraction of sash.

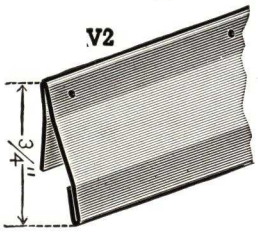
Full Floating Construction

Note that the Style H Double Wing Center Strip forms a parting stop and, therefore, the usual wood parting stop is unnecessary. The L type strips are merely slipped under the wings on both sides of Type H. The tension of these wings is sufficient to hold the L strips in place at all times. Completely covers unfinished jamb.

Easy to Install and Remove

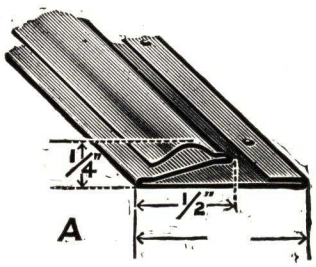
This three-member Weather Strip is installed on window frames at time sash are assembled, and since no nailing is needed, practically all labor is eliminated. No extra grooving of sash or frame is necessary. Metal requires no painting. Can be used on standard stock frames and sash as they need no extra preparation, and use any type of overhead balance. Weatherstripped sash can be removed as easily as though no weather strip were present.

Top, Bottom and Check Rail Strip



Type V2—Width ¾ in. for check rail and top of upper sash

Type A—Width 1 in. for bottom of lower sash



Highest Efficiency on Test

Air leakage tests conducted by the University of Wisconsin are reported as follows:

"Letter of May 22, 1937. The window unit (Dennis Wing Flex) tested here showed a leakage value of 7.43 cu. ft. per ft. of sash perimeter per hour at 15 miles per hour. This is a low leakage and might be compared with the guide figure of 23.6 for the average weather-stripped window. Signed D. W. Nelson."

Architectural Details and Samples

Mounted samples and details showing standard weather strip installations furnished free upon request. Complete information and samples of other products in our line will also be forwarded upon request.

MEMORANDA

HIGGIN PRODUCTS, INC.

Weather Stripping

NEWPORT, KENTUCKY

AGENCIES AND DEALERS THROUGHOUT THE COUNTRY

For Metal Frame, Wood Frame and Rolling Screens, Lightproof Shades, Access Panels, Venetian Blinds, see our pages in File Index

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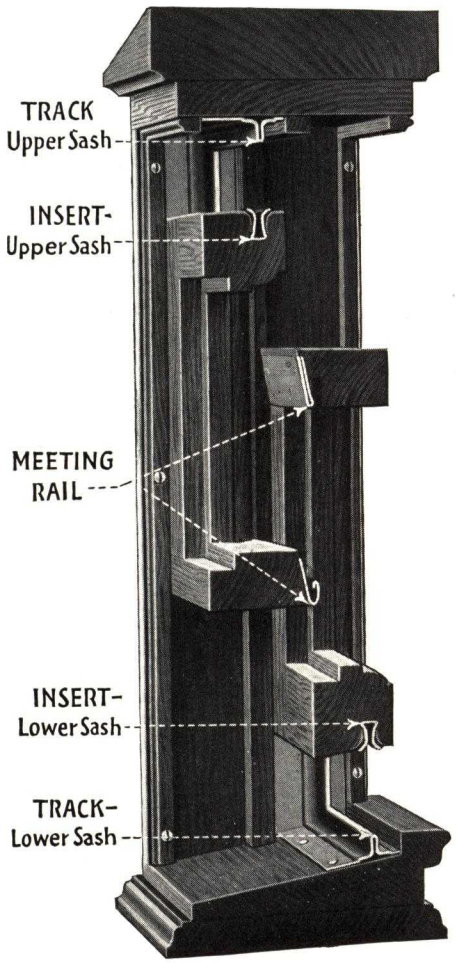
HIGGIN ALL METAL WEATHERSTRIPS

Higgin Weatherstripping Equipment

Efficient metal to metal contact weatherstripping for wood windows in these days of air conditioning is more necessary than ever. Higgin more than twenty years ago pioneered the "metal to metal" principal in the rib track and spring bronze INSERT or liner for double hung windows. Today no more efficient weatherstrip exists. This equipment is equally efficient on all sides which cannot be said for many strips with metal to metal side members but single strips at head and sill. The dove-tail shape of the Higgin INSERT is such that the sides are always free to make contact with rib of track. A special shoulder at base of rib prevents edges of sash from "wiping" flat base of rib track. Double hung windows Higgin equipped slide easily.



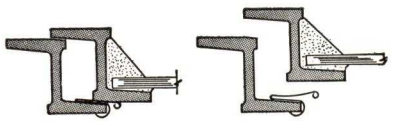
Section through a double hung window showing rib track and insert equipment.

Ask the nearest Higgin representative to show you results of infiltration tests made at the University of Wisconsin.

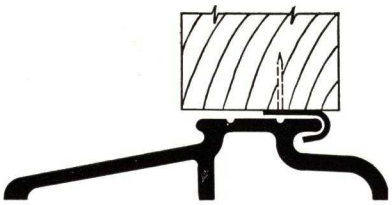
In addition to the above equipment there are others for Casements swinging in and out, for doors, transoms, etc. Complete information may be had for the asking.

Higgin No. 75-76 spring bronze strip for light-section steel outswinging casements are economical and effective. They are designed to grip fixed frame of sash tightly. Screws or rivets are not necessary.

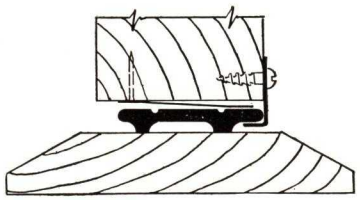
For Inswinging Wood casements several effective troughs are available as well as interlocking strips for heads and jambs which are also used for outopening wood casements.



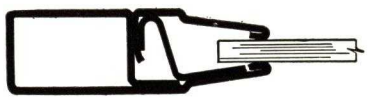
Above: Higgin No. 75-76 weatherstrip for light section steel casement windows opening out. Mitered at corners, this equipment is most inconspicuous yet the efficiency is excellent.



Above: 4¼ in. wide extruded brass threshold for important entrances. This threshold is ⅞ in. high and may be used with the hook shown of the "1" brass shown below.



Above: There are a number of ¼ in. high extruded brass thresholds ranging from 1⅛ to 1⅞ in. wide. Either the hook or "11" may be used with them.



Above: In another section of Sweet's, Higgin Metal Frame Screens are described. Interchangeable with them is the metal frame storm sash, a section of which is shown above. Sash are available in two widths of rails 1⅜ and 1⅞ in., thickness for both being $\frac{7}{16}$ in. Full information on request.

MASTER METAL STRIP SERVICE

1720 North Kilbourn Avenue

CHICAGO, ILL.

PRODUCTS

METAL WEATHERSTRIPS made of cross grain zinc, cold rolled bronze, brass, and spring bronze for every type of window or door.

THRESHOLDS, extruded bronze or aluminum.

CALKING COMPOUNDS for use with either knife or calking gun.

KICK PLATES of polished or chromium plated brass.

LINOLEUM BINDINGS and EDGINGS in brass, zinc, aluminum, and stainless steel.

WALL TRIM STRIPS.

CARPET and FLOOR HARDWARE.

SPECIAL STRIPS *of any metal formed to specifications.*

DISTRIBUTION

Master Weatherstrip contractors and dealers are located in over 300 cities of the United States. These men are reputable contractors, thoroughly experienced and skilled in the installation of Master equipment, and can be depended on for first-class workmanship at reasonable prices.

The importance of correct and skilful installation can not be stressed too strongly. The finest weatherstrip equipment, improperly or poorly installed, is certain to be unsatisfactory. For that reason, Master installers are just what the name implies, master mechanics, thoroughly capable of applying weatherstrips in a manner that will guarantee permanent, trouble-free service.

We will be glad to advise as to our authorized dealer in your vicinity upon request.

MANUFACTURING FACILITIES

Nearly two decades of experience in the manufacture of high-grade weatherstrips have contributed to make the Master line outstanding in its field.

A spacious plant with finest available manufacturing equipment, highly trained personnel, large stocks of raw and finished material, central location and fine shipping facilities, are factors that assure high quality products and prompt delivery.

Our resources are ample for the largest metal strip job and no order is too small to receive our prompt and careful attention.

SERVICE

Our Engineering Staff is available for consultation at any time regarding your weatherstrip problems.

We will gladly send, upon request, the complete catalog of Master products, showing recommended installations for every type of opening, as well as actual illustrations of all strips.

GENERAL INFORMATION

The prime essential of metals used for weatherstrips is rust resistance. Therefore, non-ferrous metals are customarily used. Of the non-ferrous metals, the character of zinc lends itself admirably to weatherstrip manufacturing, and its low price makes it most economical.

There are two types of zinc in common use, ribbon and sheet zinc. Sheet zinc is the superior in tensile strength, rigidity, and the ability to withstand extremes of temperature. When used for Master Weatherstrips, this zinc is sheared and formed against the grain. This is what is commonly referred to as cross grain zinc.

Where weatherstrips are to be used in close proximity to the ocean, or in an extremely corrosive atmosphere, it is advisable to specify cold rolled bronze. Practically all Master Strips can be furnished in cold rolled bronze, as well as in cross grain zinc.

SUGGESTED SPECIFICATIONS

Master Equipment "A"

All double hung windows shall be equipped with Master Rib Type Weatherstrips, cross grain zinc (or cold rolled bronze), with two-member interlocking strips at the meeting rails. All strips to cover full width of runways.

Master Tubular Equipment

All double hung windows shall be equipped with Master Tubular Two-Member Weatherstrips at the jambs, standard rib strip at head and sill, and two-member interlocking strips at the meeting rails. Grooves for head and sill strips to have zinc liners.

Master Slide-Ezy Equipment

All double hung windows shall be equipped with Master Slide-Ezy Two-Member Weatherstrips, cross grain zinc (or cold rolled bronze), and two-member interlocking strips at the meeting rails. Zinc liners to be used in all grooves.

Doors

All outside doors to be equipped with Master Interlocking Strips, cross grain zinc (or cold rolled bronze), at sides and top, and interlocking brass threshold (specify size and type) at bottom. *Alternate*—Master Hemmed Spring Bronze Weatherstrip at sides and top.

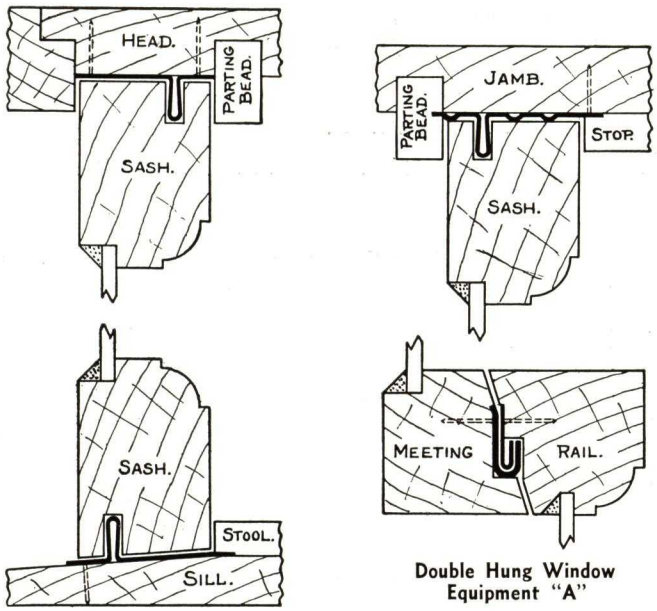
Inswinging Casements

All inswinging casements to have Master No. 300 Three-Member Channel Equipment at bottom; and interlocking strips, cross grain zinc (or cold rolled bronze), at sides, top, and center. *Alternate*—Master Spring Bronze Weatherstrip at sides, top, and center.

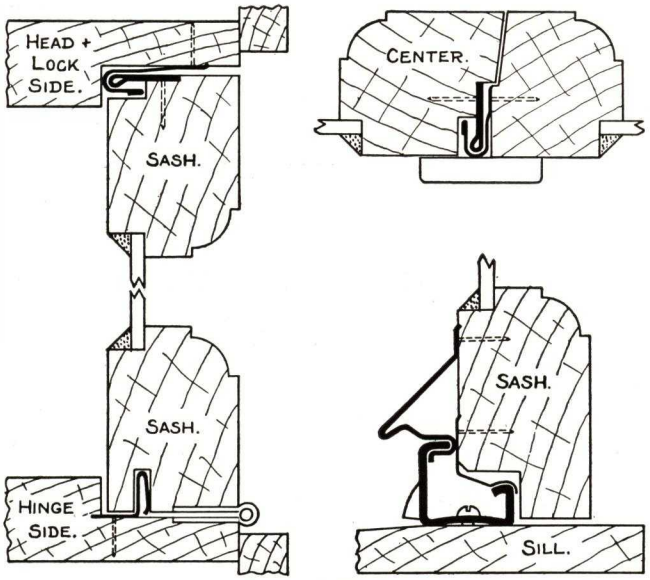
Outswinging Casements

All outswinging casements to have Master Zinc Sill Equipment No. 80 at bottom; and interlocking strips, cross grain zinc (or cold rolled bronze), at sides and top. *Alternate*—Master Hemmed Spring Bronze Weatherstrip at sides and top.

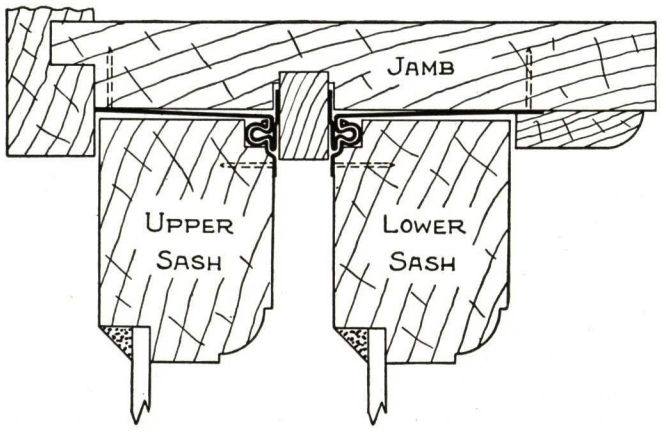
All installations to be in accordance with manufacturers' details shown in Sweet's Catalog File, Architectural.



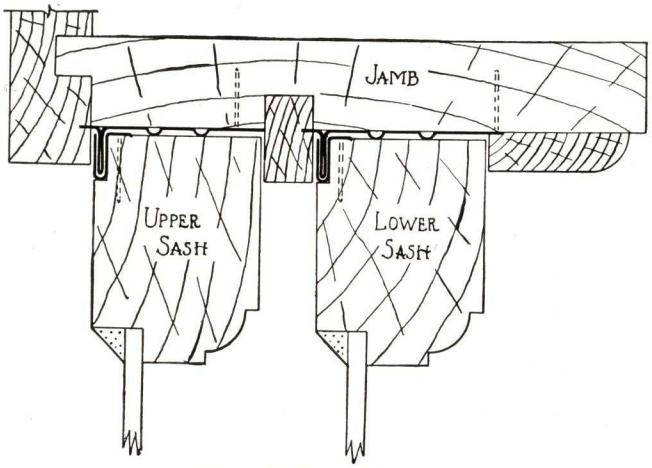
Double Hung Window Equipment "A"



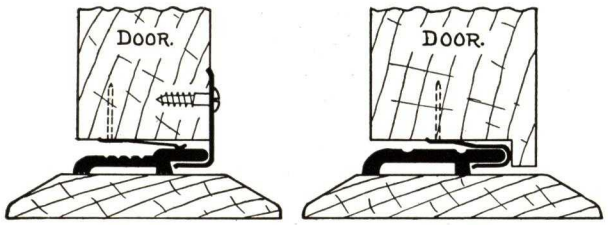
Casement Window
Flexible Interlocking Equipment



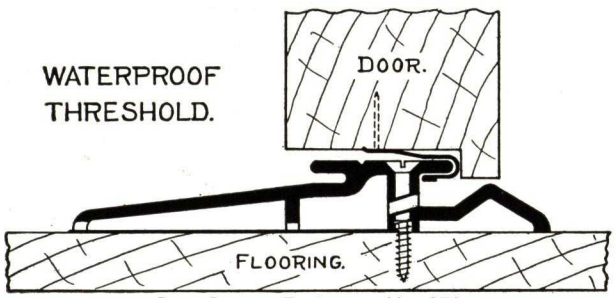
Tubular Equipment on Double Hung Windows



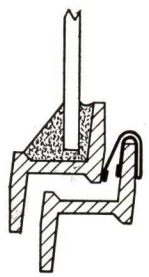
Master Slide-Ezy Equipment

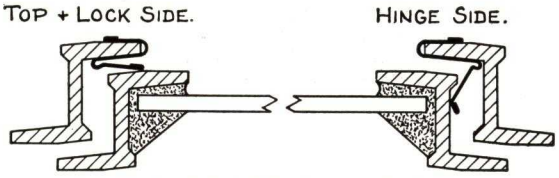


No. 45 No. 43



Door Bottom Equipment No. 354





Master Steel Sash Weatherstrip Equipment

All Details Shown Are Half Size

NIAGARA METAL WEATHER STRIP CO.

GENERAL OFFICES AND FACTORY
37 West Tupper Street, BUFFALO, N. Y.
Dealers in Principal Cities of United States and Canada—See Classified Telephone Directories

Products

Manufacturers of NIAGARA METAL WEATHERSTRIP for windows and doors; CRAIG BRASS and ZINC CHANNEL BARS and NIAGARA EXTRUDED BRASS and ALUMINUM CHANNEL BARS for sills of inward opening casements; NIAGARA BRASS THRESHOLD PROTECTION STRIP and BRASS SADDLES for doors.

Niagara Metal Weatherstrip, the Only Reinforced Metal Weatherstrip Made for Double Hung Windows

Niagara metal weatherstrip, of which a full size section is shown below, is made of No. 26 U. S. standard gage cross grain zinc, reinforced with hardwood. On account of this wood reinforcing it will bear the weight of a heavy man without buckling. This is especially desirable on the sills of windows, as it is on the window sill that most weatherstrips collapse. It is, however, also used on the heads and jambs of double hung windows.

Niagara Equipment for Weatherproofing Double Hung Windows

For the head, sill and length of each sash on each jamb, specify Niagara Reinforced Metal Weatherstrip.

For the meeting rails, specify Niagara Non-collapsible Meeting Rail Strip. Note the double thickness of zinc at the contact surface of the meeting rail strip.

Niagara Equipment for Weatherproofing Inward-opening Casements

For the head, lock side of jamb for single casements, and for meeting stiles of double casements, specify Niagara Interlocking Bronze Hook and Flat. A cheaper zinc hook is also made but the flexible bronze hook is recommended.

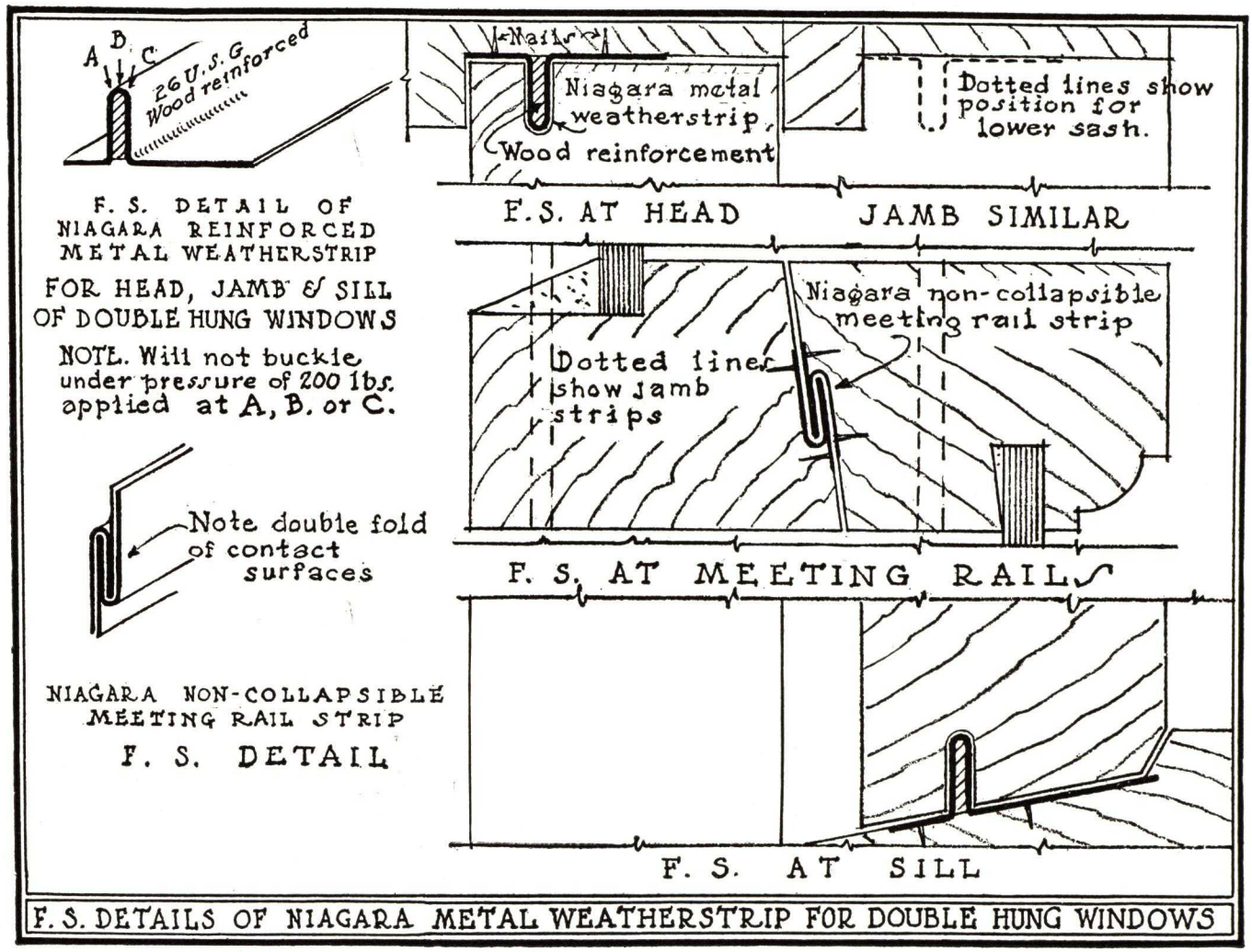
For the hinge side of jambs specify Niagara Metal Weatherstrip.

For the sill, specify the Craig Brass or Zinc Channel Bar and Drip, or the Niagara Extruded Brass or Aluminum Channel Bar and Bronze Hook.

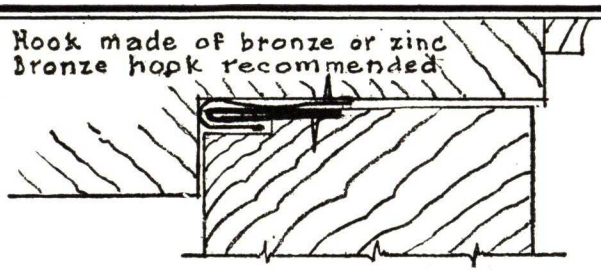
Niagara Equipment for Weatherproofing Doors

For the jambs and head specify Niagara Spring Bronze Weathering, or if an interlocking equipment is desired specify same as for inward opening casements.

For the sill specify either the Niagara Brass Threshold Strip or the Brass Saddle and the Brass Ell Weatherstrip, set according to details. The threshold strip is generally used on wood sills and the brass saddle on stone or concrete sills.

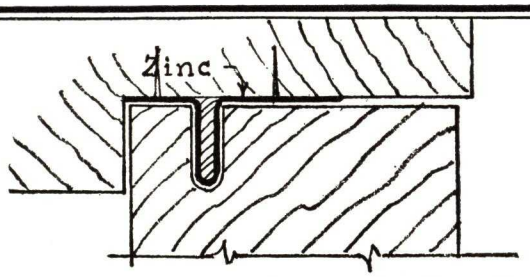


F. S. DETAILS OF NIAGARA METAL WEATHERSTRIP FOR DOUBLE HUNG WINDOWS



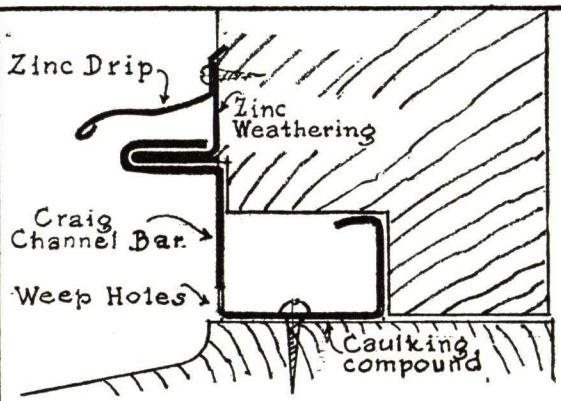
NIAGARA INTERLOCKING HOOK & FLAT

DETAIL FOR HEAD, LOCK SIDE OF JAMB & MEETING RAILS OF DOUBLE CASEMENT



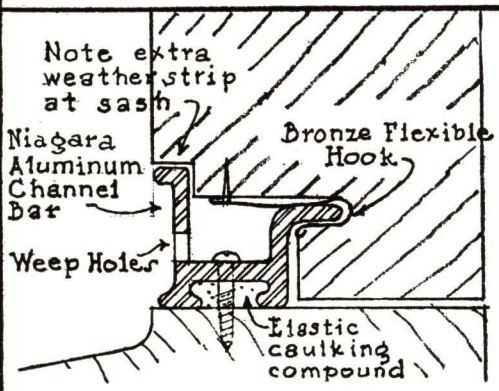
NIAGARA REINFORCED ZINC WEATHERSTRIP

DETAIL FOR HINGE SIDE OF JAMB



CRAIG CHANNEL BAR

SECTION THRU WOOD SILL

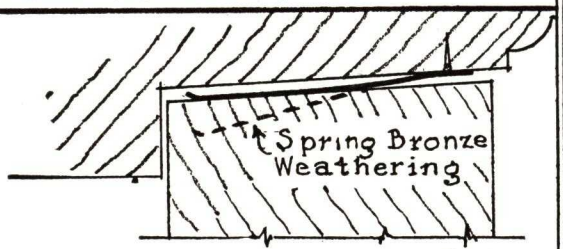


NIAGARA ALUMINUM CHANNEL BAR

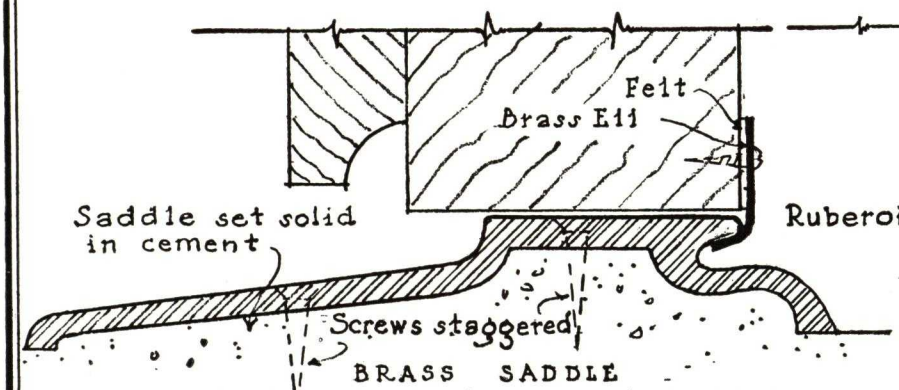
SECTION THRU WOOD SILL

F. S. DETAILS OF WEATHERPROOFING FOR WOOD CASEMENTS OPENING IN

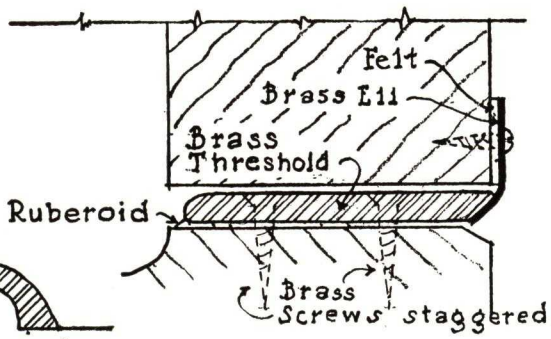
NOTE. Interlocking equipment for doors can also be supplied. Details similar to that used for casement above.



DETAIL FOR JAMB & HEAD



BRASS SADDLE FOR STONE & CONCRETE SILLS



BRASS THRESHOLD STRIP FOR WOOD SILLS

F. S. DETAILS OF BRASS SADDLES AND WEATHERPROOFING FOR DOORS

DRAWN BY SWEETS CATALOGUE SERVICE, INC.	NIAGARA METAL WEATHERPROOFING FOR DOORS & CASEMENT WINDOWS OPENING IN	SCALE FULL SIZE DATE- JUNE '27	DRWG 2

MEMORANDA

MONARCH* METAL WEATHERSTRIP CORPORATION

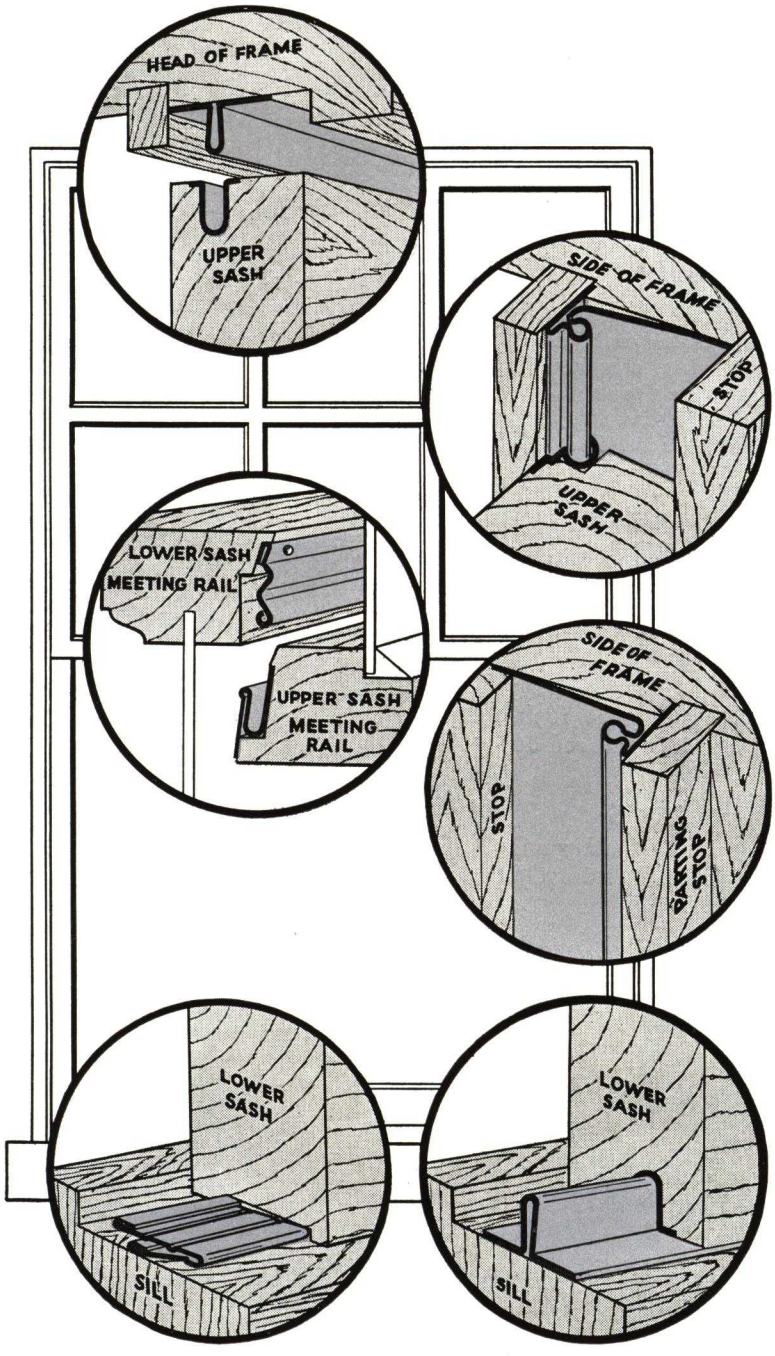
*Reg. U. S. Pat. Off.

GENERAL OFFICE AND FACTORY
6333 Etzel Avenue
ST. LOUIS, MO.

CERTIFIED REPRESENTATIVES THROUGHOUT THE UNITED STATES

MATERIAL

Vatafend Weather and Dust Strips are now made of MetaLane material, a new metal having an aluminum base and special alloys to give it strength, durability and long life. MetaLane material will not oxidize, corrode or discolor. It is highly resistant to salt air and sulphurous gases. MetaLane material is electro chemically treated, resulting in a hard, smooth surface that will not wear and is practically frictionless. Casement hardware and door closers operate better with Vatafend Weather and Dust Strip.



Standard Head and Sill — Alternate Head and Sill

Vatafend Double Hung Equipment No. 410

EFFICIENCY

The efficiency of Vatafend Weather and Dust Strip has been determined by various unbiased authorities. Air leakage tests have proven Vatafend Weather and Dust Strips have no superior in efficiency for windows and doors. Based on these accurate scientific tests, Vatafend Weather and Dust Strips are sold on a definite maximum leakage expressed in terms of cubic feet of air per hour, per foot of crack, per mile of wind velocity.

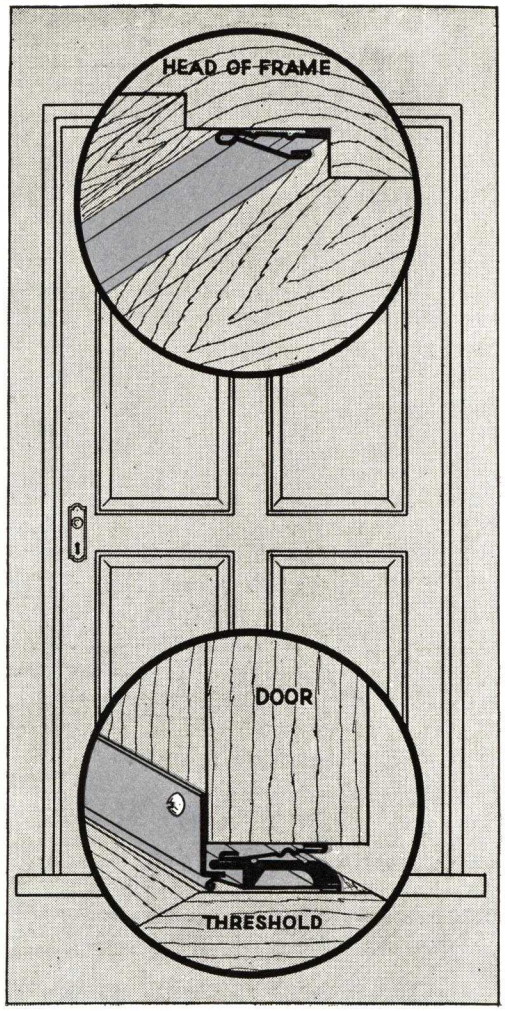
DOUBLE HUNG

Head—Groove in sash is lined to protect the wood which would otherwise be exposed by removing paint. Member on frame fits snugly into the liner.

Meeting Rail—A two-member equipment (1) three-way spring contact attached to lower sash engages (2) a double nailed hook member on upper sash. Warping or shrinking does not affect the efficiency of the meeting rail equipment.

Sides—Upper and lower sash are treated the same at the jamb. Sashes are rabbeted at corner nearest the parting bead to receive the tubular member which interlocks with the floating member attached to frame. The two members cannot become disengaged by swelling or shrinking of either sash or frame. Yet sash can be raised and lowered easily without any grating or scraping sound. The flange between parting bead and groove in pulley stile prevents air getting in behind frame strip as sash shrinks.

Sill—A cushion contact is highly recommended, with lower rail grooved as detailed, by the sash manufacturer, and painted before strip is applied. This leaves the sill clear of any obstructions. *Alternate Sill*—Groove in sash is lined, same as head. This is very important where a rib shape sill member on frame is desired. Water will be trapped between stool and sill member and absorbed by the exposed wood in the groove, causing early rot. Dirt also accumulates behind the rib member.

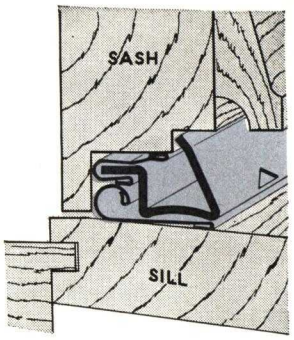


Vatafend Door Equipment No. 3821

Doors

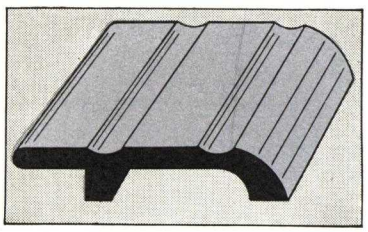
Sides and Head—Vatafend Weather and Dust Strip as applied to sides and head of doors, functions differently than any other design of strip. The fold-back construction with the tubular bead at the fold (patented) provides two advantages. First, the tubular fold transmits the strain of bending around the entire circumference of the bead, thereby adding long yielding life to the strip. Second, the strip is nailed against the stop—the fold-back prevents the air from passing through. As the wind velocity outside is increased the air pressure inside the fold is increased, causing the strip to expand between the door and jamb. Result: Greater contact and efficiency, no humming. The hard, smooth surface of Vatafend Weather and Dust Strip permits the door to close easily—no sticking because of friction against edge of door, which very often causes warping.

Sills—Two sill plates are proposed. The narrow $1\frac{7}{16}$ in. is used in combination with wood saddles. The wide $4\frac{1}{4}$ in. is used in place of wood saddles. The drain pans under each sill plate return water to the outside. The guard strip attached to the inside face of door is interposed between the curl on the drain pan and the lip on the sill plate, completely stopping any leakage at this point. Curl on drain pan also prevents any dirt accumulating under the lip of sill plate. Both sill plates are extruded MetaLane material. The hard, smooth surface resists wear and will not oxidize, corrode or turn black. It will not discolor stone or paint. Can be cleaned easily with any cleansing powder and water.



Sill of Vatafend Casement Equipment No. 3621

Casements are treated at sides and head the same as doors. The sill equipment functions similar to the sill plates of doors, with the exception the hook attached to lower rail of sash engages the lip of the trough member.



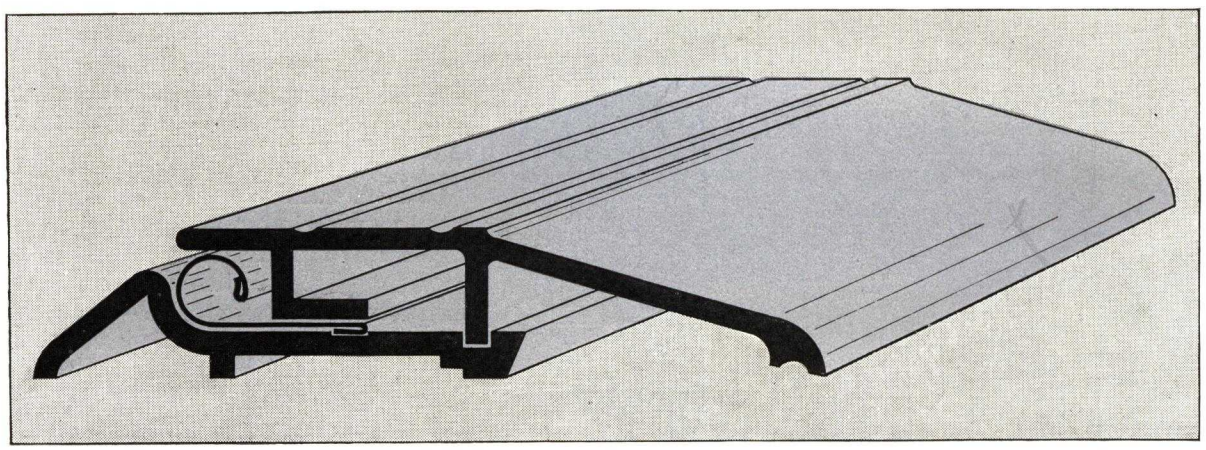
$1\frac{7}{16}$ In. Sill of Vatafend Door Equipment No. 3821

SERVICE TO ARCHITECTS AND ENGINEERS

Monarch Representatives are specially trained to prepare heat waste reports from plans as a guide to heating engineers, or to measure cracks and clearances in standing buildings and determine heat losses and the consequent fuel waste. This service to architects can be rendered at more than 165 points in the United States.

PATENTS

MetaLane material, as well as the design of Vatafend Weather and Dust Strips are protected by United States Patents. "MetaLane" is our trade mark registered U. S. Patent Office.



$4\frac{1}{4}$ In. Sill of Vatafend Door Equipment No. 3841

PROTEX

Weatherstrips

PROTEX WEATHERSTRIP MF'G.CO.

CHICAGO · ILLINOIS

The Blue Book of Weatherstrips

PROTEX WEATHERSTRIP MANUFACTURING COMPANY

General Office and Factory . . . 2306-2310 W. 69th Street, Chicago, Ill.

Representatives and Sales Agents in all Principal Cities in U. S. A. and Canada

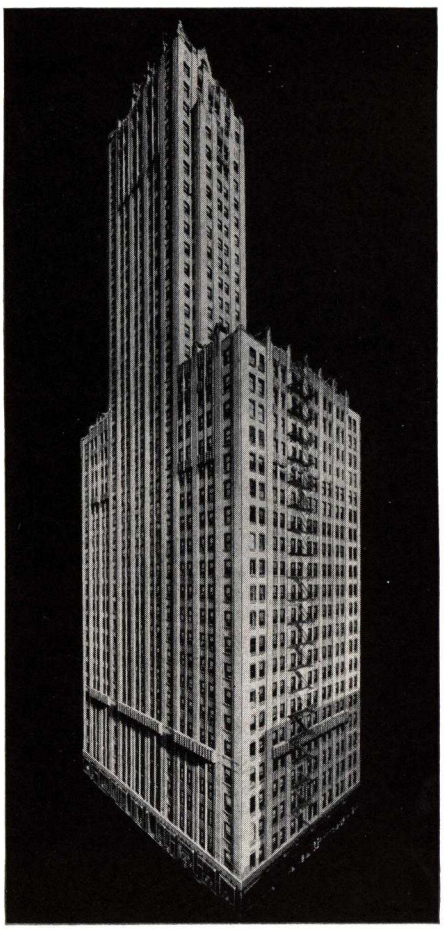
THE COMPANY

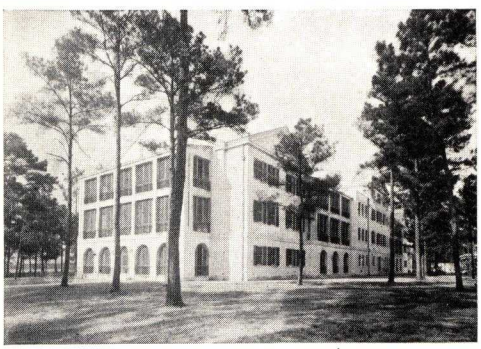
• The Protex Weatherstrip Manufacturing Company is an organization of highly skilled technicians of long experience in the development, manufacture, production and installation of weathering equipment for doors and windows. Progressive and constantly alert to the increasingly exacting requirements of modern building construction we are prepared to offer specialized service in whatever degree is required in this important phase of the insulation problem and to assist, upon request, in the preparation of details and specifications.

THE PRODUCT

• Protex equipment consists of: Weatherstrips, Calking, Kick Plates, Edgings, Nosings, Thresholds, Double-Glazing Panes. Protex weathering materials adaptable to all types of metal or wood windows, are the result of test-proven development following scientific investigation at the University of Wisconsin and the R. W. Hunt Co. Laboratories. Protex equipment enjoys a quality reputation second to none and is designed and manufactured to give full investment value.

• Above is Sunset Towers, Hollywood, Cal., a Protex installation of 400 units. Below is the Pittsfield Bldg. in Chicago with 2300 Protexed windows





• Veterans Hospital at Biloxi, Miss., above, has over 600 openings equipped with Protex

INSTALLATIONS

• The use of Protex equipment in thousands of buildings both large and small across the country attest to the high standard of quality in materials and installation service maintained to meet rigid specifications. Following is a few of the many Protex equipped buildings of recent date.

Harvey S. Firestone Residence, Akron, Ohio

John Carroll University Bldgs., Cleveland, Ohio

Department of Interior Bldgs., Washington, D. C.

State Office Bldg., Madison, Wisc.

Veterans Facilities
- Ft. Lyon, Colo.
- Outwood, Ky.
- Biloxi, Miss.
- Milwaukee, Wisc.

. U. S. Federal Housing

Will Rogers Courts, Oklahoma City, Okla.

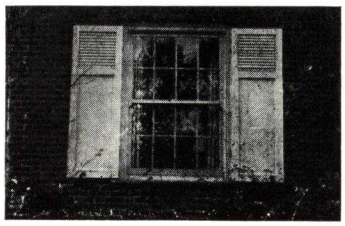
University Courts, Columbia, S. C.

Lincoln Gardens, Evansville, Ind.

U. S. Army (Q.M.C.) Barracks Bldgs.
- Maxwell Field, Ala.
- March Field, Cal.
- Fort Sam Houston, Tex.
- Fort Knox, Ky.
- Fort Monroe, Va.
- Fort Bragg, N. Car.

• 1200 Protex units are installed in this San Francisco Psychopathic Cancer Building

WEATHERSTRIPS
DH • 200 • 201
DOUBLE HUNG WINDOWS



Rib Type—This type of equipment is standard for ordinary residential and commercial construction. The tongue or rib, mitered at corners, operates in accurately plowed groove in the sash. Strong, concealed interlocking members are provided at meeting rails. Sash grooves can be lined with metal liners for metal to metal contact. Tests on this equipment at the University of Wisconsin Laboratories show 90% infiltration reduction.

EQUIPMENT DH-200—ZINC				
Location	1⅜" Sash	1¾" Sash	2¼" Sash	Ga.
Head	2R	2R	2R	9
Sill	4R	6R	8R	9
M.R. Hook	11	11	11	12
M.R. Flat	12	12	12	10
Upper Sides	4C-⅜	6C-⅜	7C-⅜	9
Lower Sides	6C-½	7C-½	8C-½	9
EQUIPMENT DH-201—BRONZE				
Head	2RB	2RB	2RB	25
Sill	4RB	6RB	8RB	25
M.R. Hook	11B	11B	11B	22
M.R. Flat	12B	12B	12B	24
Upper Sides	4CB-⅜	6CB-⅜	7CB-⅜	25
Lower Sides	6CB-½	7CB-½	8CB-½	25

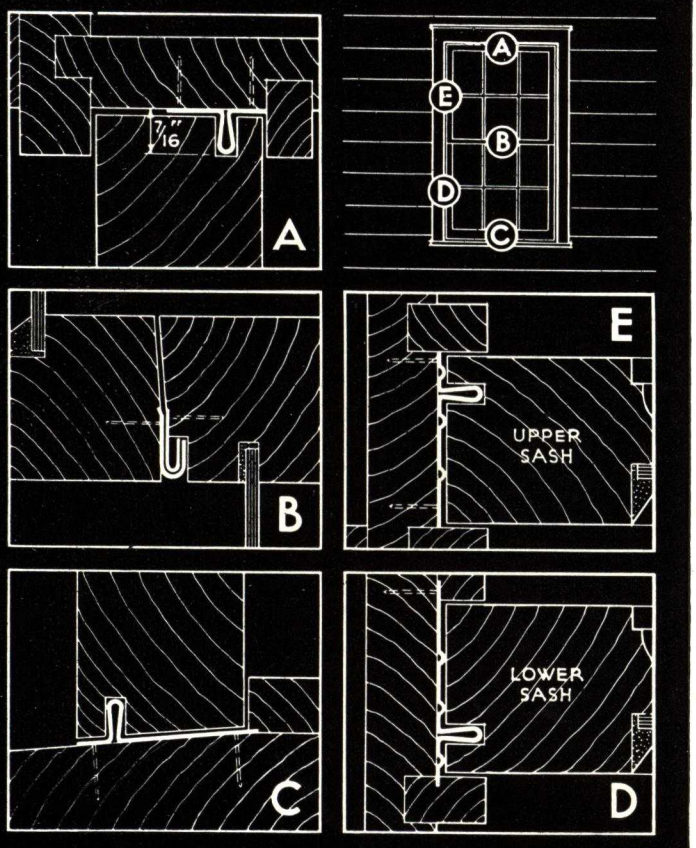
Alternate No. 1—Substitute Heavy Sills
Alternate No. 2—Kerf upper sides to Blind Stop

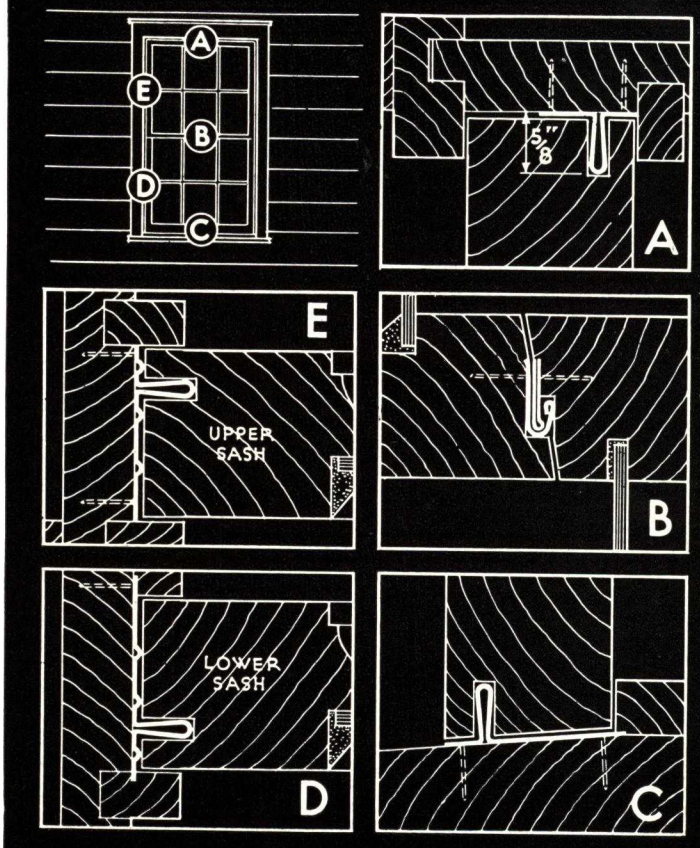
WEATHERSTRIPS
DH • 220 • 221
DOUBLE HUNG WINDOWS

High Rib Type—Extremely large double hung window openings requiring heavy sash and glass should have heavier weatherstripping members. Note the ⅝ inch rib height of equipment DH-220 and 221, which allows for greater shrinkage and expansion in the sash with no loss of efficiency. All of the members are of extra heavy gauge to withstand severe strain and usage. Do not specify this equipment for sash less than 1¾ inch thick.

EQUIPMENT DH-220—ZINC				
Location	1⅜" Sash	1¾" Sash	2¼" Sash	Ga.
Head	Use DH-200 in 10 ga. Zinc	2RH	2RH	10
Sill		6RH	8RH	10
M.R. Hook		111	111	12
M.R. Flat		112	112	9
Upper Sides		6CH-⅜	7CH-⅜	10
Lower Sides		7CH-½	8CH-½	10
EQUIPMENT DH-221—BRONZE				
Head	Use DH-201 in 25 ga. Bronze	2RBH	2RBH	24
Sill		6RBH	8RBH	24
M.R. Hook		11B	11B	22
M.R. Flat		12B	12B	24
Upper Sides		6CRH-½	7CRH-½	24
Lower Sides		7CRH-⅝	8CRH-⅝	24

Alternate No. 1—Substitute Heavy Sills
Alternate No. 2—Kerf upper sides to Blind Stop





PROTEX
Weatherstrips

WEATHERSTRIPS
DH • 240 • 241
DOUBLE HUNG WINDOWS

Surety Type—Adapted to all types of sash hung on weights or spring or spiral balances. Absence of side grooves and application to parting bead eliminates pulley and cord interference. The concealed, interlocking action allows for a full ¼ inch shrinkage with no loss of efficiency. Tests at University of Wisconsin Laboratories show 95% infiltration reduction with finger tip operation. Surety strips are covered by U. S. Patent No. 1,928,948.

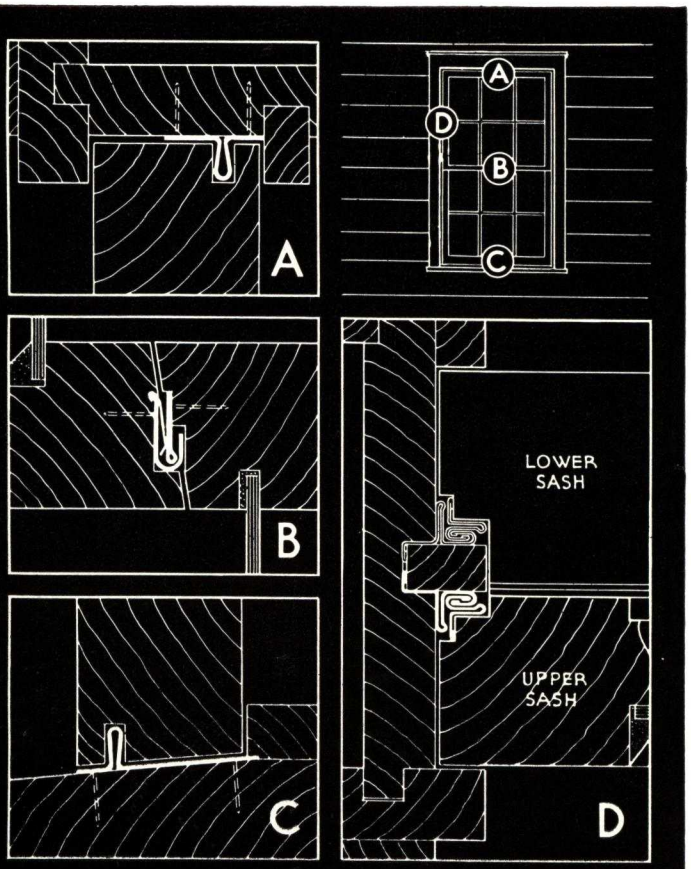
EQUIPMENT DH-240—ZINC AND BRONZE

Location	1⅜" Sash	1¾" Sash	2¼" Sash	Ga.
Head	2R	2R	2R	9
Sill	4R	6R	8R	9
M.R. Hook	11-BI	11-BI	11-BI	12
M.R. Flat	112	112	112	9
Upper Sides	1X-2X	1X-2X	1X-2X	32
Lower Sides	1X-2X	1X-2X	1X-2X	32

EQUIPMENT DH-241—BRONZE

Head	2RB	2RB	2RB	25
Sill	4RB	6RB	8RB	25
M.R. Hook	11-B—BI	11-B—BI	11-B—BI	22-35
M.R. Flat	112-B	112-B	112-B	25
Upper Sides	1X-2X	1X-2X	1X-2X	32
Lower Sides	1X-2X	1X-2X	1X-2X	32

Alternate No. 1—Substitute Heavy Sills
Note—Give parting bead depth



WEATHERSTRIPS
DH • 260 • 261
DOUBLE HUNG WINDOWS

Surety Type—DH-260 and 261 are identical in design with DH-240 and 241, with the exception that the side members of the strip form full jamb sash runway coverage. Note that the weathering points are at the outermost points of air or water ingress which prevents the elements from reaching any part of the otherwise exposed frame or sash. Metal operating on and in metal provides perfect sliding areas and reduces friction to an absolute minimum.

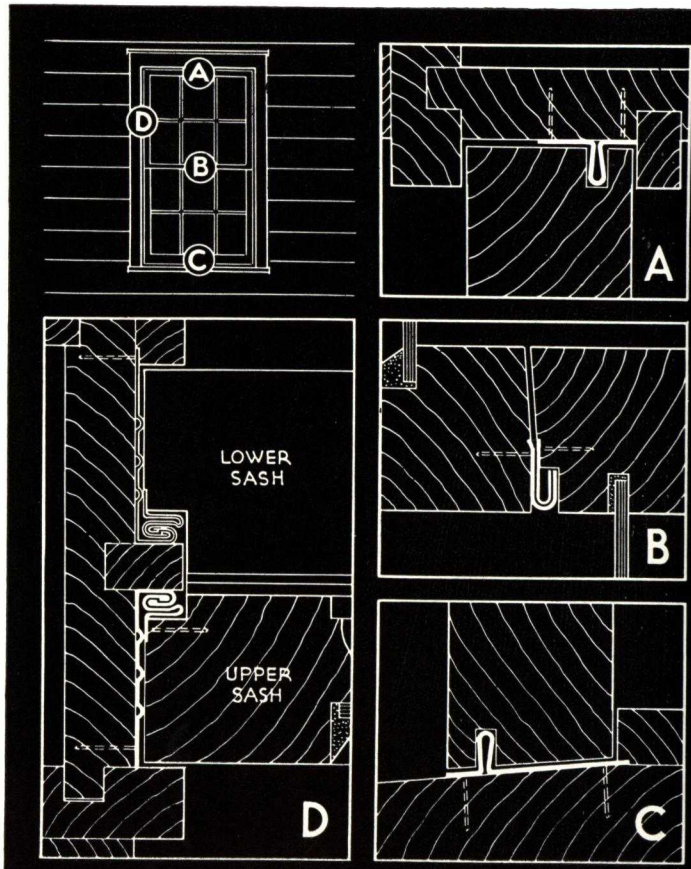
EQUIPMENT DH-260—ZINC

Location	1⅜" Sash	1¾" Sash	2¼" Sash	Ga.
Head	2R	2R	2R	9
Sill	4R	6R	8R	9
M.R. Hook	11	11	11	12
M.R. Flat	12	12	12	10
Upper Sides	6X-5X	7X-5X	8X-5X	9-9
Lower Sides	7X-5X	8X-5X	9X-5X	9-9

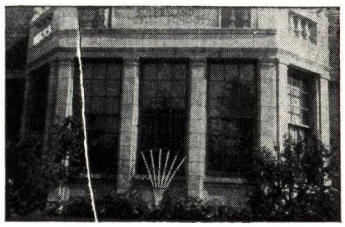
EQUIPMENT DH-261—BRONZE

Head	2RB	2RB	2RB	25
Sill	4RB	6RB	8RB	25
M.R. Hook	11B	11B	11B	22
M.R. Flat	12B	12B	12B	24
Upper Sides	6XB-1X	7XB-1X	8XB-1X	25-32
Lower Sides	7XB-1X	8XB-1X	9XB-1X	25-32

Alternate No. 1—Substitute Heavy Sills
Alternate No. 2—Kerf upper sides to Blind Stop



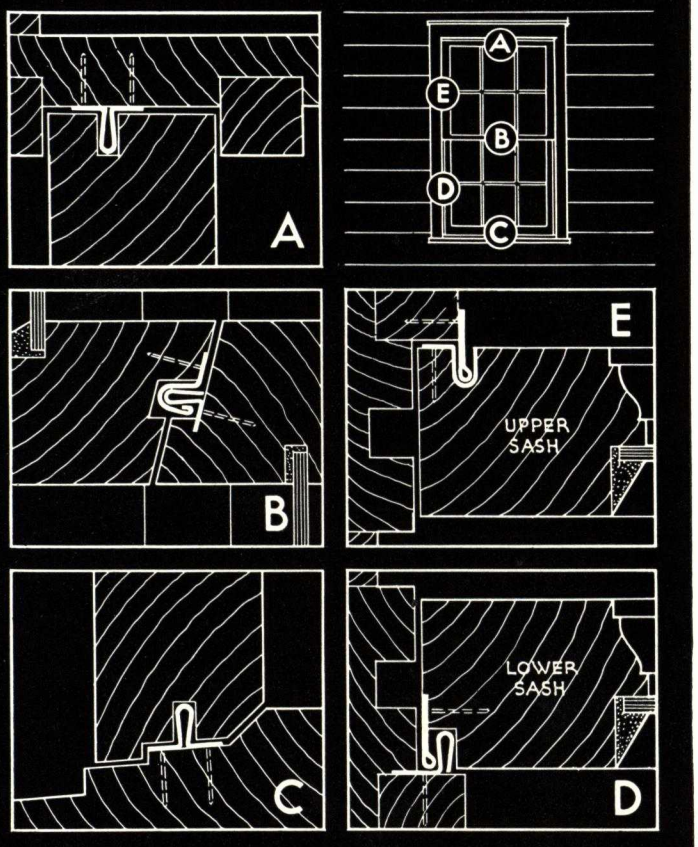
WEATHERSTRIPS
A • 280 • A • 281
• AUSTRAL WINDOWS •



Interlocking Type—Heads and sills are weatherstripped with rib type strips. Because of the rotating sash movement, the sides are weatherstripped with interlocking metal to metal contacts. The weatherstripping members are so designed and installed as to eliminate all hardware interference and permit installation from inside the building. The equipment is in exact accordance with the Austral Window Co.'s standards for easy operation.

EQUIPMENT A-280—ZINC				
Location	Strip	Ga.	Strip	Ga.
Head	1R	9	....	..
Sill	2R	9	....	..
Meeting Rail	17	11	18	9
Upper Sides	15	9	112	9
Lower Sides	112	9	19	9
*Groove Liners	16	9	....	..
EQUIPMENT A-281—BRONZE				
Head	1RB	25	....	..
Sill	2RB	25	....	..
Meeting Rail	17B	23	18B	25
Upper Sides	15B	26	112B	25
Lower Sides	112B	25	19B	25
*Groove Liners	16B	26	....	..

Alternate No. 1—Substitute Heavy Sills
*Alternate No. 2—Add Groove Liners Head and Sill

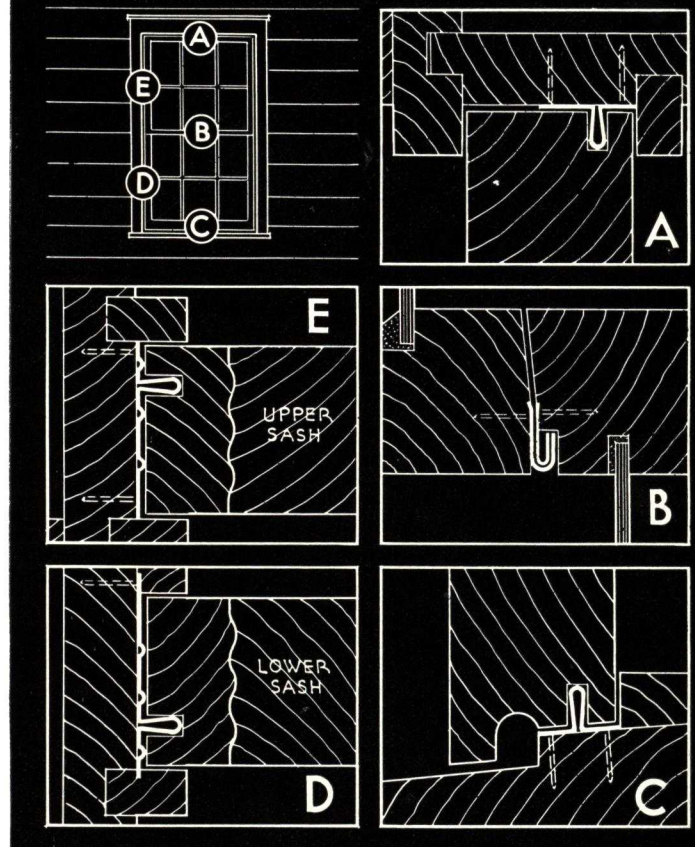


WEATHERSTRIPS
P • 290 • P • 291
WILLIAMS PIVOT WINDOWS

Rib Type—The equipment members and their installation is identical with equipment DH-200 and 201 (see page 2). Sash operating hardware is installed in the face of the side filler members which are plowed to receive the weatherstripping rib which prevents air or moisture infiltration between the filler strip and frame. The interlocking corrugations between the filler strip and the sash proper prevent air leakage at these points.

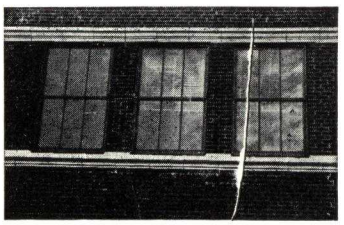
EQUIPMENT P-290—ZINC				
Location	1⅜" Sash	1¾" Sash	2¼" Sash	Ga.
Head	2R	2R	2R	9
Sill	1R	1R	1R	9
M.R. Hook	11	11	11	12
M.R. Flat	12	12	12	10
Upper Sides	4C-⅜	6C-⅜	7C-⅜	9
Lower Sides	6C-½	7C-½	8C-½	9
EQUIPMENT P-291—BRONZE				
Head	2RB	2RB	2RB	25
Sill	1RB	1RB	1RB	25
M.R. Hook	11B	11B	11B	22
M.R. Flat	12B	12B	12B	24
Upper Sides	4CB-⅜	6CB-⅜	7CB-⅜	25
Lower Sides	6CB-½	7CB-½	8CB-½	25

Alternate No. 1—Substitute Heavy Sills
Alternate No. 2—Kerf upper sides to Blind Stop



PROTEX
Weatherstrips

WEATHERSTRIPS
DH • 520 • 521
HOLLOW METAL DOUBLE HUNG



Interlocking Type—Standard manufacturing tolerances in fabrication together with expansion and contraction require that hollow metal or Kalamein double hung windows be weatherstripped with perfect interlocks that will not increase sliding friction. The strips are backed with specially treated felt to eliminate leakage under strips due to uneven surfaces. Note that H strips slide on EI members which eliminates side play, assuring easy operation. Where hardware interferes at meeting rails with the members detailed, it is necessary to substitute spring bronze between sections.

EQUIPMENT DH-520—ZINC				
Location	Strip	Ga.	Strip	Ga.
Head	18	9	36	12
Sill	18	9	36	12
Meeting Rail	17	11	18	9
Upper Sides	18	9	36	12
Lower Sides	18	9	36	12
EQUIPMENT DH-521—BRONZE				
Head	18B	25	36B	22
Sill	18B	25	36B	22
Meeting Rail	17B	23	18B	25
Upper Sides	18B	25	36B	22
Lower Sides	18B	25	36B	22

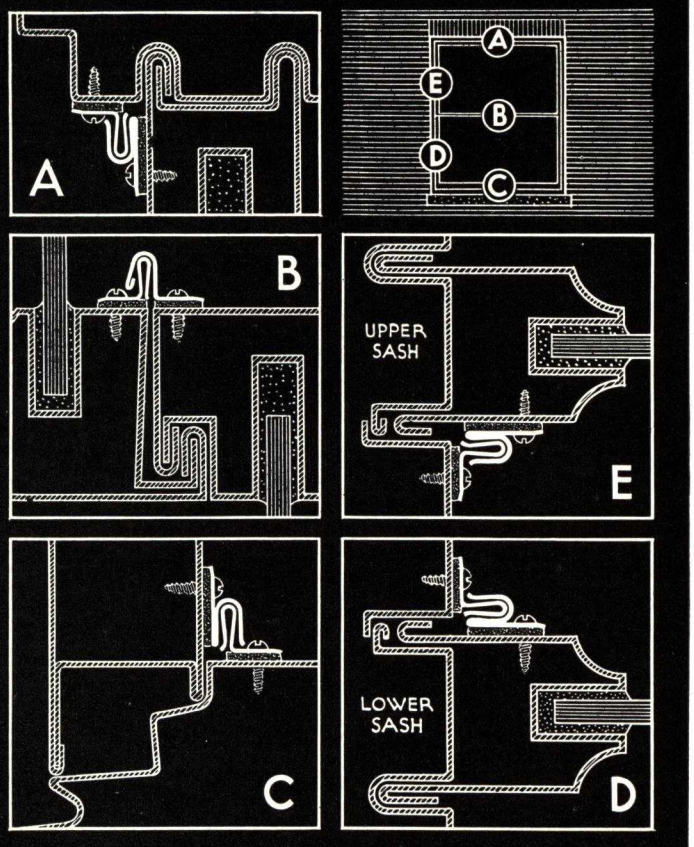
Note—Strips backed with Waterproof Felt

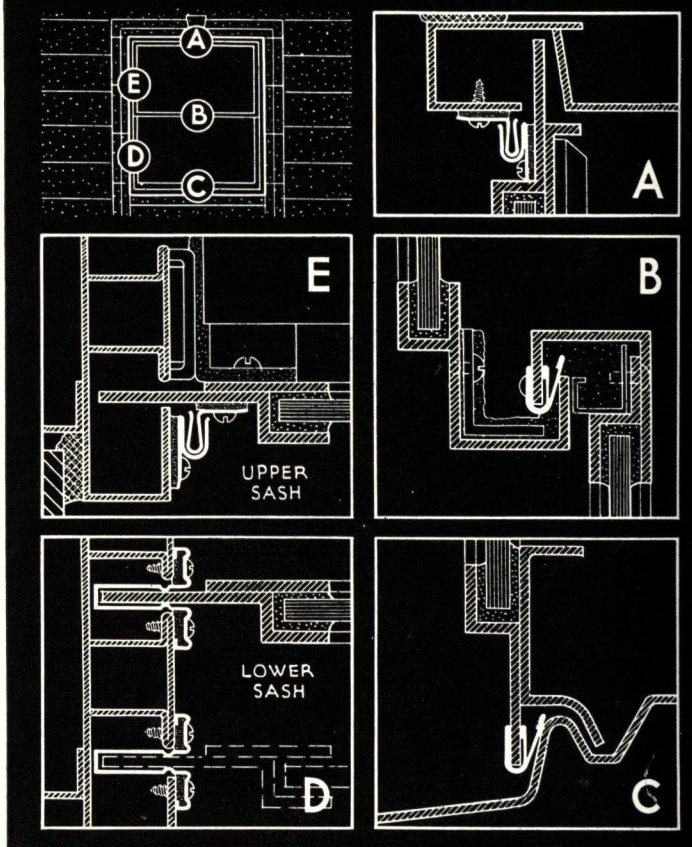
WEATHERSTRIPS
DH • 530 • 531
PLATE TYPE DOUBLE HUNG

Channel Type—Plate type double hung windows require interlocking weatherstrip members located at the outermost points of air and water ingress. Because of the siphonage action at the lower sides, a special patented (U. S. Patent No. 2,050,369) channel strip is inserted in the jamb slots eliminating side play and wind and water entrance into the frame box and around the sash sections. All members are felt backed. Special stops and bumpers are furnished to complete the equipment. Tests at R. W. Hunt Laboratories show but .367 cu. ft. of air leakage per foot of sash perimeter infiltration loss.

EQUIPMENT DH-530—ZINC AND BRONZE				
Location	Strip	Ga.	Strip	Ga.
Head	18	9	36	12
Sill	501	34	..	..
Meeting Rail	501	34	..	..
Upper Sides	18	9	36	12
Lower Sides	506	10	..	..
EQUIPMENT DH-531—BRONZE				
Head	18B	25	36B	22
Sill	501	34	...	..
Meeting Rail	501	34	...	..
Upper Sides	18B	25	36B	22
Lower Sides	506B	25	...	..

Note—Strips backed with Waterproof Felt





WEATHERSTRIPS
••• SC • 540 •••
STEEL CASEMENT WINDOWS

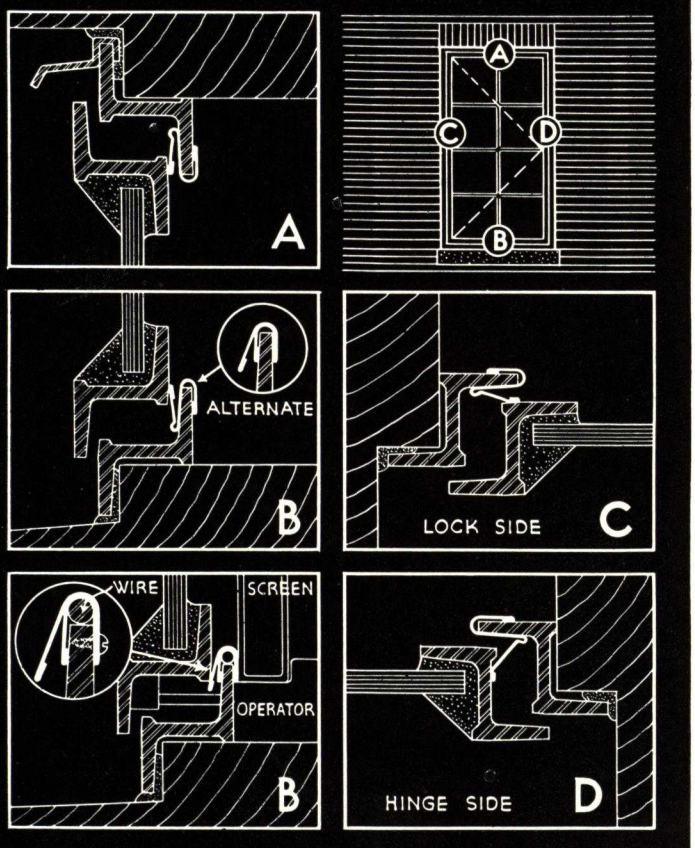
Spring Bronze Type—Actual experience in the weatherstripping of solid rolled steel casements has developed this present 500 Series. Steel casements require weatherstrips of high tempered spring bronze of the least thickness to eliminate binding, closure interference, and must be of a design applicable to all makes of standard window units. This weatherstrip permits close clamping to the steel sections reinforced at corners with drive-ins to assure permanence and eliminate possible removal or misalignment. Alternate Detail B illustrates a method of elevating the sill strip to obviate interference with inside sash operators. It carries the strip and reinforces it over that part of the sash which is cut out for passage of operator arm. Strip 500-H is for hinge sides of casements having a sectional lap of not more than $\frac{3}{16}$ inch.

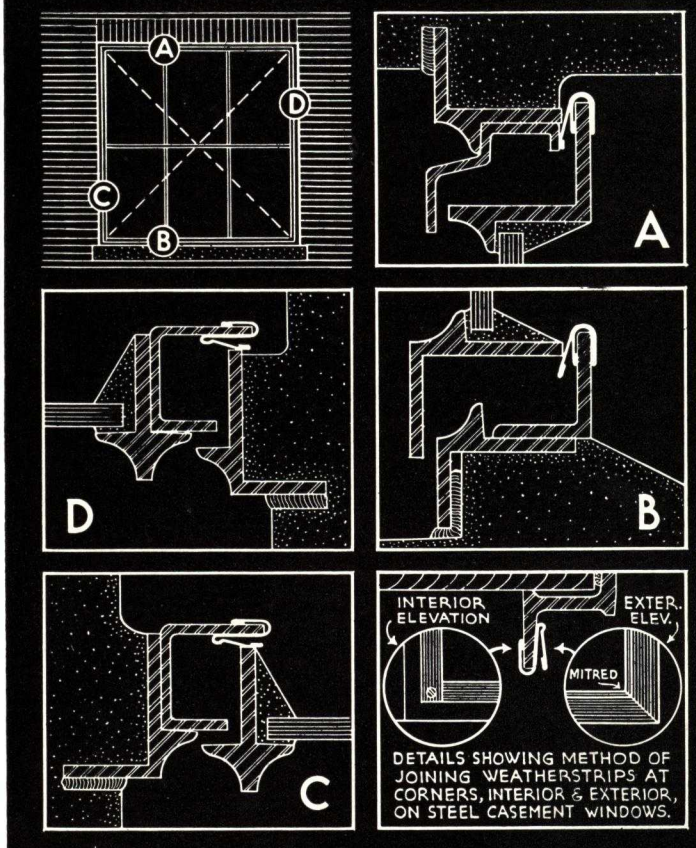
EQUIPMENT SC-540—BRONZE			
Location	Strip	Ga.	Types
Head	500	34	
Sill	500	34	Light and
Centers	500	34	Medium
Lock Side	500	34	Casements
Hinge Side	500H	34	
Alternate No. 1—Substitute No. 501 at Sill Alternate No. 2—Add Elevator Wire at Sill			

WEATHERSTRIPS
••• IS • 550 •••
STEEL INDUSTRIAL WINDOWS

Spring Bronze Type—The same 500 Series strips as used for Steel Casements are used for Steel Industrial Windows as indicated in the equipment schedule below. Strip 501 is used in all positions when there is a possibility of dirt or moisture interfering with the contact closures. Due to ventilator warpage, it is sometimes necessary to apply a supplementary $\frac{3}{8}$x$\frac{3}{8}$ inch steel angle to the bottom of the ventilator section aligned with the frame member to form a perfect contact for the flange of the weatherstrip member. The standard strip will fit most of the various makes of solid steel section industrial windows. Because some windows depart from the customary standards, the flanged strip 501 is made, where so required, with extra wide flanges and additional distance between the sides to compensate for these manufacturing variances.

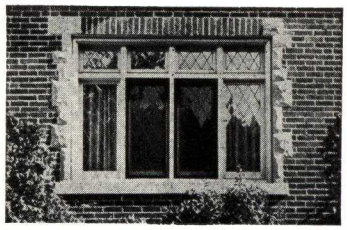
EQUIPMENT IS-550—BRONZE			
Location	Strip	Ga.	Ventilators
Head	501	34	All types
Sill	501	34	All types
Sides	500	34	Project in
Sides	500	34	Project out
Sides	500	34	Center Pivoted
Alternate No. 1—Substitute No. 501 at Sides Alternate No. 2—Extra wide flange on No. 501			





PROTEX
Weatherstrips

WEATHERSTRIPS
C • 403 • • 403 • B
WOOD CASEMENT WINDOWS



Interlocking Type—Since there are no definite design standards established by woodworking mills in the manufacture of inswinging wood casement windows, weatherstripping for these units must be designed to be applicable to any variation. The detail below illustrates a strong, concealed metal to metal interlock with a most effective self-draining sill trough adaptable to sash 1¾ inch or greater in thickness. Moisture following down the side members collects in the trough and drains out through weep holes which are furnished with wind breaks.

EQUIPMENT C-403—ZINC				
Location	Strip	Ga.	Strip	Ga.
Head	19	9	112	9
Sill	Optional 70 detailed			15
Center (Double)	19	9	112	..
Lock Side	19	9	112	9
Hinge Side	19 or 18	9	...	..
EQUIPMENT C-403B—BRONZE				
Head	19B	25	112B	25
Sill	Optional 71 detailed			18
Center (Double)	19B	25	112B	25
Lock Side	19B	25	112B	25
Hinge Side	19B or 18B	25	....	..

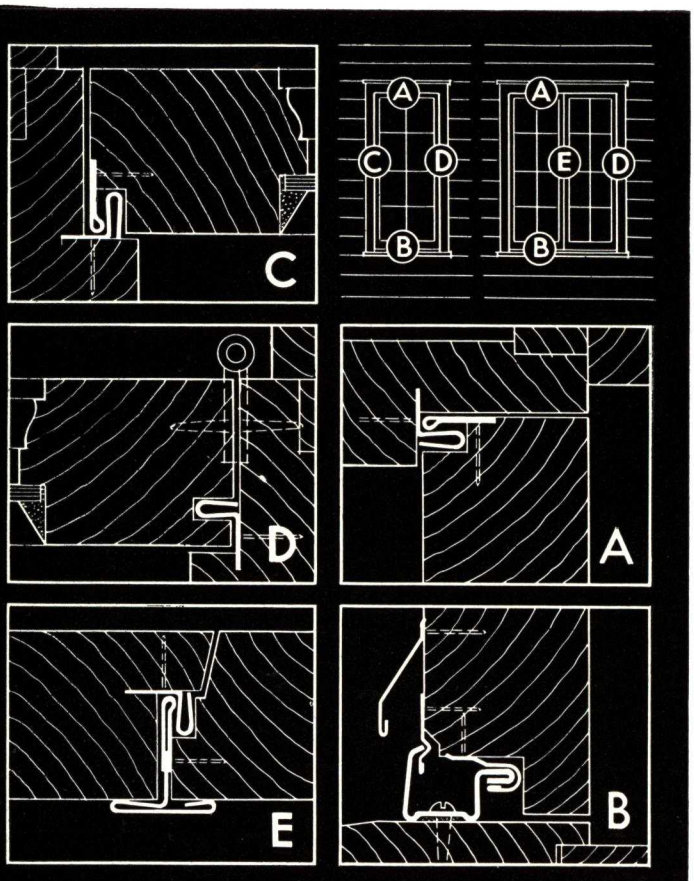
Alternate No. 1—Add Metal or Wood Astragal
Alternate No. 2—Add Metal or Wood Dripcaps

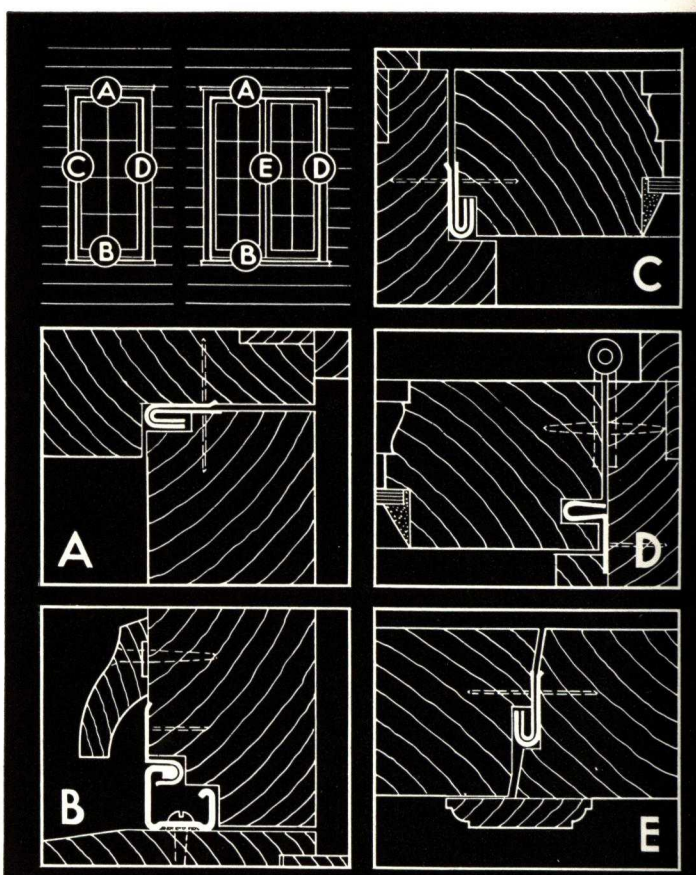
WEATHERSTRIPS
C • 404 • • 404 • B
WOOD CASEMENT WINDOWS

Interlocking Type—This alternate design of weatherstripping for inswinging wood casement windows is a metal to metal interlock in which one member is enclosed within the other. Air infiltration and moisture passage is in this type of interlock reduced to a minimum. The sill trough shown in the detail below is an alternate assembly particularly adaptable for sash 1⅜ inch or less in thickness. Note that weather strip members on receiving jambs have turned edges to insure proper indenture in the wood to eliminate sharp, protruding edges.

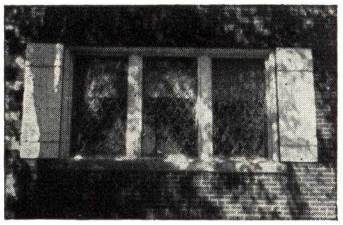
EQUIPMENT C-404—ZINC				
Location	Strip	Ga.	Strip	Ga.
Head	11	12	12	10
Sill	Optional 070 detailed			15
Center (Double)	11	12	12	10
Lock Side	11	12	12	10
Hinge Side	18	9	..	..
EQUIPMENT C-404B—BRONZE				
Head	11B	..	12B	24
Sill	Optional 071 detailed			18
Center (Double)	11B	22	12B	24
Lock Side	11B	22	12B	24
Hinge Side	18B	25	...	..

Alternate No. 1—Add Metal or Wood Astragal
Alternate No. 2—Add Metal or Wood Dripcaps





WEATHERSTRIPS
C • 405 • • 405 • B
WOOD CASEMENT WINDOWS

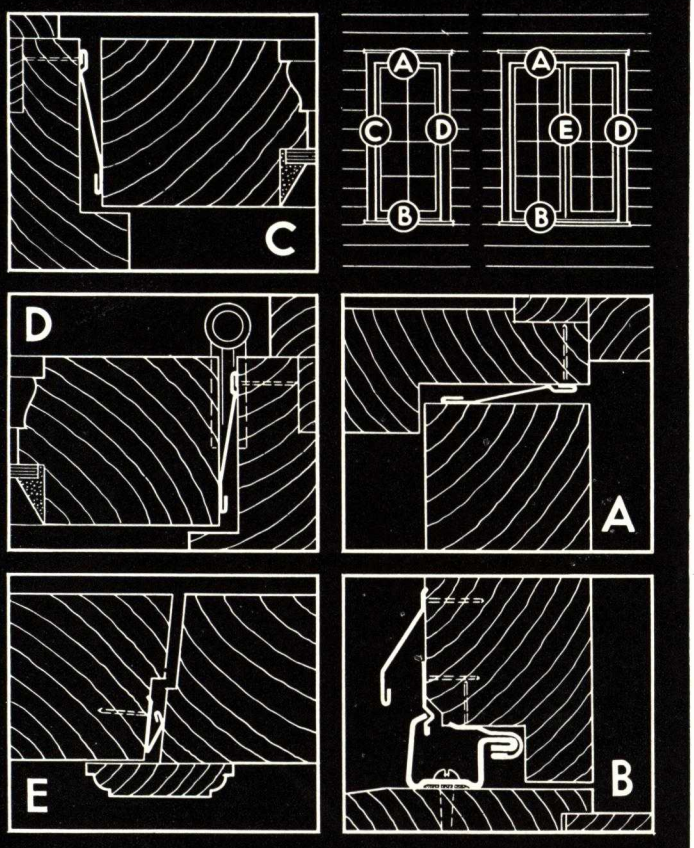


Spring Bronze Type—For inswinging casements under normal conditions, spring bronze of correct gauge, temper, and hardness is equally as effective as the interlocking type of weatherstrip. It has the advantage that it is adjustable after installation to seal openings of as wide as 3/8 inch. Edges are hemmed for added rigidity and to eliminate "humming." Requiring no rabbeting or plowing of the sash, the cost is less than the interlocking type. Sill weatherstripping is the same as required for the interlocking type of equipment.

EQUIPMENT C-405—ZINC AND BRONZE				
Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Sill	Optional 70 detailed			15
Center (Double)	83	83	83	32
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31

EQUIPMENT C-405B—BRONZE				
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Sill	Optional 71 detailed			15
Center (Double)	83	83	83	32
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31

Note—Select desired sill in specifying equipment



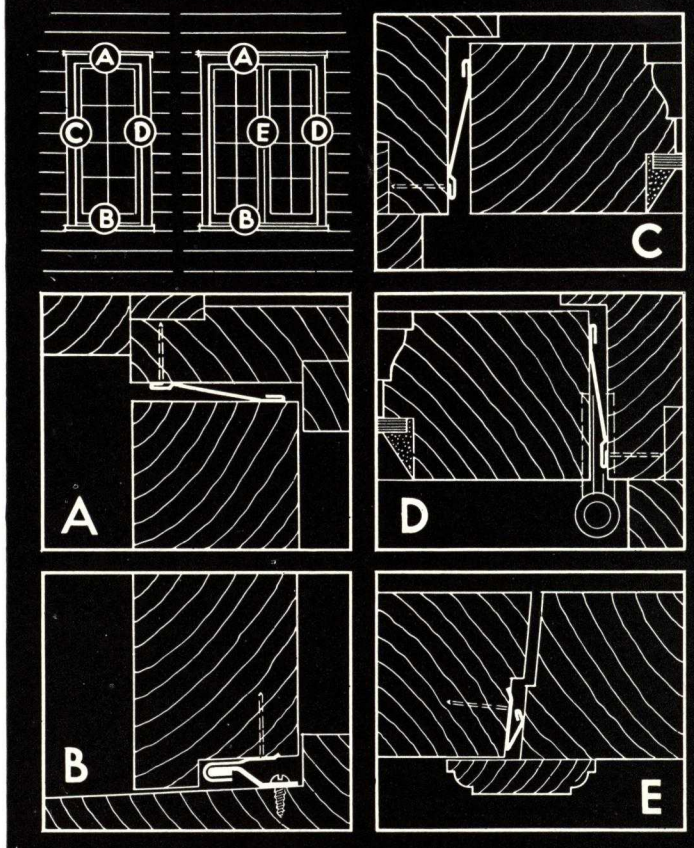
WEATHERSTRIPS
C • 406 • • 406 • B
WOOD CASEMENT WINDOWS

Spring Bronze Type—Since outswinging casement sash close against an inside rabbeted jamb or stop, they are less susceptible to moisture and air leakage under normal conditions than are inswinging casements. In the average installation, this spring bronze type of weatherstripping together with this strong, flexible hook type of sill equipment is entirely adequate. For severe exposures, use either of the interlocking types of weatherstripping illustrated on page 7, set in a reverse position for head and side jambs.

EQUIPMENT C-406—ZINC AND BRONZE				
Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Sill	Optional 80 detailed			15
Center (Double)	83	83	83	..
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31

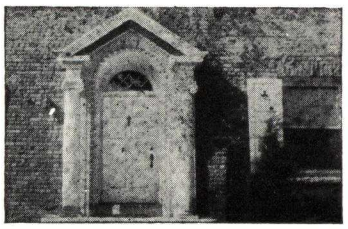
EQUIPMENT C-406B—BRONZE				
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Sill	Optional 81 detailed			..
Center (Double)	83	83	83	..
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31

Note—Select desired sill in specifying equipment



PROTEX Weatherstrips

WEATHERSTRIPS
D • 404 • • 404B
• WOOD DOORS •



Interlocking Type—Since the construction of door frames is similar to frames for casement windows, the head and side jamb weatherstripping for doors is practically the same as that required for casements. Because the door sill is the point of maximum leakage and must take severe traffic abuse, only the best heavy-duty equipment is advocated. The bottom of the door should have sufficient clearance over heavy carpets, mats, etc., to avoid conflict with the door bottom hook. See also pages 12 and 13 for alternate sill equipment.

EQUIPMENT D-404—ZINC				
Location	Strip	Ga.	Strip	Ga.
Head	11	12	12	10
Sill	Optional 50 detailed			..
Center	11	12	12	10
Lock Side	11	12	12	10
Hinge Side	18	9	..	..
EQUIPMENT D-404B—BRONZE				
Head	11B	22	12B	24
Sill	Optional 50 detailed			..
Center	11B	22	12B	24
Lock Side	11B	22	12B	24
Hinge Side	18B	25	...	..

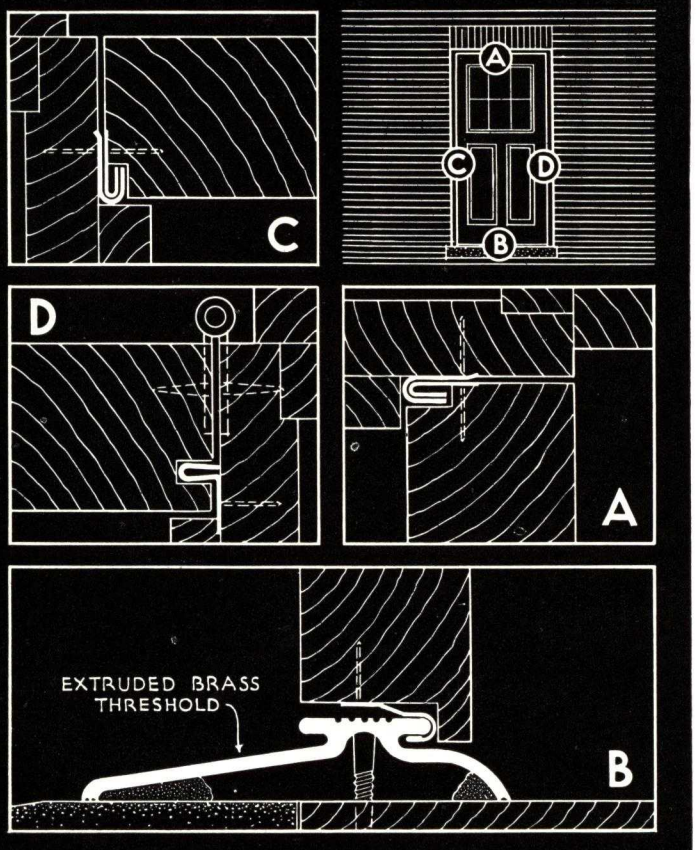
Note—Select desired sill in specifying equipment

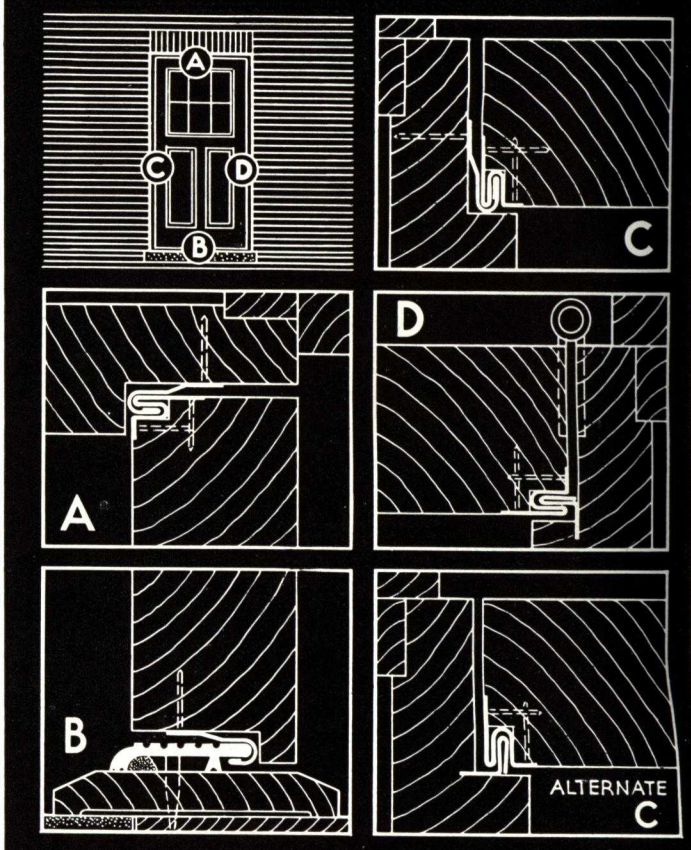
WEATHERSTRIPS
D • 407 • • 407B
• WOOD DOORS •

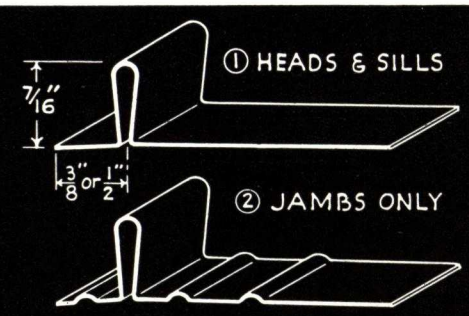
Interlocking Type—The interlocking equipment illustrated below is a sturdy door equipment especially designed to allow for at least a ¼ inch shrinkage without binding. The lip of the door member is guided into a flexible jamb member, assuring a positive closure at varying crack widths. Alternate equipment C substitutes a non-flexible El jamb member adaptable to doors in less exposed locations. Various widths and heights of interlocking door sill equipment are provided to fulfill a wide variety of conditions (see also pages 12 and 13).

EQUIPMENT D-407—ZINC				
Location	Strip	Ga.	Strip	Ga.
Head	109	9	110	31
Sill	Optional 41 detailed			..
Center	Optional			
Lock Side	109	9	110	31
Hinge Side	109	9	19	9
EQUIPMENT D-407B—BRONZE				
Head	109B	..	110	31
Sill	Optional 41 detailed			..
Center	Optional			
Lock Side	109B	..	110	31
Hinge Side	109B	..	19B	25

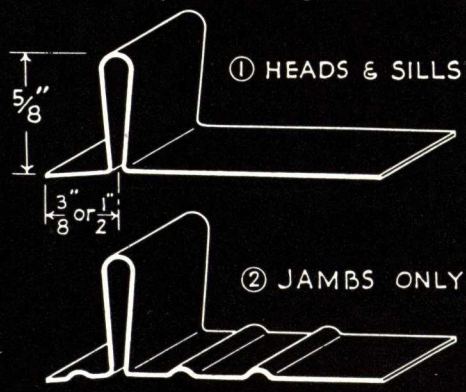
Alternate No. 1—Substitute No. 19 for 110 Strip
Note—Select desired sill



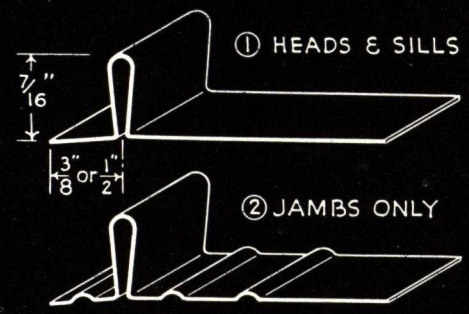




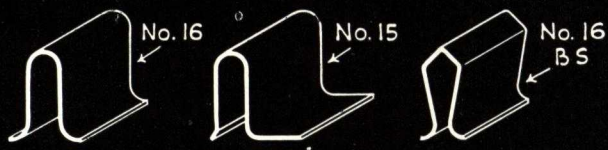
STANDARD ZINC RIB STRIPS
① 3/4", 1", 1 3/8", 1 1/2", 1 3/4", 2 1/8", 2 1/2" WIDTHS
② 1 3/8", 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2 1/8", 2 1/2" WIDTHS



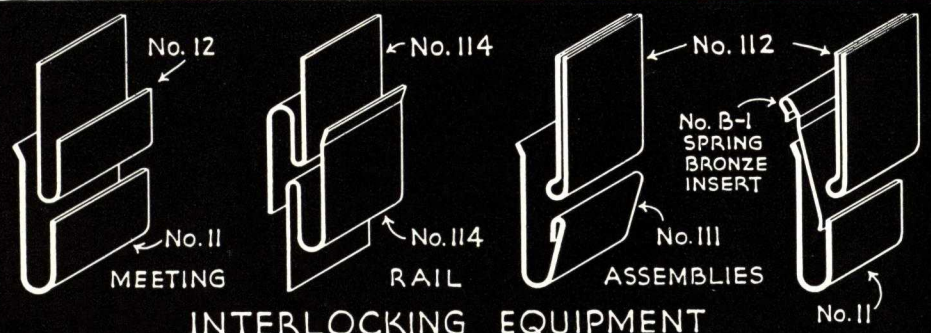
HEAVY DUTY ZINC RIB STRIPS
① 3/4", 1", 1 3/8", 1 1/2", 1 3/4", 2 1/8", 2 1/2" WIDTHS
② 1 3/8", 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2 1/8" 2 1/2" WIDTHS



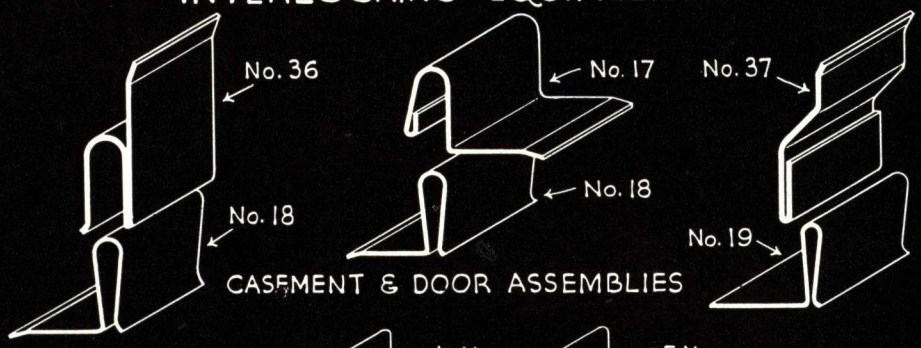
STANDARD COLD ROLLED BRONZE RIB STRIPS ① 3/4", 1", 1 3/8", 1 1/2", 1 3/4", 2 1/8", 2 1/2" WIDTHS
② 1 3/8", 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2 1/8", 2 1/2" WIDTHS



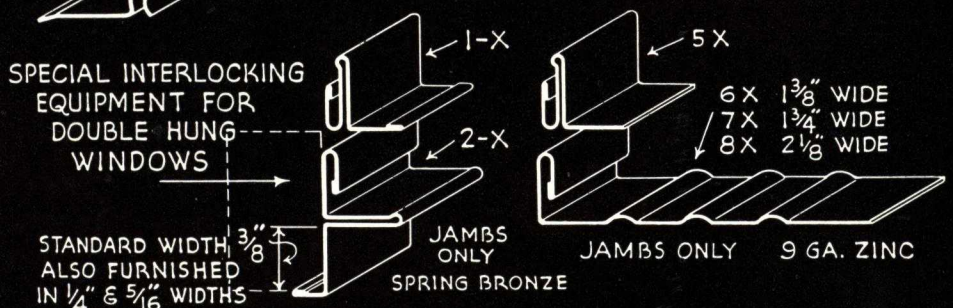
GROOVE LINERS

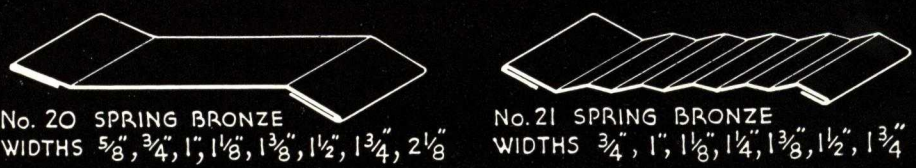


INTERLOCKING EQUIPMENT



CASEMENT & DOOR ASSEMBLIES





STEEL CASEMENT EQUIPMENT

TROUGH ASSEMBLIES FOR CASEMENTS

PROTEX Weatherstrips

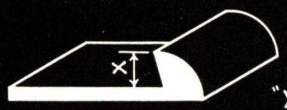
EDGINGS • BINDINGS • NOSINGS
EXTRUDED BRASS AND WHITE METAL

No. 790 BRASS
No. 790W WHITE METAL

No. 780 BRASS

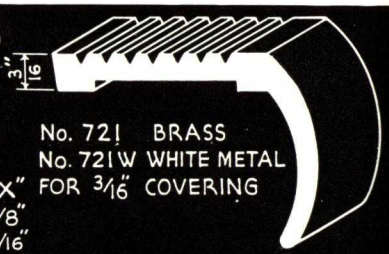
No. 770 BRASS

No. 760 BRASS

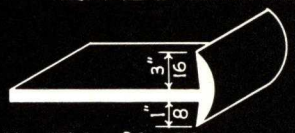


		"X"
No. 740	BRASS	1/8
No. 741	BRASS	3/16"
No. 742	BRASS	1/4"
No. 740W	WHITE METAL	1/8"
No. 741W	WHITE METAL	3/16"
No. 742W	WHITE METAL	1/4"

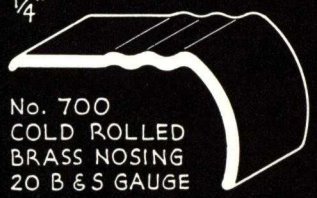
		"X"
No. 750	BRASS	1/8"
No. 751	BRASS	3/16"
No. 750W	WHITE METAL	1/8"
No. 751W	WHITE METAL	3/16"



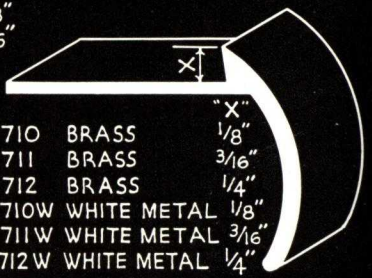
No. 721 BRASS
No. 721W WHITE METAL
FOR 3/16" COVERING



No. 730 BRASS
No. 730W WHITE METAL



No. 700
COLD ROLLED
BRASS NOSING
20 B & S GAUGE

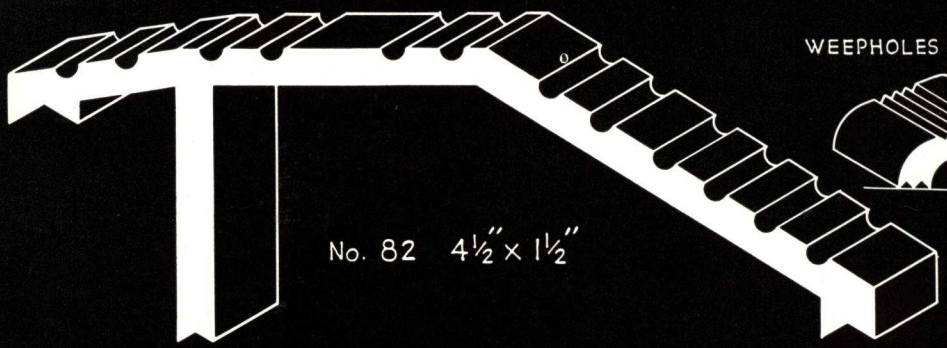


		"X"
No. 710	BRASS	1/8"
No. 711	BRASS	3/16"
No. 712	BRASS	1/4"
No. 710W	WHITE METAL	1/8"
No. 711W	WHITE METAL	3/16"
No. 712W	WHITE METAL	1/4"

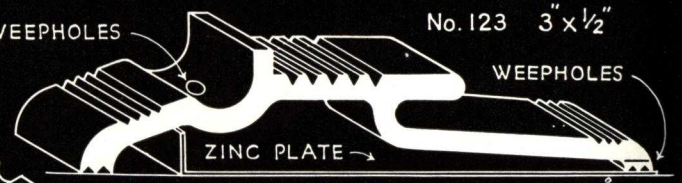
No. 122 6 1/8" x 1/4"
SILL PLATE EXTRUDED BRASS

BRASS THRESHOLDS

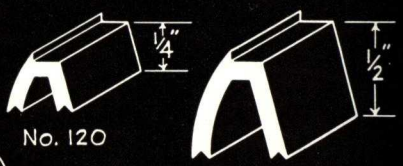
USE WITH INTERLOCKING SILLS
TO SECURE COVERAGE IN EXCESS
OF PRESENT STANDARD WIDTHS



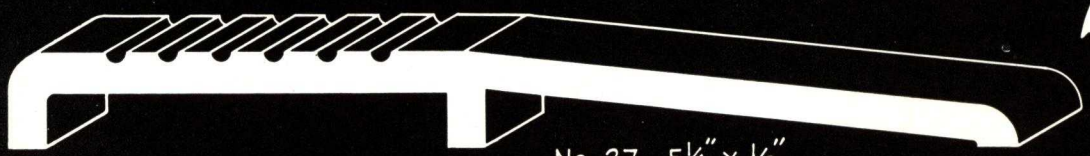
No. 82 4 1/2" x 1 1/2"



No. 123 3" x 1/2"
WATERPROOF SELF DRAINING
EXTRUDED BRASS SILL FOR
OUTSWINGING DOORS



No. 120
No. 121
THRESHOLD ELEVATORS
EXTRUDED BRASS



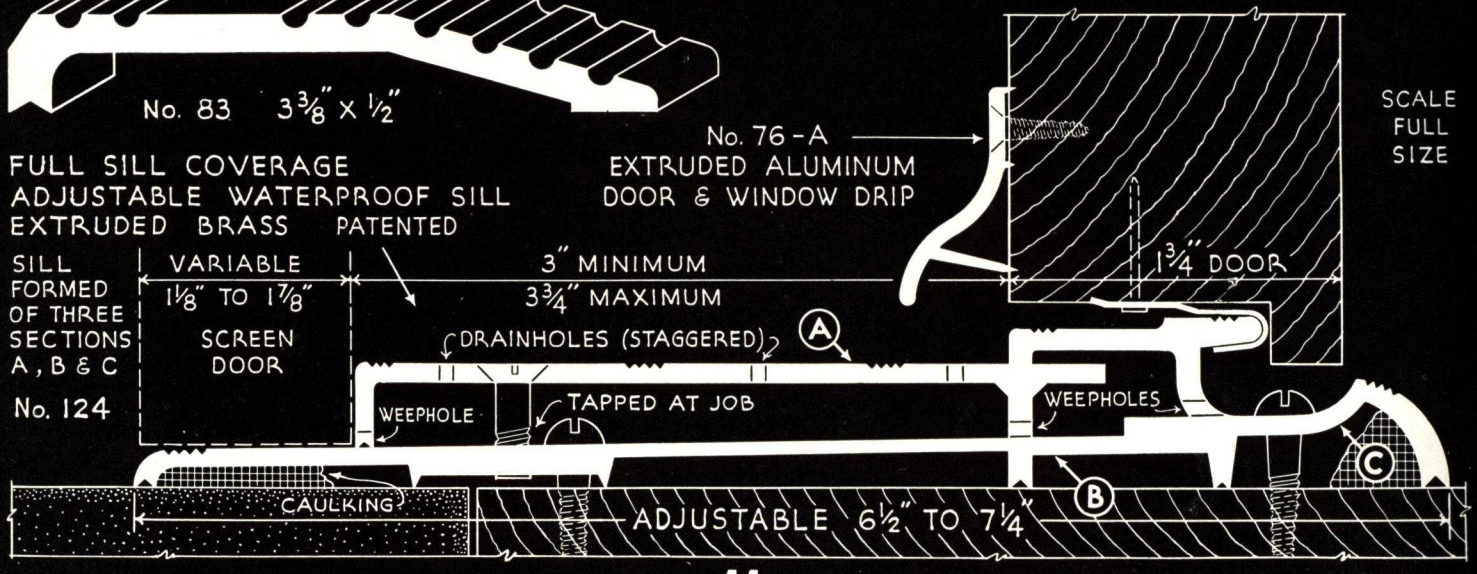
No. 27 5 1/4" x 1/2"

No. 83 3 3/8" x 1/2"

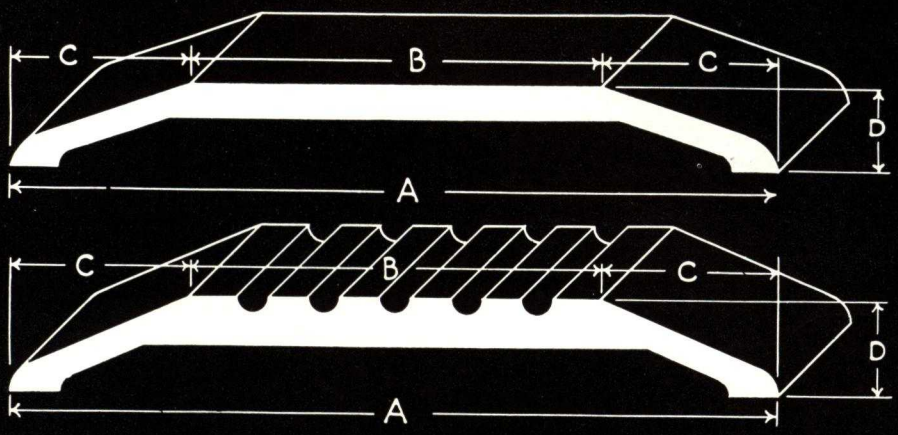
FULL SILL COVERAGE
ADJUSTABLE WATERPROOF SILL
EXTRUDED BRASS PATENTED

No. 76-A
EXTRUDED ALUMINUM
DOOR & WINDOW DRIP

SCALE
FULL
SIZE



EXTRUDED METAL SADDLES



BRASS — PLAIN TOP

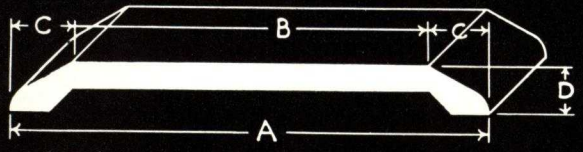
No.	A	B	C	D
71-D	3"	2 3/8"	5/16"	1/4"
58	4"	2 1/8"	15/16"	7/16"
59	5	3 1/2"	3/4"	7/16"
60	6"	3 1/8"	1 7/16"	1/2"

BRASS — FLUTED TOP

56	3 1/2"	1 15/16"	25/32	15/32"
61	4"	2 1/8"	15/16"	1/2"
62	5"	2 11/16"	1 5/32"	1/2"
63	6"	2 15/16"	1 17/32"	7/16"

WHITE METAL — FLUTED TOP

61-W	4"	1 3/4"	1 1/8"	5/8"
62-W	5"	2 3/4"	1 1/8"	5/8"



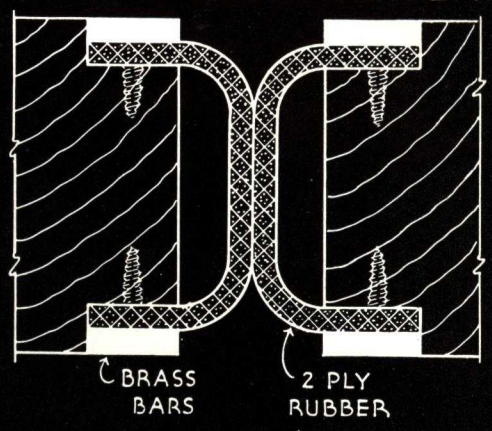
BRASS FLOOR PLATES

No.	A	B	C	D
70-A	2 1/4"	1 3/4"	1/4"	3/16"
70-B	2 1/2"	1 7/8"	5/16"	1/4"
71-D	3"	2 3/8"	5/16"	1/4"

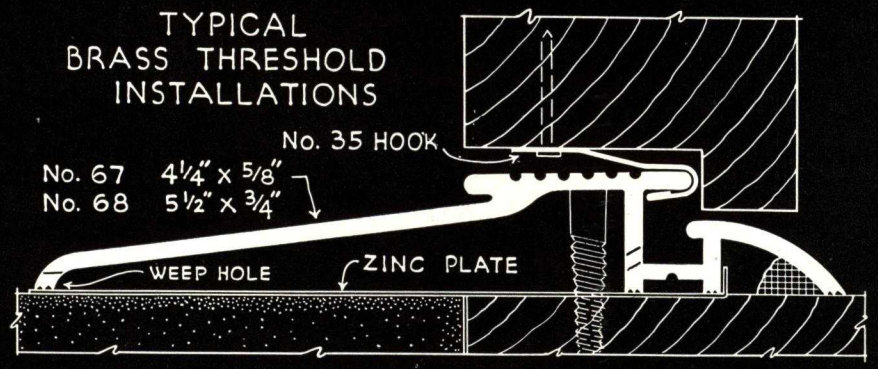
WHITE METAL FLOOR PLATES

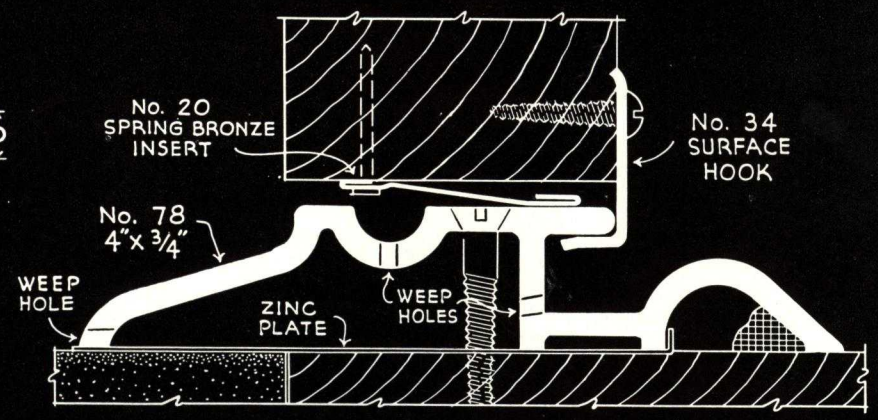
70-W	2 1/4"	1 11/16"	9/32"	3/8"

DOUBLE DOOR CENTER

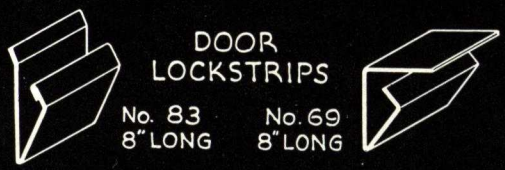


TYPICAL BRASS THRESHOLD INSTALLATIONS



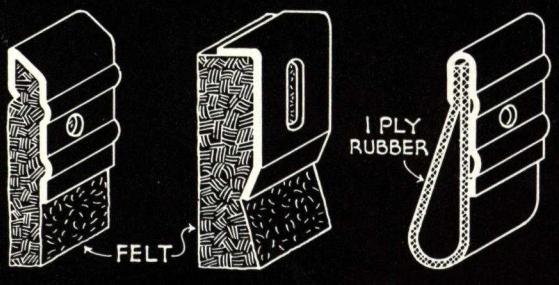


DOOR LOCKSTRIPS



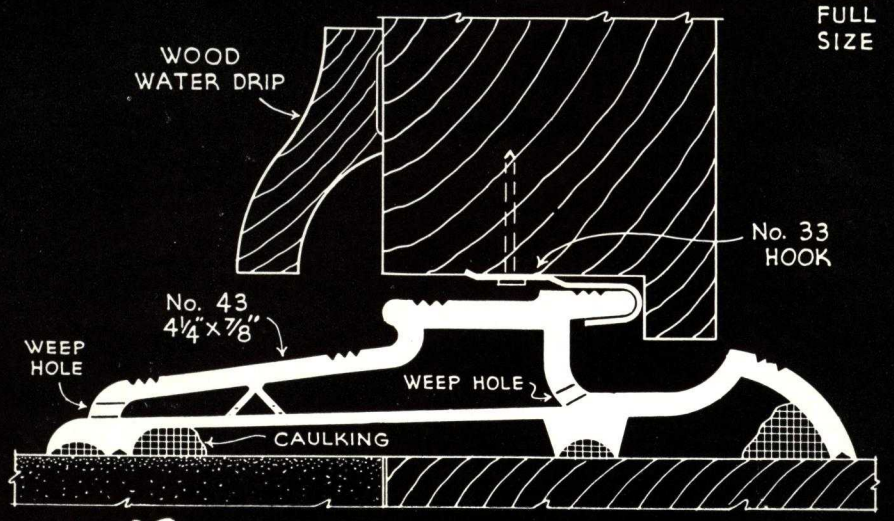
No. 83 8" LONG — No. 69 8" LONG

DOOR BOTTOMS



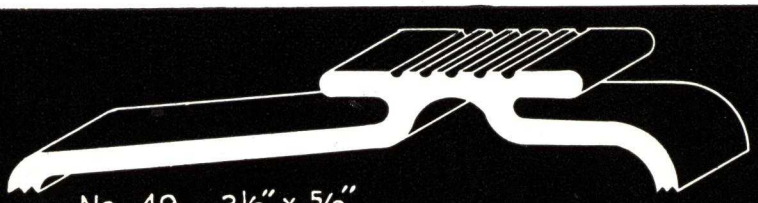
No. 31 — No. 32 — No. 38

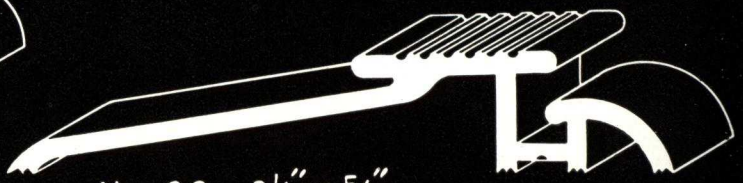
SCALE FULL SIZE



PROTEX
Weatherstrips

BRASS THRESHOLDS

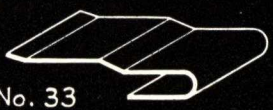

No. 49 3½" x 5/8"


No. 66 3½" x 5/8"

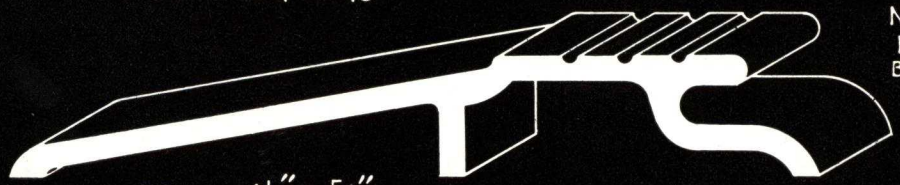
No. 52L 3½" x 5/8"

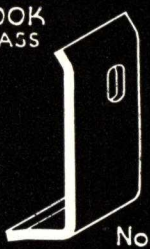
No. 65 2¾" x 5/8"

No. 150 4¼" x 9/16"

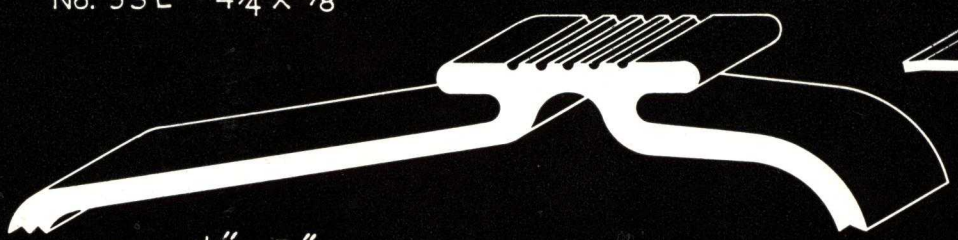

No. 33 HOOK BRASS

No. 35 HOOK BRONZE


No. 53L 4¼" x 5/8"

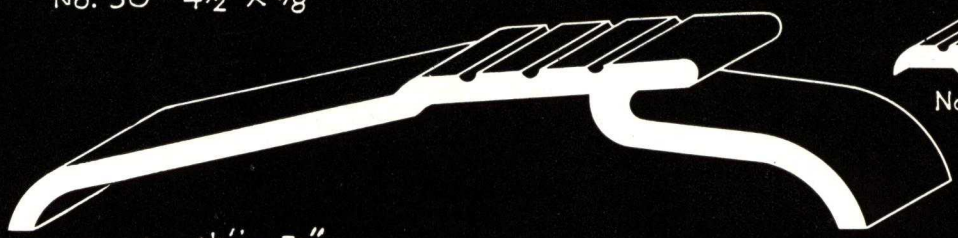

No. H-34 SURFACE HOOK

No. 48 1⅜" x ¼"

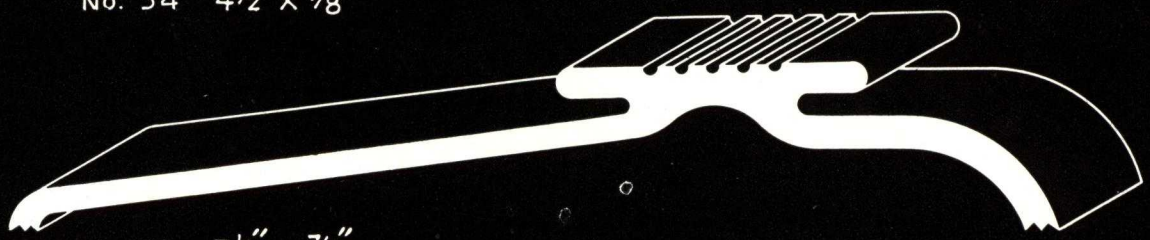

No. 50 4½" x 7/8"

No. 45 1⅜" x ¼"

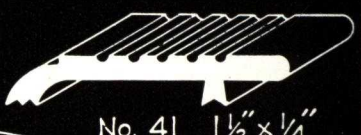
No. 47 1⅛" x ¼" No. 40 1⅛" x ¼"

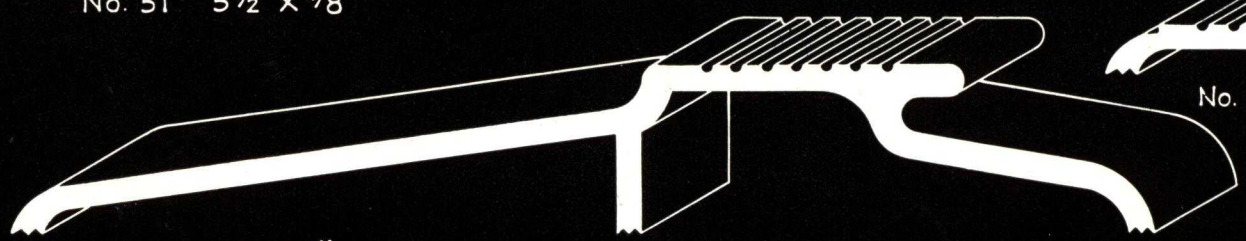

No. 54 4½" x 7/8"

No. 44 1⅞" x ¼"


No. 51 5½" x 7/8"

No. 42 1¼" x ¼"

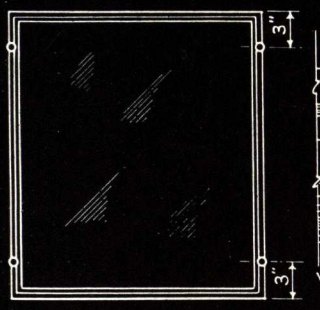

No. 41 1½" x ¼"


No. 57 6" x 7/8"

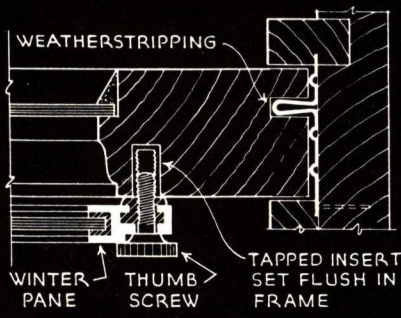
SCALE FULL SIZE

DETAILS OF WINTER PANES ~ THE MODERN STORM SASH

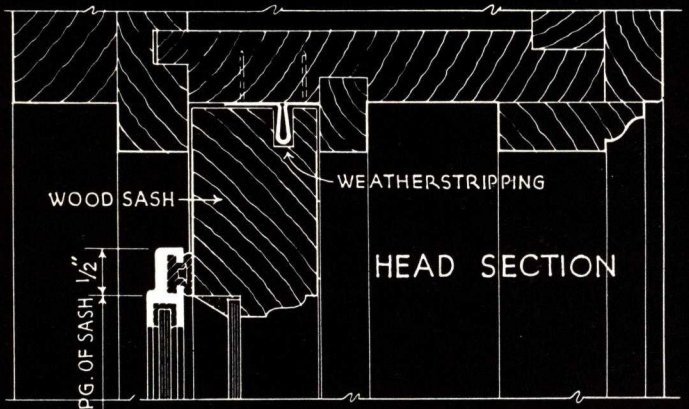
ELIMINATES ~ FROSTING • CONDENSATION • HEAT LOSS

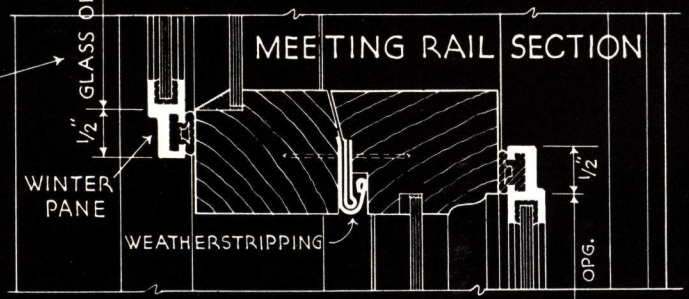


ELEVATION OF WINTER PANE SHOWING LOCATION OF THUMB SCREWS HOLDING WINTER PANE TO SASH



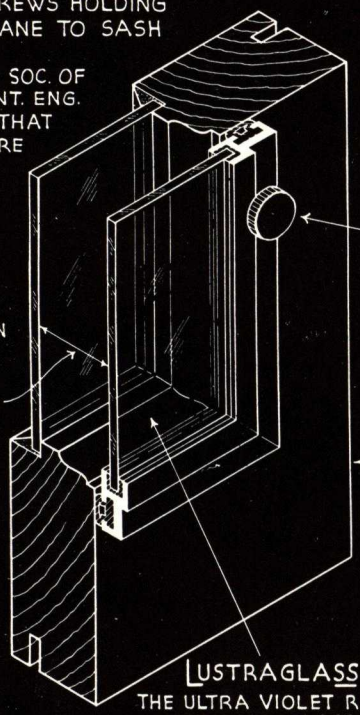
JAMB SECTION SHOWING THUMB SCREW





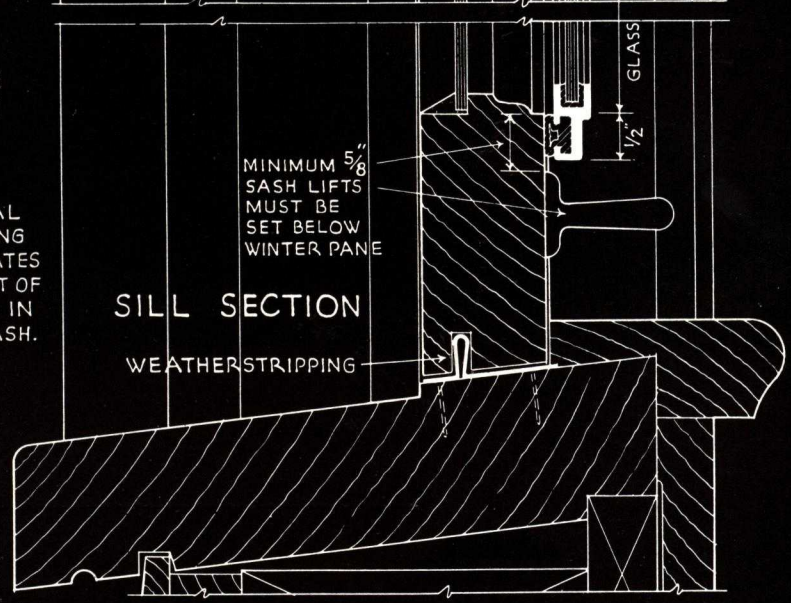
AMERICAN SOC. OF HEAT. & VENT. ENG. INDICATE THAT ¾" OR MORE DEAD AIR SPACE BETWEEN WINDOWS PROVIDES THE MOST EFFECTIVE INSULATION

FOR OVERALL DIMENSIONS OF WINTER PANES MEASURE GLASS OPENING OF WOOD OR STEEL SASH AND ADD ONE INCH

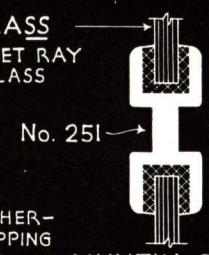


PERSPECTIVE SHOWING WINTER PANE INSTALLED ON WOOD SASH

NOTE :- FRICTIONAL WEATHERSTRIPPING USUALLY COMPENSATES FOR LIGHT WEIGHT OF WINTER PANES IN BALANCING OF SASH.

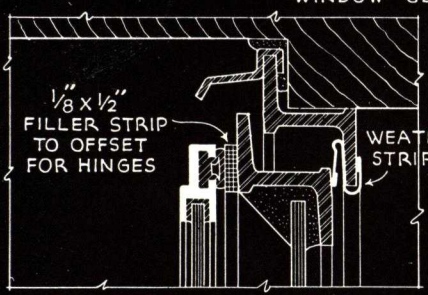


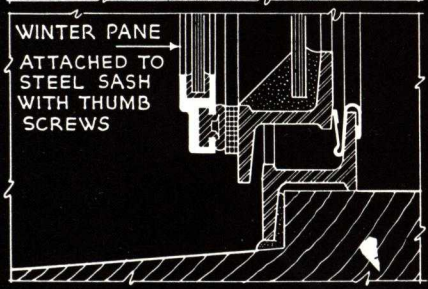
LUSTRAGLASS
THE ULTRA VIOLET RAY WINDOW GLASS



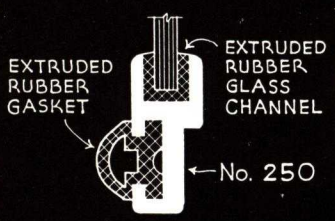
MUNTIN OR CENTER BRACE

WINTER PANES ON WOOD D.H. WINDOW





ON STEEL CASEMENT SASH



F.S. DETAILS OF FRAME
EXTRUDED ALUMINUM

PROTEX

Weatherstrips

METAL WEATHERSTRIPS

ALUMINUM THRESHOLDS

BRASS THRESHOLDS

CAULKING COMPOUNDS

KICK AND PUSH PLATES

STAIR NOSINGS AND EDGINGS

SPECIAL METAL SHAPES

PROTEX WEATHERSTRIP MF'G.CO.

CHICAGO · ILLINOIS

The Blue Book of Weatherstrips

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SAGER METAL WEATHERSTRIP COMPANY

Manufacturers and Installers of Metal Weatherstrips and Caulking

TELEPHONE:
ARMitage 1130

FACTORY AND GENERAL OFFICES
2531-2533 Homer Street, CHICAGO, ILL.
AGENTS IN ALL PRINCIPAL CITIES

Products

Sager Metal Weatherstrip for doors and windows including Sager Patented Interlocking Parting Bead Strip, Sager Patented Rotproof Sill Strip, Leakproof Casement Window Strip and Extruded Brass Interlocking Door Thresholds.

Sager All-Metal Interlocking Parting Bead Strip

For double-hung windows embodies every desirable feature of a weatherstrip plus an exclusive method of installation, which provides for the removal of the strip from the window frame, for repairing broken weight cords or other repairs to the sash, without in any way damaging the strip.

Shrinkage of the sash and frame does not in any way affect the contact of the interlocking members of this weatherstrip.

Stops rattling windows when opened for ventilation because both sash are tracking in the weatherstrip from head to sill. Stops air leakage at its source of entry.

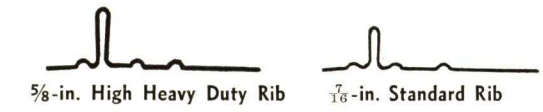
Sager Patented Interlocking Parting Bead Weatherstrip

Functions at the parting bead and does not interfere with the back of the sash, therefore makes a perfect installation in connection with Pullman and Unique sash balances.

Sager New Improved Rotproof Sill Strip

For double-hung windows (shown below) allows water caused from condensation on the inside of window pane to drain through the weep holes in the sill strip and at the same time prevents air infiltration.

Catalog showing our complete line of weatherstrips for doors and windows will be mailed upon request.



5/8-in. High Heavy Duty Rib

7/16-in. Standard Rib

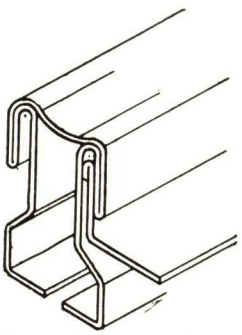
7-C 3½ in.

7-B 1½ in.

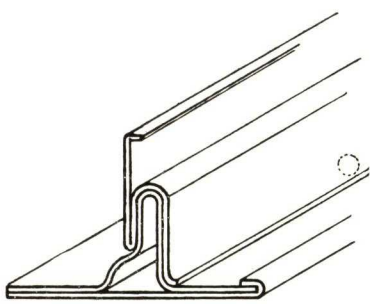
7-N 3½ in.

7-A 1⅛ in.

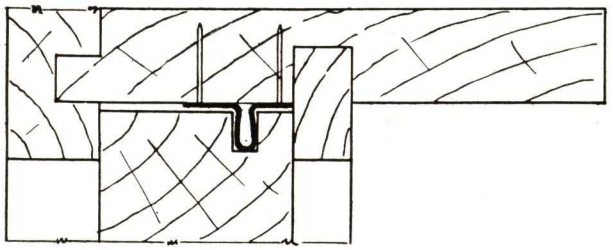
7-L 5-in. Reversible Interlocking Threshold



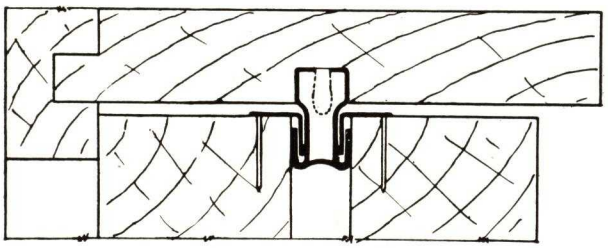
Isometric View Showing Sager Interlocking Parting Bead Strip
No. 2-B & 2-C



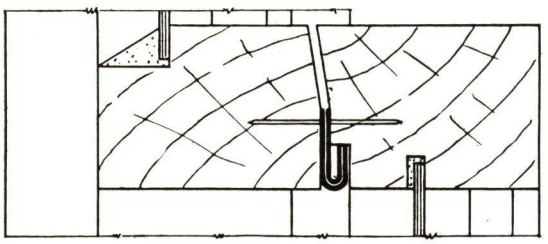
Isometric View Showing Sager Rot-Proof Interlocking Sill Strip
No. 3-RP



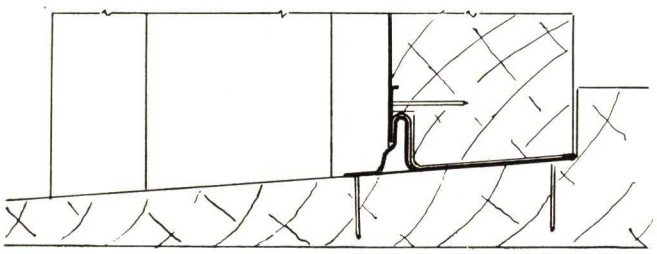
Section through Head



Section through Jamb



Section through Meeting Rail



Section through Sill

REESE METAL WEATHER STRIP CO.

111 South 10th St., MINNEAPOLIS, MINN.

Products

FLEXO-SEAL EQUIPMENT for double hung windows (patented).

ADJUSTO-SEAL EQUIPMENT—self-adjusting interlocking equipment for casements and doors (patented).

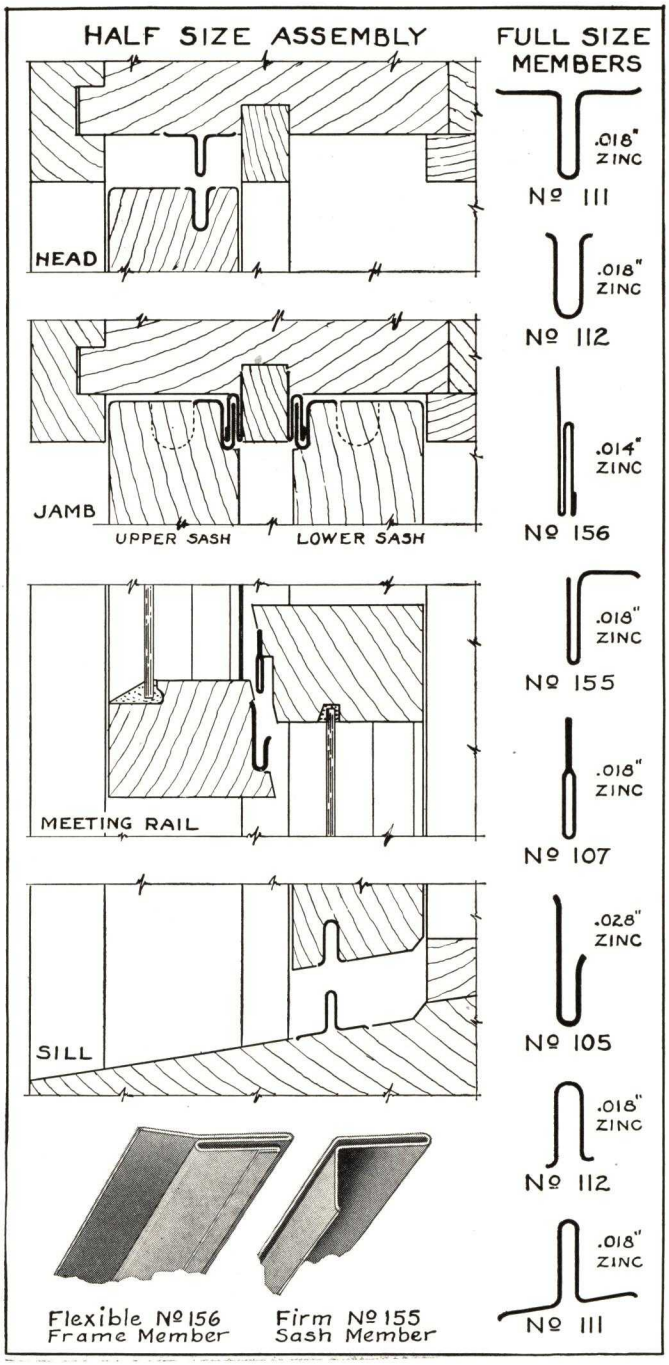
PERFEC-SEAL AUTOMATIC DOOR BOTOMS (patented).

500 SERIES FLEXO-SEAL EQUIPMENT for steel windows, hinged, projected, or pivoted (patented).

THRESHOLDS, SPRING BRONZE, WATERPROOF CASEMENT EQUIPMENTS.

GOLD SEAL NON-HUMMING SPRING BRONZE PLASTO-SEAL CAULKING COMPOUND.

IGA — SYSTEM of INSULATION of GLASS AREAS (patent pending).



FLEXO-SEAL EQUIPMENT

Wide Adaptability

Flexo-Seal Equipment for double hung windows requires no special detailing. It is admirably adapted to all ordinary double hung window construction, as well as to practically any vertically sliding sash of special detail.

Minimum Sash Cutting

Its installation involves minimum cutting of sash stiles. Jamb members are positioned next to the parting beads where they are protected from damage. They do not interfere with pulleys, balances, nor access to weight pockets, and furnish full protection past sash cord slots.

Automatic Adjustment

The jamb members provide automatic "shrinkage-swelling" adjustment of ½ in. with *adjustment also for warpage of sash.*

The frame member, locked into the frame, is shaped like the bellows of an accordion. This interlocking member yields when sash warpage occurs and sash slide freely, without undue friction or grinding action on the weather strip. Because of this yielding action of a strip *designed to yield,* we produce the interlocking members with a tighter fit one with the other than is possible in rigid or non-pliant members, thus obtaining greater ability to exclude air, while retaining an ease of sash operation especially appreciated by any operator of the sash.

Ideal for New Buildings

Since the design of Flexo-Seal anticipates the changes which will naturally occur in a sash after installation, it is ideal for use on new work and may be so specified with assurance that it will continue to deliver satisfaction to the user through the years of usefulness of the sash.

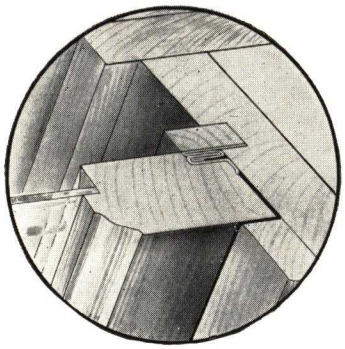
High Quality Materials

All zinc strips, 60 in. or less in length, are made of best quality sheet zinc, cut and formed across the grain to provide the greatest strength and resistance tc fracture.

Laboratory Test Data

Flexo-Seal Equipment has been tested at the University of Wisconsin. Copies of test curves furnished on request.

With sash fitted to $\frac{3}{16}$ *in. crack* and $\frac{3}{32}$ *in. clearance,* and with *pressure drop of 0.1 through windows* in inches of water, Flexo-Seal equipment showed a leakage of *.242 cu. ft. per minute per foot of crack.* This leakage does not include leakage subject to control by pulley covers or caulking, but only that controlled by weather strips.



Comparisons of laboratory test data are often misleading on account of a difference in specifications governing the test. Percentage methods of computing efficiency are meaningless because the percentage varies according to the amount of leakage in the plain window.

Laboratory test data is valuable chiefly because it clearly proves the economic value of weather strips, and offers a scientific measure of this value to the engineer. However, we do not consider laboratory test data alone an adequate guide in the selection of a weather strip. This data, together with experience gained in the use of the product, forms a reliable guide.

Flexo-Seal Specifications

All double hung windows shall be equipped with Reese Flexo-Seal Equipment, as applied by the manufacturer's authorized dealer. Jamb strips shall have ½ in. interlocking contact with sash against jamb to allow amply for sash shrinkage, and the design shall permit easy operation in case of warpage of sash ⅛ in. out of plane surface. Meeting rail, head, and sill shall have two-piece interlocking members. Unless otherwise specified, all members shall be made of sheet zinc cut across grain, and of thickness specified in published detail.

Alternate for Flexo-Seal in Bronze: All members shall be cold rolled from commercial bronze of thicknesses specified in published details.

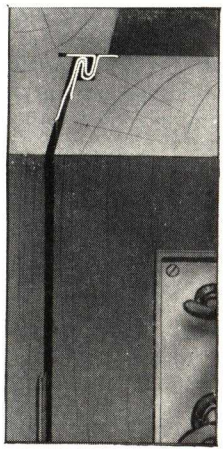
ADJUSTO-SEAL EQUIPMENT

(Patented)

A True Self-adjusting, Interlocking Equipment for the Jambs and Head of Casements and Doors

Adjusto-Seal Equipment is a permanent self-adjusting seal, made of rust-free materials of low (not spring) temper, either zinc or bronze. The design is such that the interlocking contact is preserved without change regardless of shrinking or swelling of sash.

Notice the wide mouth of the frame member on the lock side. See how its cam surfaces are shaped to pull the member automatically into proper alignment if its position should be moved through any cause while the sash is open.

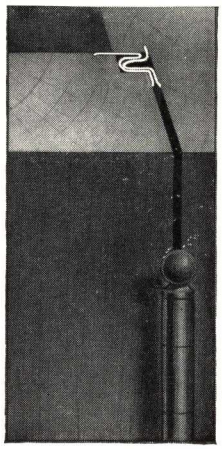


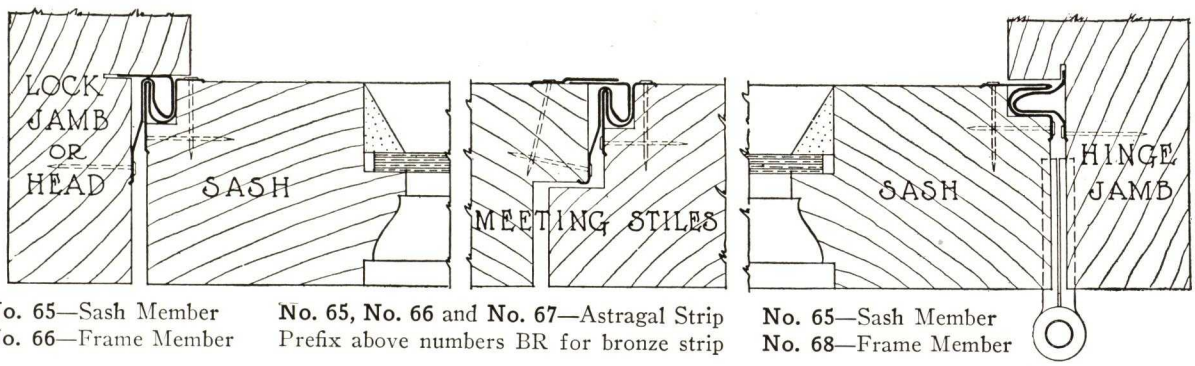
Adjusto-Seal Specifications

Sides, tops, and meeting stiles of all casement windows (and doors) shall be equipped with Reese Adjusto-Seal Equipment.

Frame members on hinge jamb shall be kerfed to form air and water seal continuous past butts, and shall be formed with outer radius for easy engagement with sash member. Frame member on lock jamb and head shall be self-adjusting to shrinkage of sash, kerfed into frame for air and water-seal. Sash members shall be double-nailed at right angles to prevent pulling loose on nails. Both frame and sash members shall be continuous past locks.

NOTE: *Unless otherwise specified, Adjusto-Seal Equipment will be furnished in zinc. If desired of bronze, add to above specification: "All members shall be furnished of cold-rolled commercial bronze; Nos. 65 and 68, .018 in. thick; No. 66, .014 in.; No. 67, .028 in. thick.*



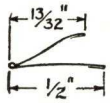


No. 65—Sash Member
No. 66—Frame Member

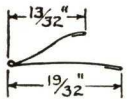
No. 65, No. 66 and **No. 67**—Astragal Strip
Prefix above numbers BR for bronze strip

No. 65—Sash Member
No. 68—Frame Member

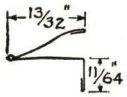
GOLD SEAL BRONZE



No. 341—The ½ in. overall width is used when space limitations do not permit use of a wider size with more convenient nailing flange. (.0056 in. Bronze).

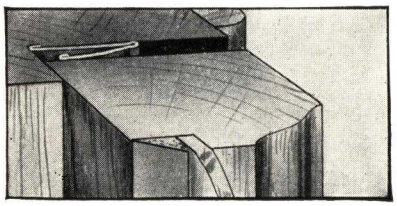


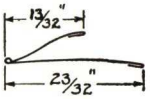
No. 342—Used mainly for cross members on Gold Seal Equipment and rabbeted casement meeting rails of 1⅜ in. sash. (.0056 in. Bronze).



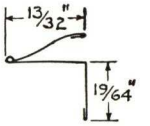
No. 343—Used as side members in Gold Seal Equipment, spring liners in rib equipments, and many special uses in wood window installations. (.0056 in. Bronze).

Gold Seal Bronze spring strips for doors and casements tend to tighten the seal as wind pressure increases. Unusually resilient, they will not hum in the wind and are adaptable to both standard and special applications.

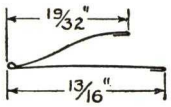




No. 344—Similar to No. 342 with wide flange to permit use of sheet metal or drive screws on steel window applications. (.0056 in. Bronze).



No. 345—Similar to No. 343. Wide flange suits sheet metal and drive screws. Used in special applications on wood windows also. (.0056 in. Bronze).



No. 350—For tops and sides of casement windows and doors of any thickness; also rabbeted meeting rails with ⅞ in. space for bronze. (.0064 in. Bronze).

500 SERIES FLEXO-SEAL EQUIPMENT

(Patented)

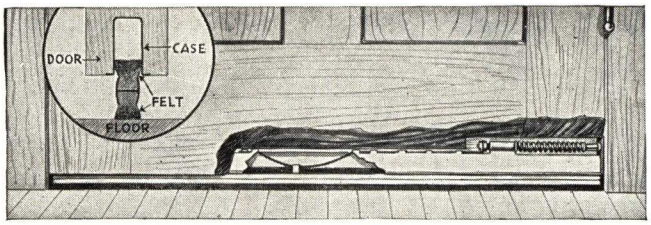
For Steel Windows—Hinged, Projected, Pivoted

500 Series Flexo-Seal Weather Strip is the ideal equipment for steel windows needing weather strip treatment. It causes neither hinge binding nor distortion of steel sash members, but acts as a yielding impenetrable cushion between the fixed and movable portions of these windows. At reasonable cost it closes all cracks, from practically tight condition to the widest.

Sizes:
No. 509 9/16 in.
No. 511 11/16 in.
No. 513 13/16 in.
No. 515 15/16 in.
No. 517 17/16 in.

PERFEC-SEAL AUTOMATIC DOOR BOTTOMS

(Patented)



A common heat loss in many homes, erroneously considered fully weather-stripped, occurs at night when bed room windows are open and bed room doors, from a heating standpoint, become outside doors.

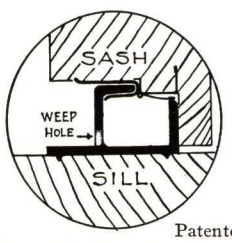
Perfec-Seal Door Bottoms automatically stop this heat loss. From a smooth metal case, concealed in the bottom of the door, a one-piece double felted bar is projected to the floor by simply closing the door.

Because of the unique flat operating mechanism, a groove of minimum depth only is cut in bottom of door, yet both projection and retraction of felt bar are simple and positive. Units readily adjustable for cracks from ⅛ in to ¾ in. Felted extruded aluminum bar, 1 in. wide.

For Metal Doors—The standard unit may readily be built into metal doors by the door manufacturer. Reese also makes a special Perfec-Seal, mounted in a heavy brass casing, for surface application to metal doors.

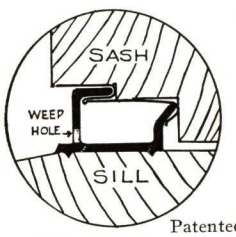
CASEMENT SILL EQUIPMENTS

Reese Casement Sill Equipments are a series of shapes of various materials which are assembled to form weather-tight drainage sills. Sections show the standard assemblies for both inswinging and outswinging sash.



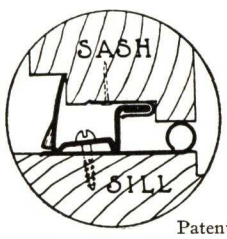
Patented

No. 201—For Inswinging Casments 1⅜ in. or 1¾ in. thick.
Extruded brass.



Patented

No. 205—For Inswinging Casements or French Doors 1¾ in. or more thick.
Extruded brass.



Patented

No. 241—For Inswinging Sash of any thickness.
Zinc or bronze.

No. 221—For Outswinging Sash.
Zinc or brass.

DOOR SILL EQUIPMENTS

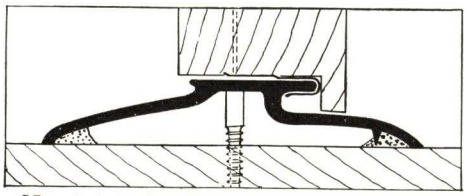
From the standpoint of infiltration control only, all the interlocking sills are equally good. Width and height of sills have no bearing on their efficiency.

Suited to All Conditions—However, a variety of sills are offered to cover the needs for various conditions, and all brass sills are of our own design to add features of merit not found in usual stock sill designs.

Materials—We use the terminology "extruded brass" for brevity, although it is also called "extruded architectural bronze". We confine the word "bronze" to alloys containing 90% or more of copper, although in practice there is no very definite dividing line.

For Residences—Nos. 368 and 378 Combination Sills, of the water drainage type, are shown with felted surface angles, useful in preventing frost in homes with high winter humidity. One piece drainage plates, set on gun grade Plasto-Seal Caulking Compound, prevent entrance of water through the sill connection.

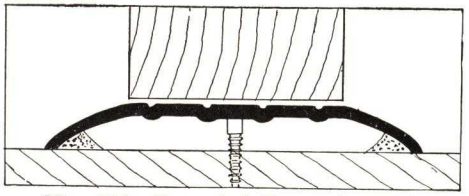
For Public Buildings—For doors in public buildings, especially when operated with door checks, we recommend sills such as Nos. 305 or 307, in combination with No. 325 Surface Strip, to avoid use of sill as foot-scraper.



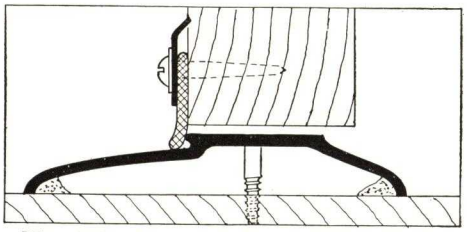
No. 301 — Extruded Brass Sill Strip 4x$\frac{11}{16}$ in.
No. 314—Spring Bronze Hook Strip.

Special Conditions — No. 325 is a water-proof heavy duty rubber fabric strip riveted to a heavy brass angle. It will not pull loose in freezing weather.

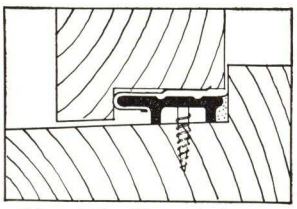
No. 327 (not shown) is a useful strip for soundproofing around metal doors as well as for control of air leakage.



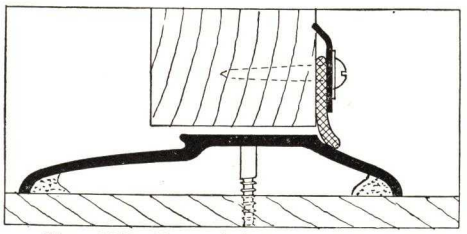
No. 305—Extruded Brass Sill 4x½ in. May be used in combination with No. 320, No. 325, or No. 327.



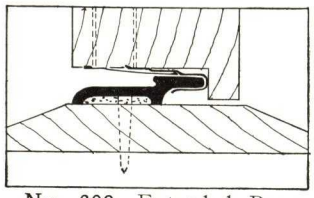
No. 307—Extruded Brass Sill 4x$\frac{5}{8}$ in.
No. 325—Surface Strip for Outswinging Doors, Schools and Public Buildings.



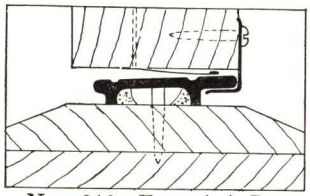
No. 308—Extruded Brass Sill Strip 1$\frac{1}{8}$x$\frac{5}{16}$ in.
No. 314 — Spring Bronze Hook Strip.



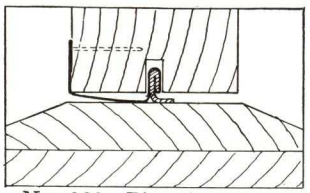
No. 307—Extruded Brass Sill 4x$\frac{5}{8}$ in.
No. 325—Surface Strip. For Inswinging Store Doors, etc.



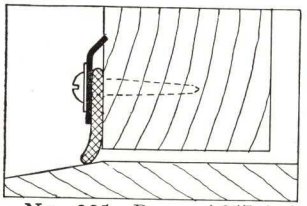
No. 309—Extruded Brass Sill Strip 1$\frac{3}{8}$x$\frac{5}{16}$ in.
No. 312 — Spring Bronze Insert.
No. 311—Brass Hook Strip.



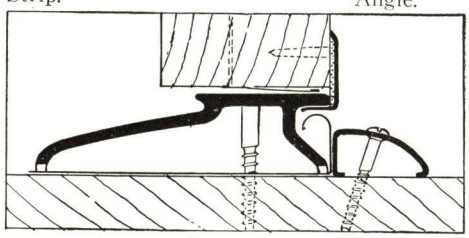
No. 310—Extruded Brass Sill Strip 1½x$\frac{5}{16}$ in.
No. 312 — Spring Bronze Insert.
No. 313 — Brass Surface Angle.



No. 320—Phosphor Bronze and Leather Door Bottom.



No. 325—Brass (.057 in.) and ⅛ in. Rubber Fabric Surface Strip for Garage Doors and other heavy duty uses.

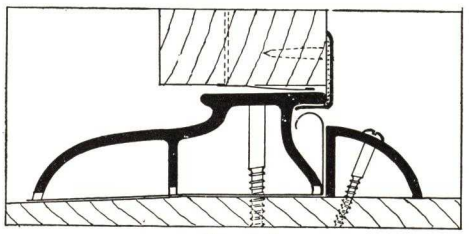


Patented
No. 368—Extruded Brass Sill Strip 3x$\frac{13}{16}$ in.
No. 370—Brass Drainage Strip.
No. 371—Brass Moulding 1x½ in.
No. 312—Spring Bronze Insert.
No. 313F—Felted Brass Surface Angle.
No. 382 — $\frac{7}{16}$ in. Brass Angle (not shown) may be used instead of Moulding No. 371, and floor covering may be run flush with the sill.

Note to Architects

No attempt has been made to show our complete line of equipments for wood and metal windows, nor of extruded or formed sill constructions for doors and casement windows. Our line includes standard equipments of all types, as well as many special applications for unusual types of windows. We solicit your correspondence.

Our complete catalog will be mailed gladly upon request. For IGA System (Insulated Glass Areas) see following two pages.



Patented
No. 378 — Extruded Brass Sill Strip 3$\frac{1}{8}$x1$\frac{1}{16}$ in.
No. 380—Brass Drainage Strip.
No. 381 — Extruded Brass Moulding $\frac{7}{8}$x¾ in.
No. 312—Spring Bronze Insert.
No. 313F—Felted Brass Surface Angle.
No. 382—½x$\frac{11}{16}$ in. Brass Angle (not shown) may be used instead of Moulding No. 381 to run carpet and carpet lining flush with sill.

A. J. SPANJERS CO.

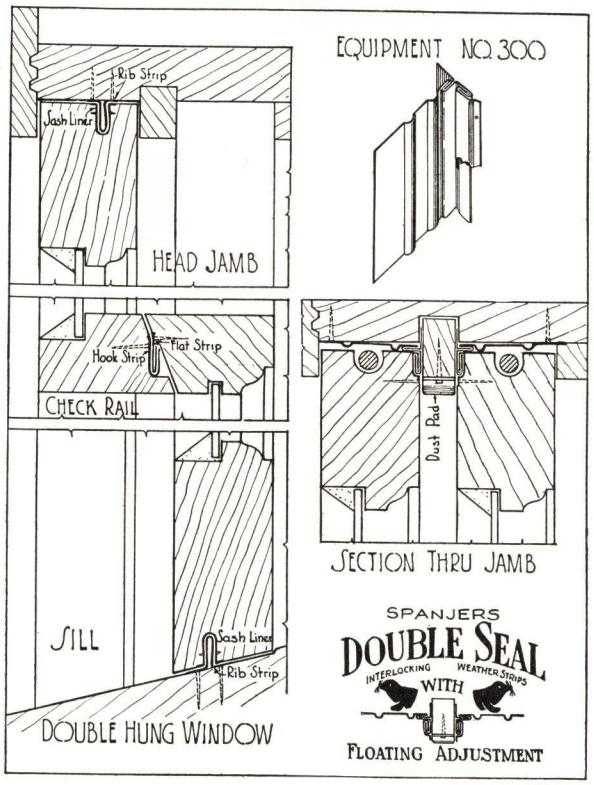
Manufacturers of Double Seal Metal Weatherstrip and "Bed-Dor-Seals"

82 Tenth Avenue, N. E.
MINNEAPOLIS, MINN.

SPANJERS DOUBLE SEAL INTERLOCKING WEATHERSTRIPS

Patents: No. 17,539; No. 1,748,660; No. 2,013,869. Other Pat. Pending

Spanjers Double Seal Interlocking Weatherstripping is made of heavy, flexible cross-grain zinc in channel shape interlocking to form an airtight, dustproof *double seal.* It is designed to take up any shrinkage between frame and sash and maintains maximum efficiency in withstanding the elements.



Adaptability

It is designed for use on double hung windows, casement windows and doors. Every movable joint is provided with windproof airtight connecting members.

Double Hung Windows—Are equipped with triple member weatherstrips, flexible and seating perfectly as the joining members meet. Note in the drawing below that there are no deep grooves to weaken either the sash or frame.

In-swinging Wood Casements—Are equipped with zinc interlocking and No. 25 zinc channel bottom. Can also be furnished in brass and bronze.

Out-swinging Wood Casements—Are equipped with hemmed edge bronze and No. 20 zinc interlocking bottom and also in concealed interlocking.

Doors—Exterior wood doors are equipped with hemmed edge bronze and various widths of interlocking and plain thresholds.

Special Equipment

We specialize in furnishing special equipment to meet your requirements.

Installation

Realizing the necessity for correct weatherstripping installations, the A. J. SPANJERS Co. undertakes to supervise the installation of its products and to guarantee the weatherstripping and calking of all frames.

No. 6-L. HOOK STRIP
No. 5-THRESHOLD

No. 6-CONCEALED HOOK
No. 9-THRESHOLD

"BED-DOR-SEALS" FOR BEDROOM DOORS

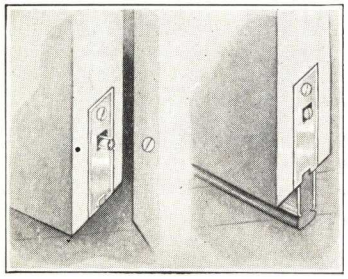
Patent: No. 1,976,970

Closes the Space Between Door and Floor

This is a fully automatic, noiseless device which operates on the adjustable plunger rod and leaf spring principle, greatly simplified and improved. All the complicated mechanism of the old type has been dispensed with, resulting in a trouble-free device, that will operate satisfactorily for years.

Superior Features

Metal Liner—Made of heavy cross-grained zinc flanged to make a finished appearance in bottom of door.



Door Open Door Closed

Seal—Made of heavy cross-grained zinc with inside core of part wood. This combines lightness with greater strength.

All Wool Felt—Highest quality and vermin proof.

Leaf Spring—Oil tempered spring steel of finest quality. Will retain its flexibility indefinitely.

Plunger Rod—Threaded and accurately machined to permit of accurate and fine adjustment of seal.

Rustproof—All metal parts are rustproof—will not corrode.

No Interference with Rugs—"Bed-Dor-Seals" do not operate until door is just two inches from being closed. Side nearest hinge drops first so there is no scraping of the felt along the floor. There is no possibility of interference with rugs.

Better Finished Appearance—Brass plates are furnished for both ends of doors as seen in illustration.

Fitted Quicker—Installation Costs Less—"Bed-Dor-Seals" can be fitted quicker and easier than other types. Only 3 small screws to be inserted after groove is cut. No chiseling for plunger box or clearance for spring or rod. Just a straight groove to be cut.

Operates Easily and Surely—Cannot stick. Device operates inside metal liner with smooth metal-to-metal contact. No jagged edges. Will operate indefinitely without trouble.

Cross Section Through Door

ESTABLISHED 1893

IDEAL VENTILATOR CO.

ORIGINATORS AND PATENTEES OF GLASS WINDOW VENTILATORS

160 Atlantic Avenue, PROVIDENCE, R. I.

VENTILATE THE IDEAL WAY

Ideal Window Ventilators are especially adapted for schools, hospitals, and various large buildings where many persons work or congregate. They have been recommended by the joint committee on Health Problems in Education of the National Education Society, and the American Medical Association.

Ideal Ventilators

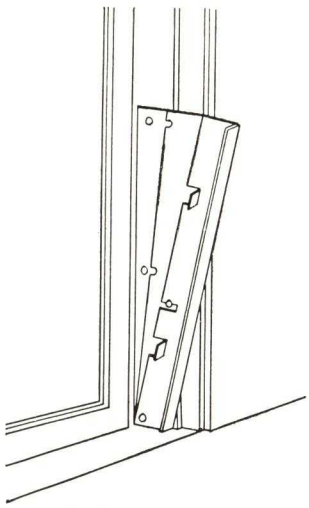
Manufactured and distributed for over forty consecutive years by this organization. Recommended by architects, engineers, contractors, and boards of education. Their efficiency has been proven in offices, homes, schools, hospitals, institutions, and factories.

The ventilator consists of two parts, the wood framed glass panel, and a pair of metal adjustable brackets.

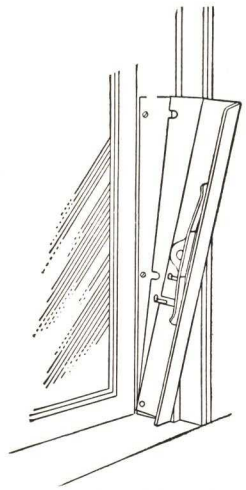
Frames are light, strong, and unobtrusive. Made of the finest materials. Woods are selected, well seasoned, kiln dried, and finished with finest stains, or enamels. Glass is Libby-Owens-Ford. Panel is 11½ in. high, made to order for the window in which it is to be used.

Brackets No. 1 are adjustable, and are designed for framed ventilators only. Will accommodate frames 12 in. high. Can be adjusted to set at any angle up to 20°, from a parallel position with the window.

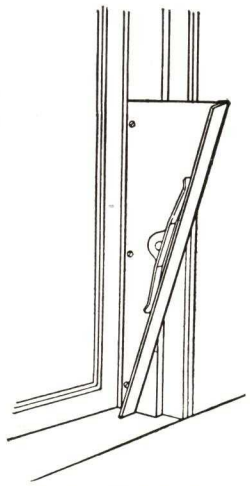
Only one measurement is required—across sill between stops.



No. 1 Ideal Adjustable Bracket for Framed Ventilators



No. 2. Ideal Adjustable Bracket for Plate Glass Ventilators
Patent No. 1660972



No. 3. Ideal Stationary Bracket for Plate Glass Ventilators
Patent No. 1660972

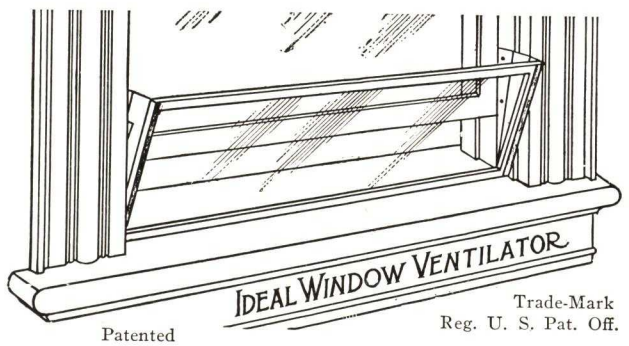
Installation is very simple, and ventilators do not interfere with screens, shades, or draperies, and are instantly removable for cleaning or other purposes. Brackets do not interfere with removal of window stops.

Air Flow Regulated

Our many years' experience has proven that the best results are obtained only by using adjustable brackets, permitting the air flow to be regulated according to atmospheric conditions, and individual requirements. Adjustable brackets are unquestionably the most efficient.

Stock Finishes for Frames

Light Oak	Weathered Oak	Light Cream
Golden Oak	Walnut Finish	Dark Cream
Flemish Oak	Mahogany Finish	Pearl Gray
Green Oak	Enameled White	Specials to order



Patented

Trade-Mark
Reg. U. S. Pat. Off.

Some Users of Ideal Ventilators

Baltimore

Johns Hopkins Hospital
City Hall
Aetna Life Insurance Co.
New York Life Insurance Co.
Chesapeake & Potomac Telephone Co.
American Oil Co.

Boston

State House
New England Telephone & Telegraph Co.
Harvard University
Massachusetts Institute of Technology
Statler Office Building and Hotel
Standard Oil Co.

New York

Empire State Building
Rockefeller Institute for Medical Research
Manhattan College
Columbia University
Department of Health
Mount Sinai Hospital

Providence

State House
City Hall
New Courthouse
Rhode Island Hospital
Brown University
Public Schools

Washington, D. C.

U. S. Weather Bureau
U. S Department of Agriculture
U. S. Treasury Building

Ideal Adjustable Anti-Rattle Brackets No. 2

Designed for unframed glass panels only, and eliminate the annoyance of glass rattling against the metal brackets. Anti-rattle clamps are properly tempered to allow for bending, permitting any thickness of glass to be used, and held firmly. Should glass become broken, the clamps act as holders to prevent panels being dislodged. Brackets furnished with, or without glass panels, thereby permitting the purchaser to obtain the glass from a local dealer, eliminating boxing and transportation charges.

All adjustable brackets are made of either steel or brass. They consist of three parts; friction clips control the fan shaped adjustment, permitting the air to be deflected at any angle desired up to 20° from a parallel position with the window, by simply opening or closing the brackets. Brackets are 11¼ in. high, 1½ in. wide at base, and 4 in. wide at top when open. Will accommodate panels 12 in. high. All brackets are made from 20-gauge stock, either cold rolled steel or brass. Steel brackets are heavily copper plated and black oxidixed, or bronze plated. Brass brackets have high quality satin finish, or are polished chromium plated.

Ideal Stationary Anti-Rattle Brackets No. 3

Made to meet low cost requirements. Are 20-gauge cold rolled steel, designed to hold glass panel approximately 12 in. high, and at an angle of 20°. Each bracket is equipped with an anti-rattle clamp acting as a holder for the glass panel. Colors are black, brown, cream, white or brewster green. Special colors to order.

THE AIROLITE COMPANY

Manufacturers of Ventilating Louvers

MARIETTA, OHIO

BOSTON, MASS., 665 Atlantic Avenue—Telephone Hubbard 8575 NEW YORK, N. Y., 548 Riverside Drive—Telephone Monument 2-4698
CHICAGO, ILL., Security Building, 326 West Madison Street—Telephone Franklin 8259
AGENCIES IN ALL PRINCIPAL CITIES

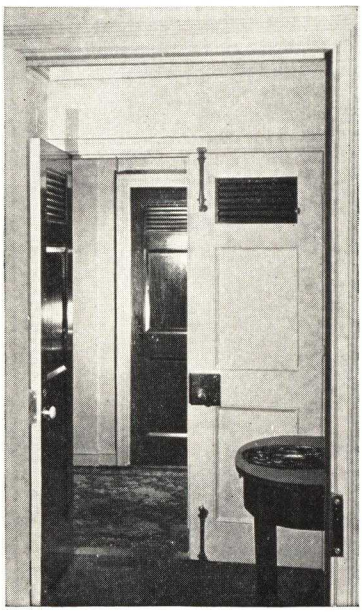
"AIROLITE" VENTILATING LOUVERS FOR MODERN NATURAL AIR VENTILATION

"Airolite" is the original patented metal louver for cross ventilation throughout hotels, apartments, schools, theatres, hospitals, dormitories — in fact, *any location* where natural air ventilation is desirable. The shape of "Airolite" Louver blades gives the maximum volume of air for any given size of ventilator.

Models for Every Purpose

"Airolite" ventilators can be placed in wood, kalamein or all-metal doors of any thickness; in any transom space or wall; in new or old buildings; and are supplied in either *adjustable* or *stationary* types.

Models are available for use in windows (double hung, casement or steel sash), air conditioning systems, X-ray, dark rooms and laboratories, walls, radiator fronts, etc. There is no ventilating requirement which "Airolite" cannot serve. We invite your inquiries on special problems.



Airolite Door Ventilators

Advantages

(1) Permit proper controllable ventillation at all times.

(2) Deflect air currents to avoid drafts.

(3) Shut out glare or corridor lights.

(4) Prohibit view of room interiors from outside.

(5) Prevent "over the transom" intruders.

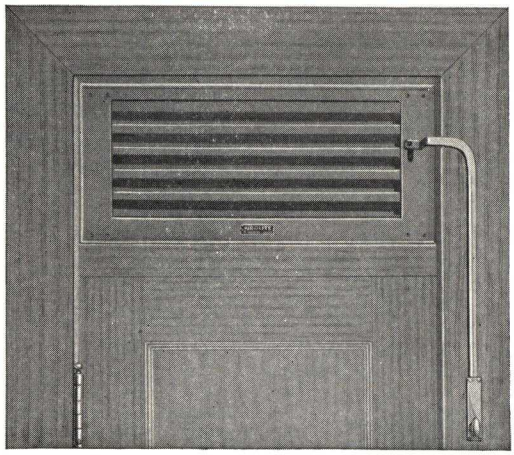
(6) Can be quickly installed at any time by carpenter or any handy man.

(7) Can be operated far more easily, with wider range of ventilating efficiency, and cost less than old style transoms.

(8) Permit lower ceilings, thus saving both in building and heating costs.

(9) Can be adapted to any situation requiring ventilation without difficulty or extensive alterations.

(10) Do not get out of order or require maintenance.



Airolite Transom Showing Operating Hardware

Construction

Built of high quality furniture steel (brass, bronze, aluminum or other metals available), in *any size.*

Held in place either by suitable mouldings furnished by contractor or equipped at the factory with metal mouldings to fit any door or wall.

Cannot be removed from outer side of opening. Shipped complete in one unit ready for installation.

Finish — Two coats baked enamel to match doors and trim. On special order, grained, plated or lead coated.

Suggested General Specification

Louver Ventilators shall be type ..... as made by THE AIROLITE COMPANY of Marietta, Ohio, furnished and installed by this contractor. Quantities and sizes shall be confirmed with door contractor. Finish shall be two coats high grade baked enamel, solid color, to match door and trim. All colors to be approved by architect.

Detailed specifications for any job will be furnished promptly upon request.

Airolite Details

The following pages show details of several standard models. Details of other types and any additional information desired, will be furnished upon request.

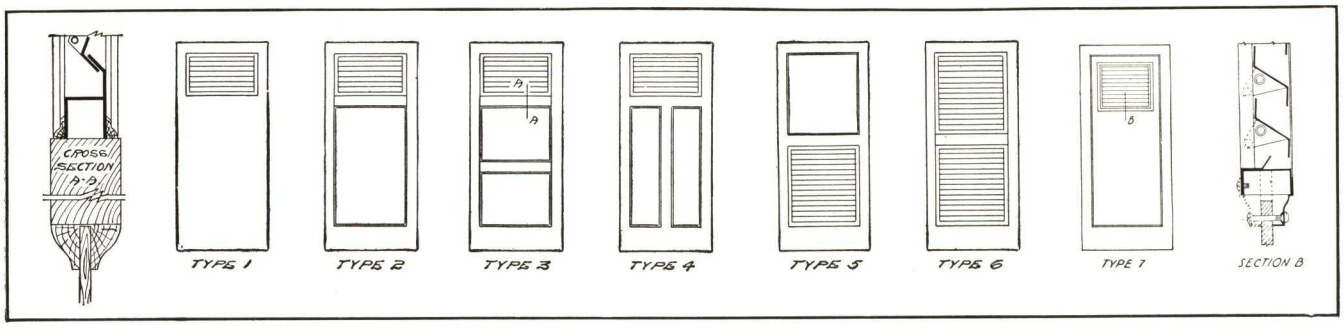
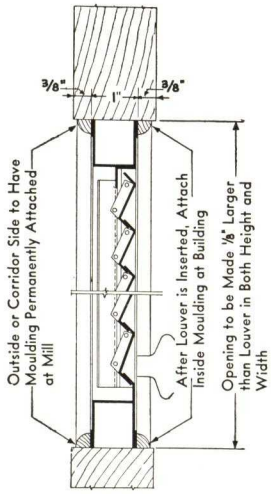
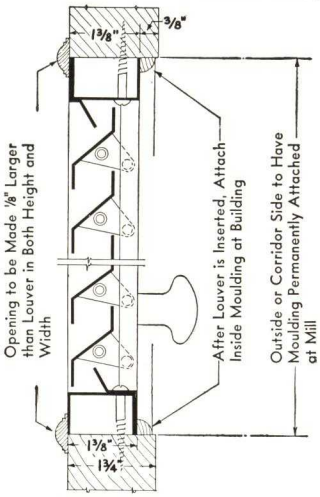


Plate III. Typical Elevations of "Airolite" Louver Installations

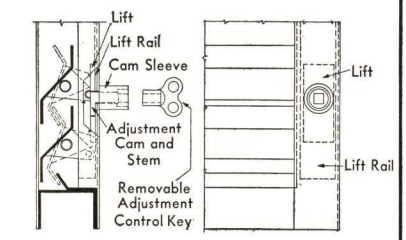
AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY



FOR PANELED AND SLAB DOORS–MOULDINGS FLUSH BOTH SIDES **500**



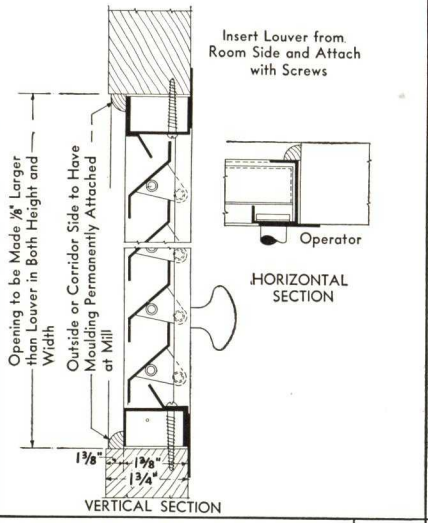
FOR PANELED AND SLAB DOORS–OVERLAP MOULDING ONE SIDE **551**



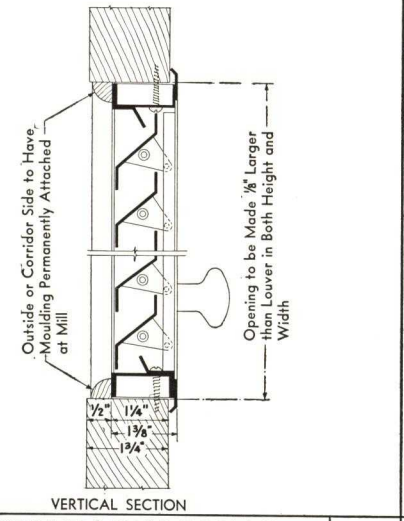
Louvers shown in Open Position. Dotted Lines show Closed Position after Key has been Used to Throw Cam into Lift or Closed Position

The Louvers are Adjusted by means of a Special Removable Key, and Cannot be Operated without a Key

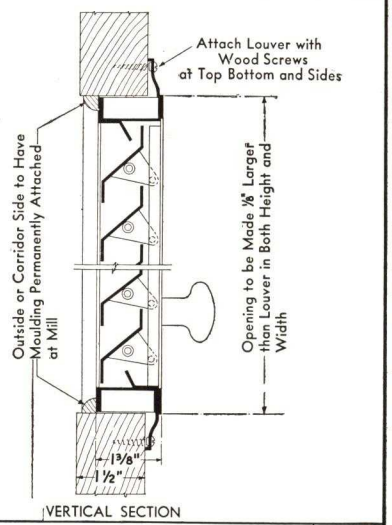
LOUVERS CONTROLLED BY VENTILATING ENGINEER **502**



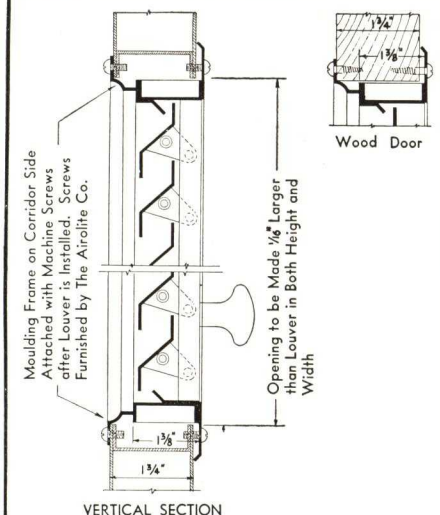
METAL FLANGE, ROOM SIDE–WOOD MOULD FLUSH OUTSIDE **569**



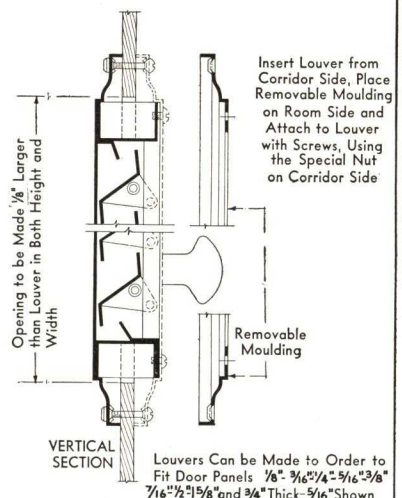
BEVELED MOULD ROOM SIDE–WOOD MOULD FLUSH OUTSIDE **584**



SAME AS 584 WITH DIFFERENT SHAPE MOULDING, ROOM SIDE **528**

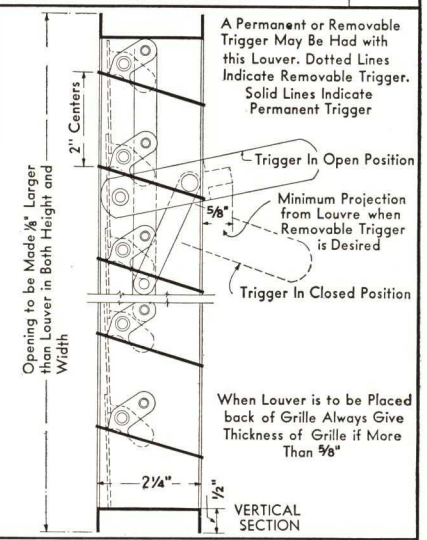


METAL MOULDING BOTH SIDES–FOR STEEL OR WOOD DOORS **643**



Louvers Can be Made to Order to Fit Door Panels 1/8"- 5/16"-1/4"-5/16"-3/8" 7/16"-1/2"-5/8" and 3/4" Thick-5/16" Shown

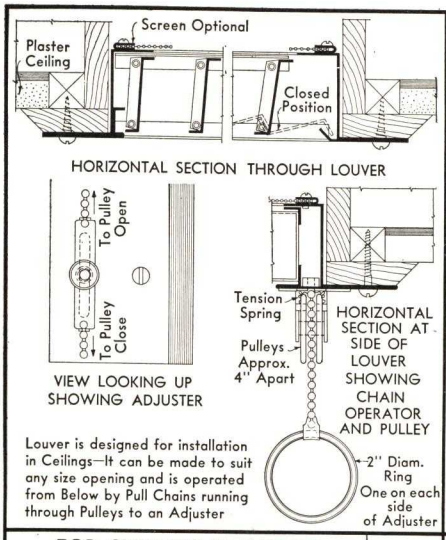
MADE ESPECIALLY FOR EXISTING THIN PANEL DOORS **570**



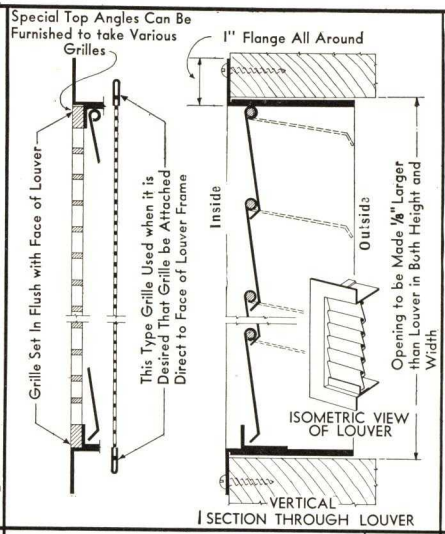
FOR WALLS, CEILINGS, ETC., WITH HEATING AND VENTILATING **627**

THE AIROLITE COMPANY

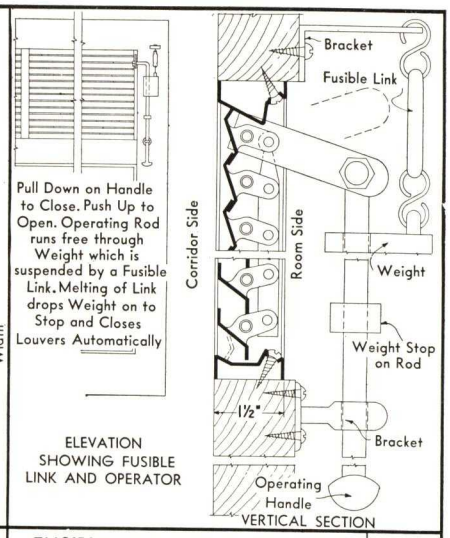
AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY (Continued)



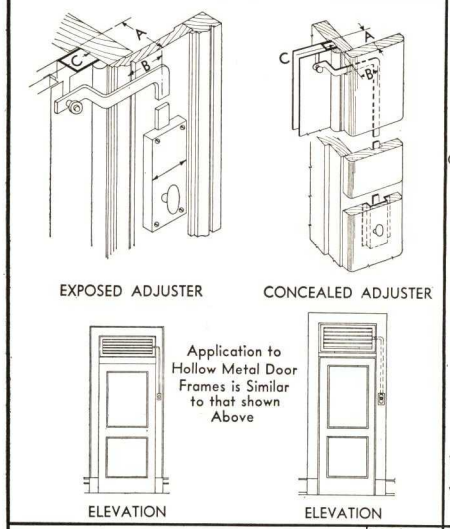
FOR CEILINGS IN STORES, OFFICES, ETC. **531**



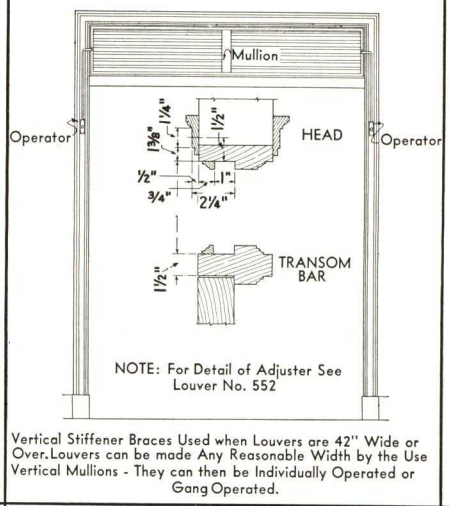
USED WITH FANS OR BLOWERS, FOR EXTERIOR OPENINGS **525**



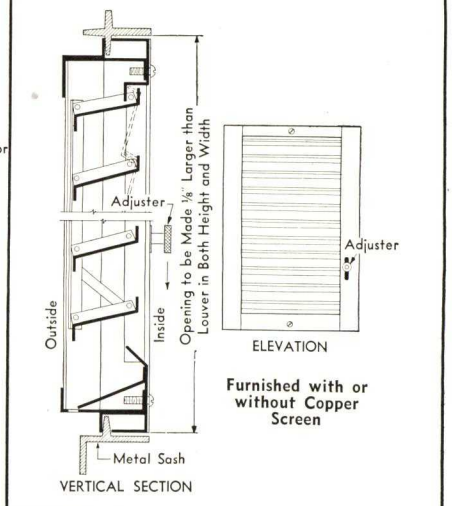
FUSIBLE LINK FOR AUTOMATIC CLOSING IN CASE OF FIRE **626**



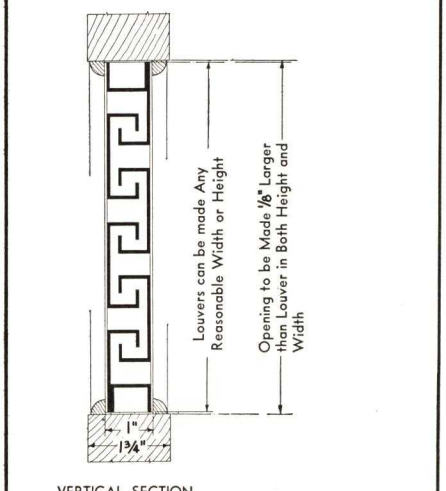
TRANSOM LOUVER WITH EXPOSED OR CONCEALED LIFT **552 506**



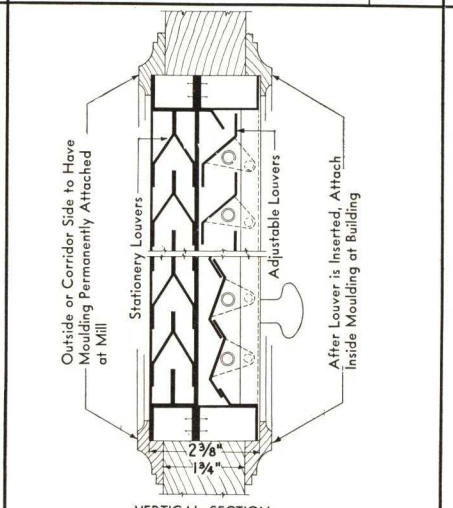
TRANSOM FOR DOUBLE DOORS, REQUIRING DOUBLE LIFTS **501**



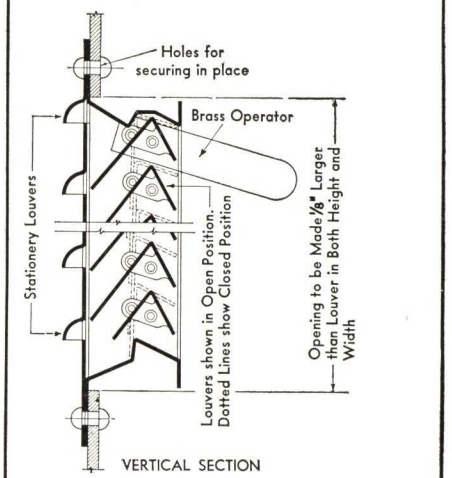
ADJUSTABLE VENTILATOR FOR METAL SASH **543**



LIGHTPROOF FOR DARK ROOMS-LEAD-COATED FOR X-RAY **619**

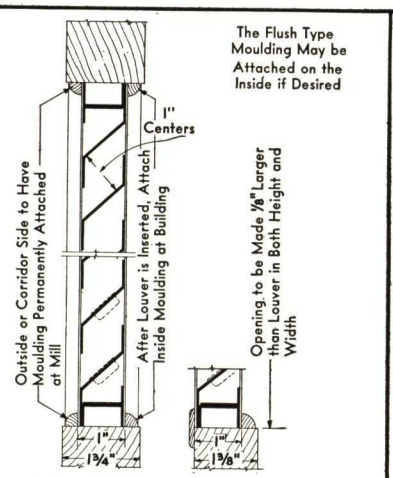


COMBINATION ADJUSTABLE AND STATIONARY, LIGHTPROOF **604**



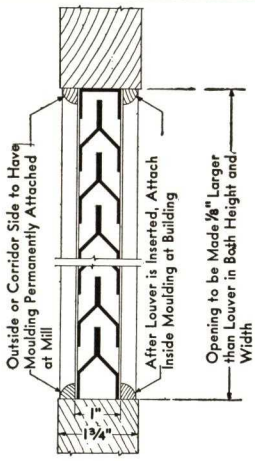
FOR INDUSTRIAL BUILDINGS, BARGES, FREIGHT CARS, ETC. **602A**

AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY (Continued)



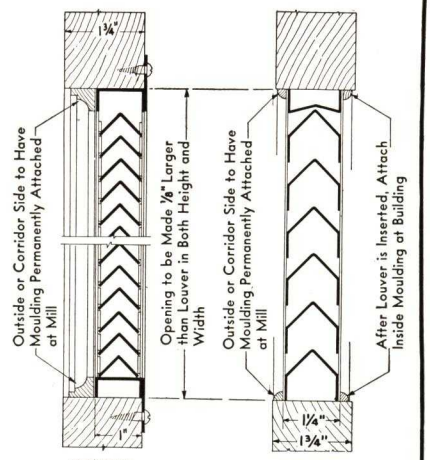
VERTICAL SECTION VERTICAL SECTION

560



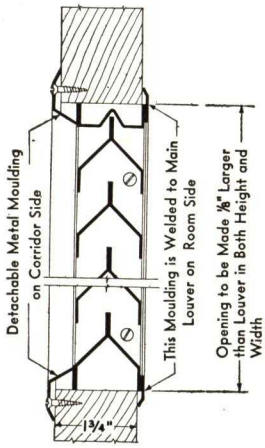
VERTICAL SECTION

583



VERTICAL SECTION **536** VERTICAL SECTION **601**

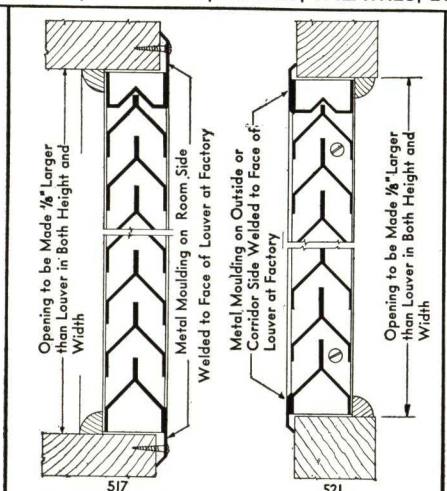
THESE THREE LOUVERS ARE FOR USE IN TOILET, WASHROOM, SLOP SINK AND CLOSET DOORS AND PARTITIONS. AIR SHAFTS AND HEATING SYSTEMS IN OFFICES, SCHOOLS, HOSPITALS, HOTELS, THEATRES, ETC., NO'S. 583 AND 601 ARE SIGHT PROOF



VERTICAL SECTION

520

METAL MOULDINGS AVAILABLE IN ANY DESIGN DESIRED

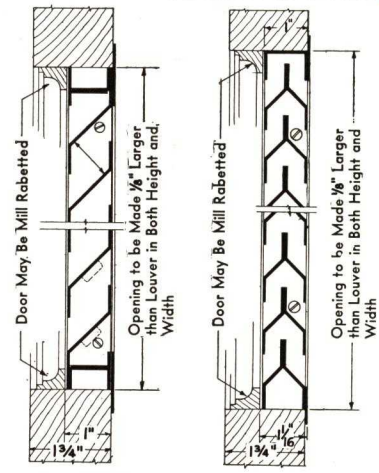


VERTICAL SECTION VERTICAL SECTION

These Louvers Can be Made 1 1/16", 1 7/16" and 1 9/16" Thick Over-all

517-21

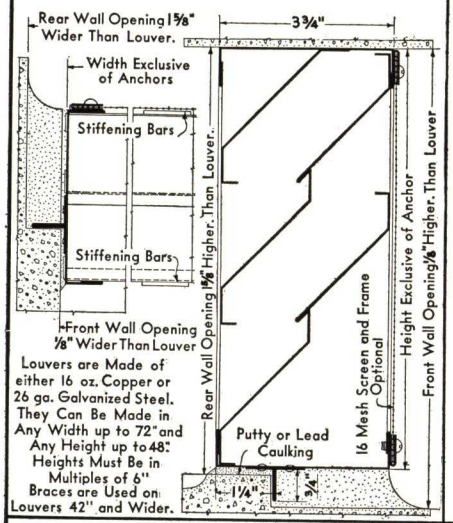
FOR WALLS, DOORS, ETC.– INTERIOR AND EXTERIOR



VERTICAL SECTION VERTICAL SECTION

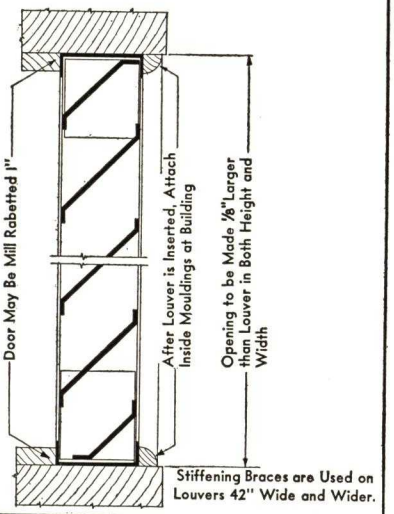
560A 610

METAL FLANGE ONE SIDE– WOOD MOULDING OTHER SIDE



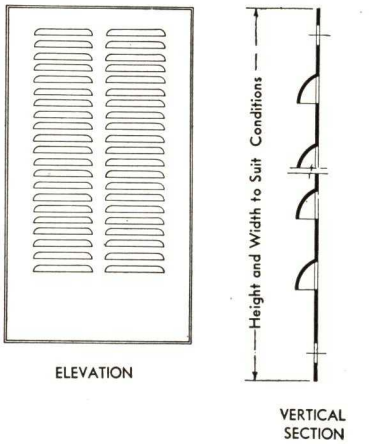
638

LEAKPROOF FOR INDUSTRIAL BUILDINGS, POWER PLANTS, ETC.



609

HEAVY GAUGE TO WITHSTAND ROUGH USAGE



602-2

STAMPED LOUVERS, ANY SIZE OR SHAPE FOR ANY PURPOSE

ESTABLISHED 1911

ELLISON BRONZE COMPANY, INC.

VENTILATOR DIVISION

JAMESTOWN, N. Y.

For our pages on Bronze and Aluminum Products and Balanced Doors, see File Index

ELLISON LOUVRE VENTILATORS

Types—Ellison Louvre Ventilators are ventilating panels for doors, transoms or walls. They are made in several different types as shown below, any of which can be made either adjustable or stationary.

Adjustable types find wide use in sleeping rooms, apartments, hotels, dormitories, hospitals, sanitariums, offices, theatre dressing rooms, staterooms, pullman compartments, etc. Stationary types are especially suited for toilets, closets, attics, pantries, wards, air shafts, etc., wherever cross ventilation is desired.

Types A, B, C, D, H are adjustable.

Types AF, BF, CF, DF, HF are stationary.

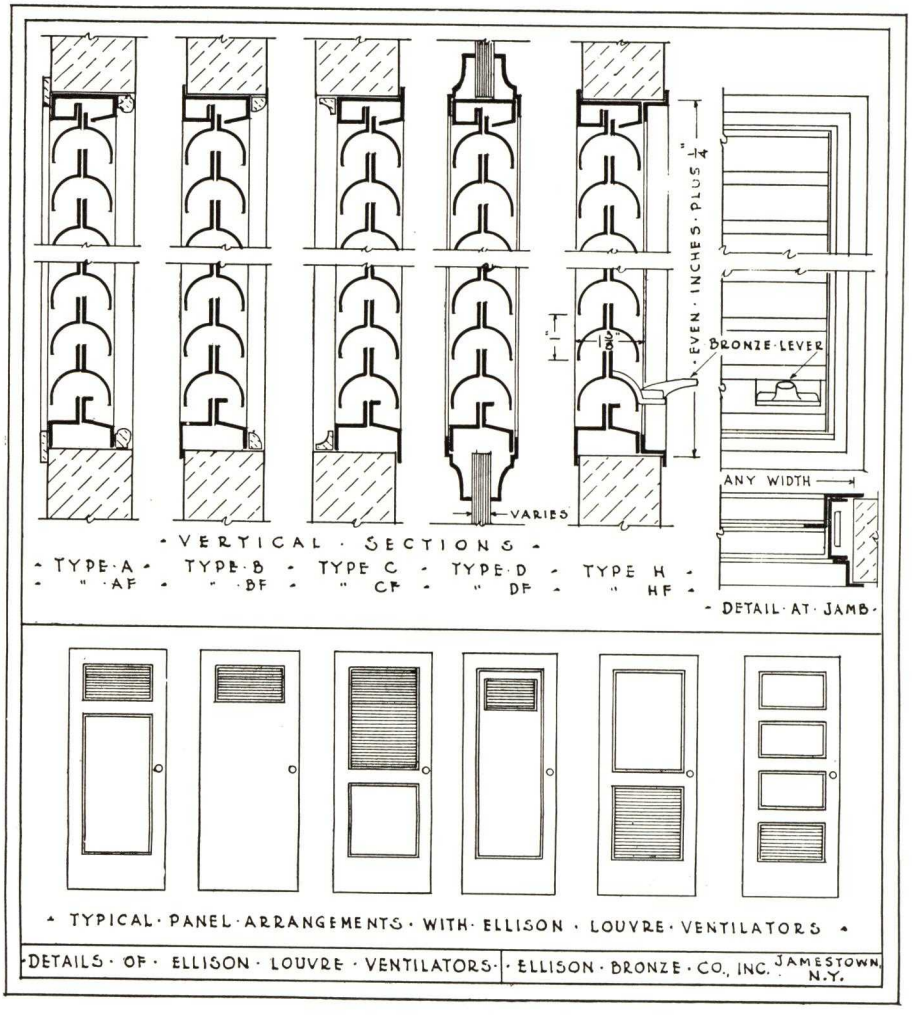
Material—Louvres are of No. 16 gauge steel with frames of No. 18 gauge steel, strongly welded construction. Can also be furnished in bronze, aluminum or chrome nickel steel. Outside (public side) is rigid, reinforced and immovable; inside (private side) is adjustable with operating handle made of polished, cast bronze.

Finish—Regularly finished with a prime coat, ready for painting by painting contractor; or two coats of baked enamel, any solid color selected.

Advantages—Provide the maximum of ventilation (40% area) and are sightproof and lightproof; perfectly quiet in operation; can be painted repeatedly without interfering with their operation; no crevices or pockets to collect dust and dirt. May be equipped with fly screens at small additional cost.

Installation—This is very simple, as drawings indicate. All necessary screws furnished with louvres.

Samples—Gladly loaned to any responsible parties for inspection and comparison. Literature and prices on request.



THE VAN ZILE VENTILATING COMPANY

Adjustable Metal Ventilators for Use in Doors and Transoms

548 Riverside Drive
NEW YORK, N. Y.

THE VENTADOOR

The Modern Ventilator with Vertical Louvres

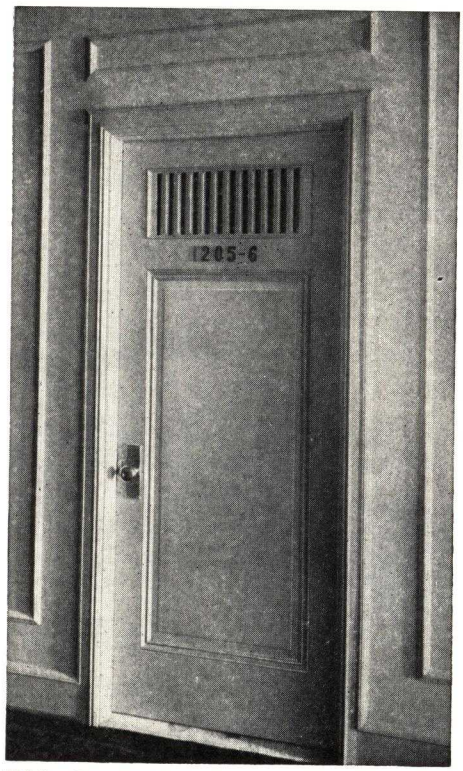
"Follows" the Door

This efficient ventilator not only performs the necessary functions of a ventilator—permits continual air circulation, deflects air currents and prohibits view from outside—but, due to its simple, unique design, actually enhances the appearance of the door.

For the Ventadoor is built to follow the structural lines of the door; its louvres run in the same predominant direction—*vertically*. Consequently, the Ventadoor becomes, even architecturally, a part of the door and its casement. There is no short, "squatty" appearance. No disturbing conflicting lines. It is because of this feature, combined with the unusual operating ability of the Ventadoor, that architects are specifying this ventilator for hotels, clubs, college dormitories and other important buildings.

No Projections for Clothing

Another paramount reason the Ventadoor is selected by so many architects is its *inability* to act as a hat or coat hanger—and defeat its own purpose. With its louvres running vertically, this type ventilator, unlike others, has no projections on which clothing may be hung.



With Its Vertical Louvres, The Ventadoor Becomes, Architecturally, Part of the Door

Either Stationary or Adjustable

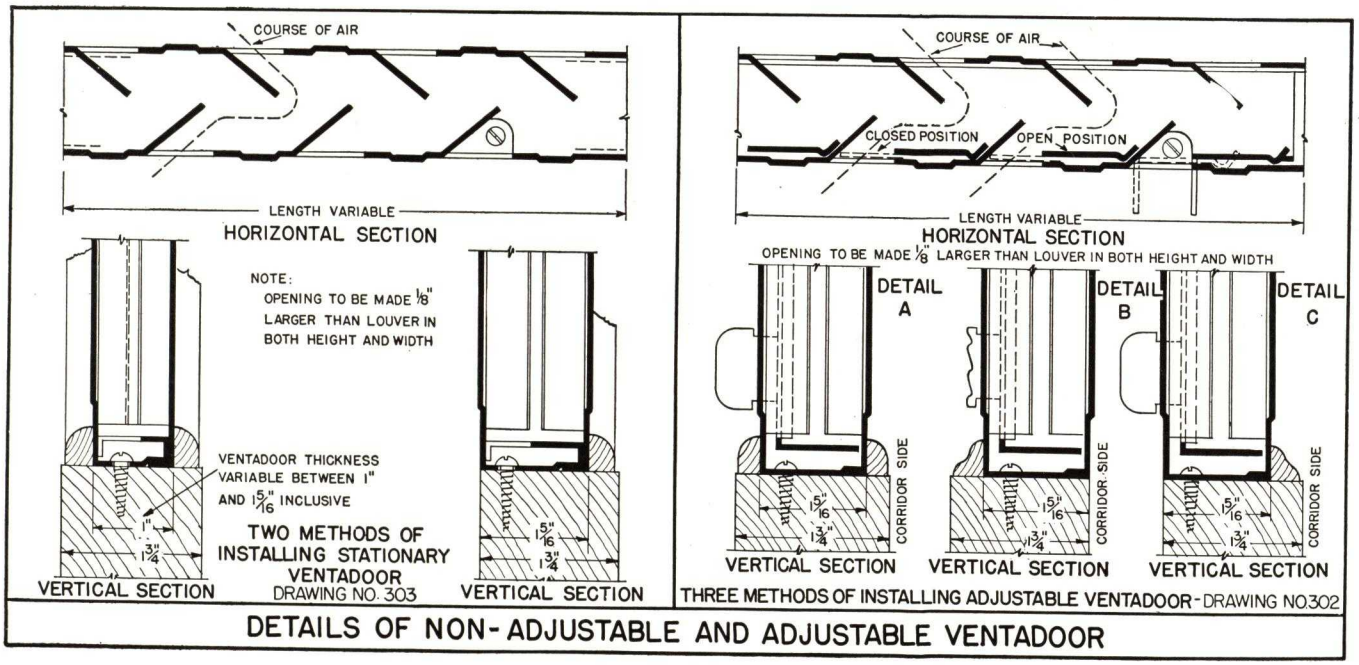
The Ventadoor is built in two types: stationary (non-adjustable) and adjustable. Both types furnished 10 in. high and in any width. Easily installed in wood, kalamein or all-metal doors of any thickness, or in any transom or wall space. Both are lightproof and sightproof. The adjustable type is similar to the stationary, except that by sliding its operating handle it closes the louvres completely.

Suggested Specifications

The Ventadoor, as manufactured by THE VAN ZILE VENTILATING COMPANY, 548 Riverside Drive, New York, N. Y., shall be furnished for all doors where indicated on the drawings, and shall be factory finished in two coats baked enamel. Color to be approved by architect.

Typical Installations

University of Montreal, Canada
Lakeside Hospital Group, Cleveland, Ohio
Life Science Building and International Hall, University of California, Berkeley
Savoy Plaza, New York, N. Y.
U. S. Veterans' Hospital, Palo Alto, Calif.
Navy Central Y. M. C. A., Philadelphia, Pa.
Ocean Forest Hotel, Myrtle Beach, S. C.
Paxton Hotel, Omaha, Neb.
Northwestern Y. M. C. A., Detroit, Mich.
Mayflower Hotel, Washington, D. C.
Knickerbocker Hotel, New York, N. Y.
Ramona Hotel, Sacramento, Calif.



DETAILS OF NON-ADJUSTABLE AND ADJUSTABLE VENTADOOR

THE VENTILOUVRE COMPANY, INC.

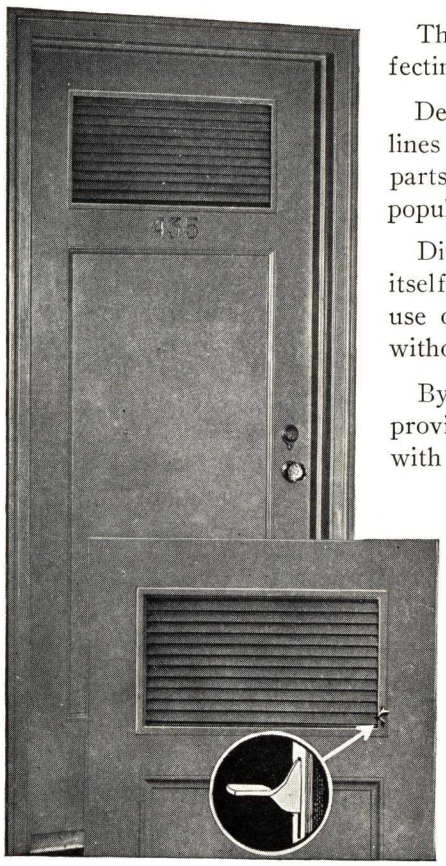
TELEPHONE
Monument 2-4788

548 Riverside Drive
NEW YORK, N. Y.

BALTIMORE, MD., 1102 No. Charles Street
CHICAGO, ILL., 326 W. Madison Street
CLEVELAND, OHIO, 900 Keith Building
DALLAS, TEX., 3201 Worth Street
LOS ANGELES, CALIF., 4711 Second Avenue, So.
ST. LOUIS, MO., 302 Rialto Building
SAN FRANCISCO, CALIF., 557 Market Street
SEATTLE, WASH., 520 Denny Way

REPRESENTATIVES IN ALL OTHER PRINCIPAL CITIES

For Store Front Panelouvres, see File Index



The introduction of the PANELOUVRE marked the final development in perfecting louvre type natural air ventilators.

Designed to meet the architectural trend towards functional simplicity, narrow lines and inherent beauty; rigidly built of the best materials and with all wearing parts eliminated—the PANELOUVRE now enjoys its well deserved and universal popularity.

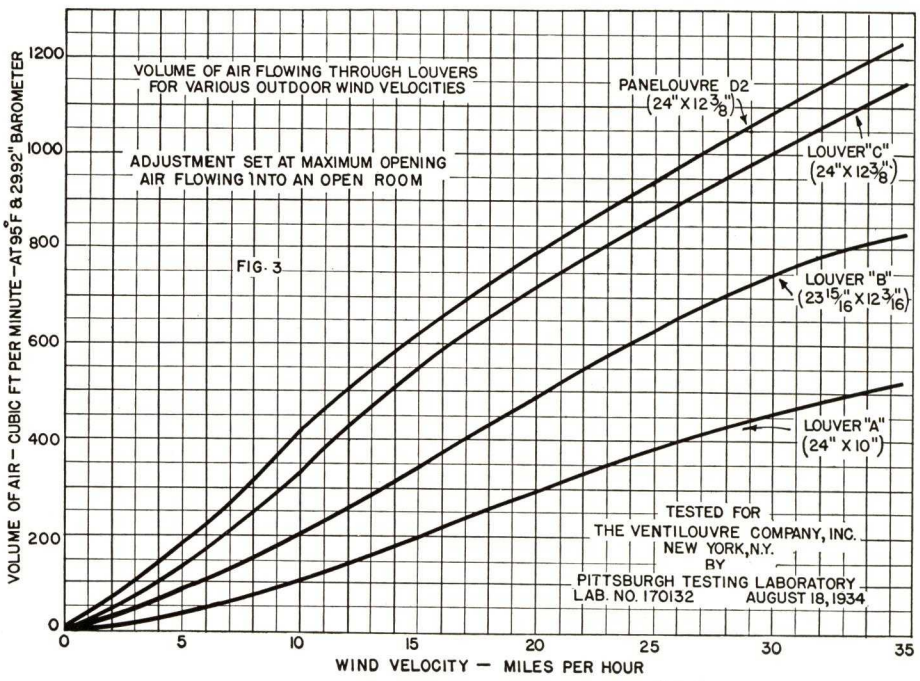
Discerning architects soon realized that the PANELOUVRE not only adapts itself unobtrusively to carrying out their design motifs but permits—through the use of lower ceiling heights—a substantial increase in the effective floor area without any increase in the total building cubage.

By using the PANELOUVRE for natural louvre type ventilation the architect provides maximum air circulation under perfect control and without drafts and with entire freedom from prying eyes and glaring outside lights.

The PANELOUVRE is rigidly built of the best materials with no wearing parts and will last a lifetime without repair, maintenance or replacement; operates easily and positively "without stick, click or trick"; and is made in sizes and types—adjustable or stationary—for interior or exterior use, in new or old buildings, to solve any and every conceivable need.

REPORT ON TESTS OF ADJUSTABLE LOUVRES

A standard PANELOUVRE made by THE VENTILOUVRE COMPANY, INC., and 3 standard competitive adjustable louvres designated as Louvre "A", Louvre "B", and Louvre "C" were tested by The Pittsburgh Testing Laboratory.



The ratio of the total area of air passages to the total over-all area of the louvres of the 3 standard competitive louvres as compared to PANELOUVRE D-2 were as follows, PANELOUVRE representing 100%:

	Area of opening by measurement	Per cent of opening by air flow tests
Louvre "C"	77.6%	82.4%
Louvre "B"	80.2%	61 %
Louvre "A"	50.5%	51 %

Air from the PANELOUVRE was found to be directed downward regardless of the direction of the air through it; the deflector adjustment device operated easily; and the louvre did not rattle. It was impossible to see through it at any angle.

CONSTRUCTION OF THE PANELOUVRE

Frame—All frame members are made of No. 18-gauge cold rolled steel channel and are ½ x 1½ x ½ in. Top and bottom channel frame members are specially designed and inverted to prevent dust collecting, and provided with countersunk screw holes. Corners are drawn and spot-welded, and both faces of frame are flush. Brass, bronze, aluminum or other metals can be furnished.

Louvres—Of the inverted "V" shape; made of cold rolled 18-gauge steel; set on 1-in. centers, with ½-in. space between bottom edges.

Operating Bar—Made of $\frac{3}{32}$ x ½-in. cold rolled steel. Attached to each louvre and runs the full height of the unit. Assures continued equal spacing and operating of each louvre.

Operating Trigger—Various types of operating triggers are available: Standard is Brass. Bakelite, plated or painted triggers can be supplied.

Sizes—Made in any width.

(1) For openings exceeding 40 in. wide, we furnish two PANELOUVRES welded together.

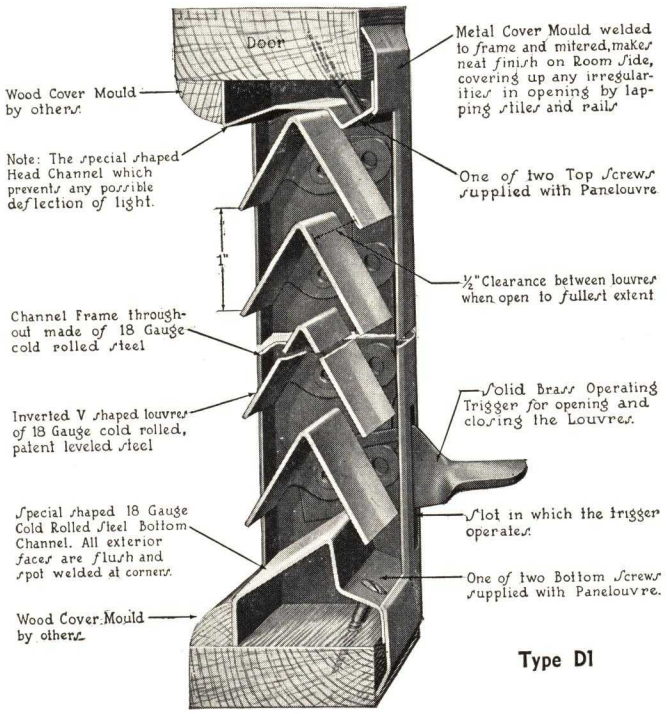
(2) Heights, due to design, preferably held to multiples of 1 in. plus ⅜ in.—for example 10⅜, 11⅜, 15⅜, etc., as may be required.

We can furnish PANELOUVRES in other heights, depending on opening sizes, at no additional cost.

Openings—Should be ⅛ in. larger each way than unit.

Finish—Two coats of high grade baked enamel, applied at the factory. Finished in any solid color selected to harmonize with doors and trim. Where ordered, grained finish will be furnished at an additional charge.

Shipments—In one unit, complete with screws, ready for installation.



Type D1

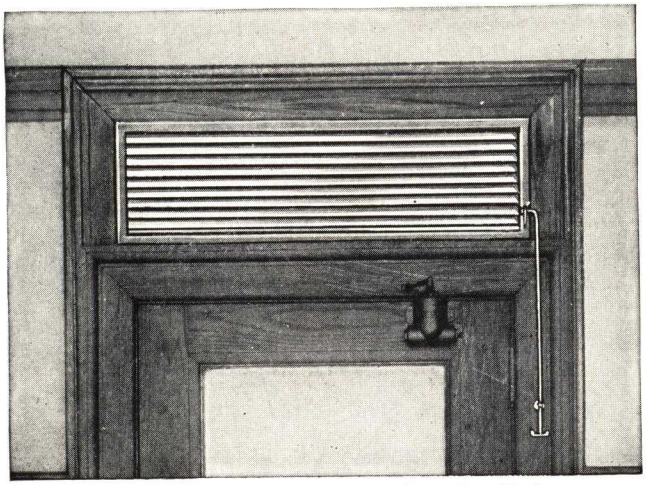
THERE IS NO NATURAL AIR VENTILATION OR AIR CONDITIONING PROBLEM WHERE THE PANELOUVRE CANNOT BE EFFICIENTLY USED

For Theatre Doors—Type DO

Furnished with screens and Metalace grille. Also solid steel sub-panels, making unit airtight during cold weather.

The standard PANELOUVRE employs inverted "V" shaped louvre blades riveted in a rigid steel channel frame, giving enormous strength and making it impossible to distort or damage the blades. The adjustable types are prefixed by the letter "D", while the fixed blade types are preceded by the letter "S" (except in types TS and SW).

For exterior use, the outer leg of the "V" is longer than the inner, making it absolutely weatherproof when closed. Type 1, 2, 3 or 4 in either "D" or "S" may be installed in any size door or wall opening in old or new buildings.

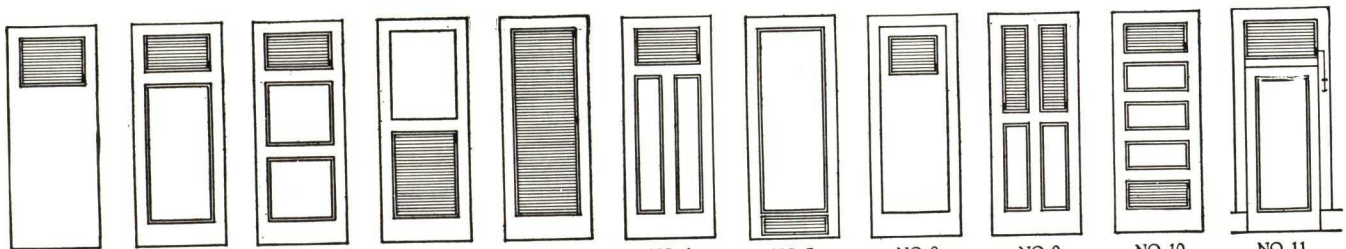


Model T Panelouvre Transom with Operating Hardware

PANELOUVRE transoms are recommended in preference to the old-fashioned glass or wood transoms in hotels, apartments, dormitories, etc., where cross ventilation with privacy is essential and it is not practical to install the PANELOUVRE in the door.

They are easily operated, cannot get out of order, require no maintenance, are lightproof and eliminate the annoying glare of corridor lights and effectively bar intruders.

PANELOUVRE transoms may be used in either steel or wood bucks.



NO. 1 NO. 2 NO. 3 NO. 4 NO. 5 NO. 6 NO. 7 NO. 8 NO. 9 NO. 10 NO. 11

Typical Elevations Showing The Panelouvre

For Steel Sash—Type PW—May be installed in any make of steel sash, etc., giving better controlled air circulation, weather protection and avoiding drafts and insects.

For Maximum Ventilation—Type SD—An enlarged, adjustable or stationary PANELOUVRE especially adapted to warm weather or stuffy rooms. Proof against light, sight and sneak thieves. Effects substantial saving over installation of, and is more convenient in use than, supplemental slatted door. Can be supplied with any type moulding.

For Fire Doors and Walls—Types FPD and FPW—Equipped with fusible links and weights for automatic closing in case of fire.

For Theatre Doors—Type DO—Furnished with screens and Metalace grille. Also solid steel sub-panels, making unit airtight during cold weather.

For Show Windows—Type SW—See File Index.

Screens and Grilles in Panelouvre

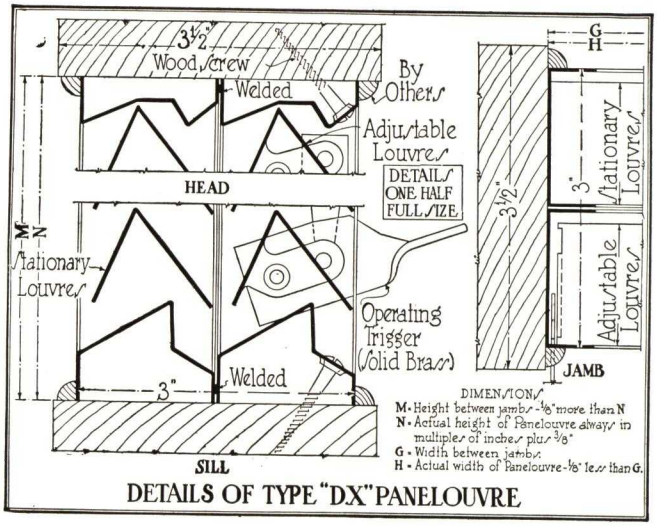
Insect screens and Metalace grilles can be supplied with any PANELOUVRE. In fact, we can adapt the PANELOUVRE to any special requirement. Merely describe your problem to us. We will furnish suggestions and details without cost.

Below is illustrated the "D" or adjustable type PANELOUVRE with different methods of installation to fit various openings. All PANELOUVRES are built up from the basic D2 (illustration below) which shows the bare unit (held in place by wood moulding furnished by others). Stationary louvres are the same except that blades are not movable.

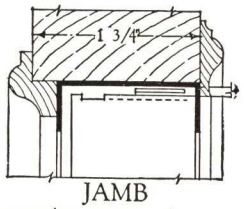
We furnish steel mouldings with Types D1 and D3 for 1¾, 1½ and 1⅜ in. door thicknesses; D4 stock mouldings for any thickness of panel from 1/16 to ⅞ in. Special mouldings are available for any opening.

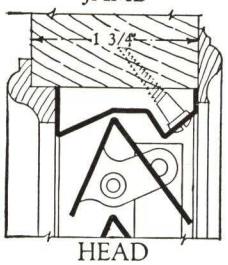
Light-Proof Louvres, Stationary and Adjustable

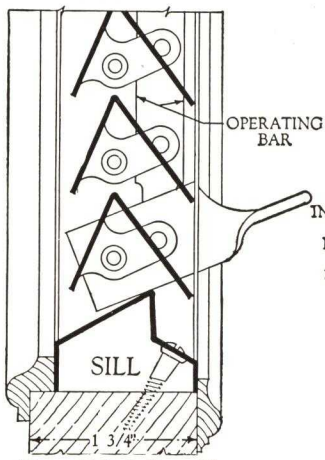
To meet the unusual ventilation requirements of such rooms, a special PANELOUVRE combining S and D types is widely and successfully used. It is guaranteed not to admit direct or reflected rays of light or fog even the most sensitive photographic paper known. It is a most efficient means of ventilating dark rooms and X-Ray rooms; insures ample circulation and removes impurities from the air. The amount of ventilation can be regulated as desired. May be lead coated for X-Ray room if desired.



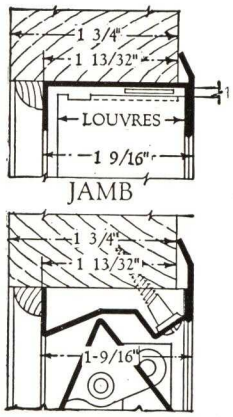
DETAILS OF TYPE "DX" PANELOUVRE





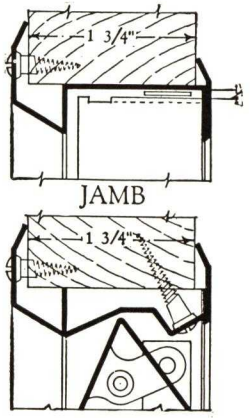


Type D2 Adjustable
Type S2 Stationary



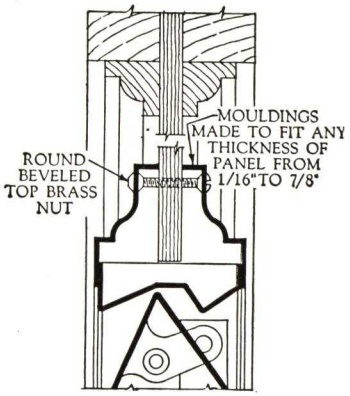
Type D1 Adjustable
Type S1 Stationary

Room side with steel cover mould welded to channel frame; corners mitred and welded. Steel moulding overlaps door opening ⅝ in. in width and 1 in. in height. Wood outer moulding furnished by contractor. The metal moulding can be placed on corridor side if desired



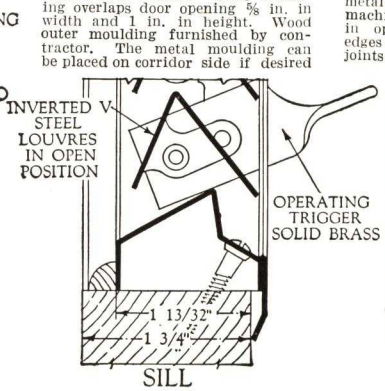
Type D3 Adjustable
Type S3 Stationary

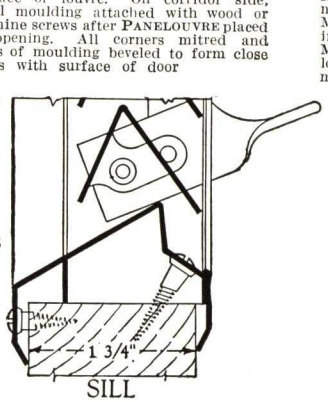
Metal moulding on room side welded to face of louvre. On corridor side, metal moulding attached with wood or machine screws after PANELOUVRE placed in opening. All corners mitred and edges of moulding beveled to form close joints with surface of door

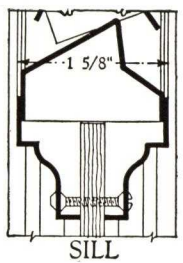


Type D4 Adjustable
Type S4 Stationary

For use in thin panels. Enough margin should be left on panel so that PANELOUVRE mouldings do not overlap door mouldings. Moulding 1¾ in. greater in width and 2 in. greater in height than Panelouvre. Moulding on corridor side is welded to louvre. Inside moulding attached with machine screws (furnished with unit)







ARCHITECT'S SPECIFICATIONS

PANELOUVRES, of both adjustable and stationary types, and whether they are to be installed in wood or metal doors, walls or partitions, should be specified under Carpentry section.

(1) The Contractor shall furnish and install as shown on plans, PANELOUVRES, as manufactured by THE VENTILOUVRE COMPANY, INC., New York, N. Y., with (adjustable or stationary) "V" type louvre blades.

(2) Finish: Two coats baked enamel to match color sample submitted by Contractor. All samples of finish to be approved by Architect.

(3) Hardware: Solid brass, polished.

(4) Metal mouldings as detailed shall be furnished by the Manufacturer. (If wood mouldings are used they shall be furnished by the Contractor.)

THE PANELOUVRE FOR AIR CONDITIONING

The rapid development of air conditioning during the past few years and the increasing demand for air conditioned apartments, hotels, offices and other buildings presents unusual problems of circulation to architects, engineers and contractors. One problem of existing buildings involves the expense and labor of installing individual inlet and outlet ducts for each separate small area. A method which would eliminate installation of these outlet ducts would save considerable money; and air conditioning in such buildings would be made much more practical. The use of PANELOUVRES provides the correct answer to this problem. Air conditioning experts are using PANELOUVRES in hundreds of installations in all parts of the country.

The high performance efficiency of the PANELOUVRES (described on page 1) makes possible the use of a small unit per installation without loss in efficiency. They are therefore particularly adapted for use in connection with air conditioning systems where it is desirable to exhaust air from one area (or group of areas) into another.

A typical installation of PANELOUVRES occurs in the Executive Offices of 20th Century Fox Film Corporation illustrated below. Here the entire cost of exhaust ducts was eliminated by placing a general exhaust duct in the rotunda shown. Individual supply ducts were installed in each of the smaller offices opening from this rotunda, and the installation of PANELOUVRES in each of the individual office doors permits proper air circulation from the individual offices through the large outer office into the general exhaust duct.

The fact that PANELOUVRES are adjustable is an important factor in proper air conditioning. The efficiency of the individual supply ducts can be thereby governed to provide uniformity of air distribution throughout all individual offices and to eliminate any "short circuiting" of air distribution.

This adjustability is not only desirable but necessary for the perfect functioning of air conditioning systems.

The illustration below shows another building in which PANELOUVRES have been installed and were a vital factor in permitting an economical air conditioning installation with increased efficiency.

Here the general exhaust ducts were located in the halls and the supply ducts in the individual apartments. Adjustable PANELOUVRES were installed in the doors leading from the apartments to the hall-ways and the expense of individual exhaust ducts in the apartments was thereby eliminated.

Existing Buildings

Through the development of PANELOUVRES it is now possible to install air conditioning systems in existing as well as new buildings with a minimum of alteration work and the consequent expense.

Adjustable PANELOUVRE Type D-4, has been designed especially for use in existing doors. It is only necessary to cut the proper size opening in the panel of the door and install the PANELOUVRE. The overlapping moulding on both sides of this Type D-4 covers all saw marks and scratches and the louvres finished to match the door, thereby eliminating the necessity of refinishing or touching up the existing door.

Apartment Building, 400 Park Ave., New York, N. Y.

Panelouvres Used in Air Conditioned Buildings

The Higgins Building
Los Angeles, California
Using: 200 S-4

The First National Bank Building
Lincoln, Nebraska
Using: 175 D-4

The Burlington Hotel
Burlington, Iowa
Using: 35 D-3

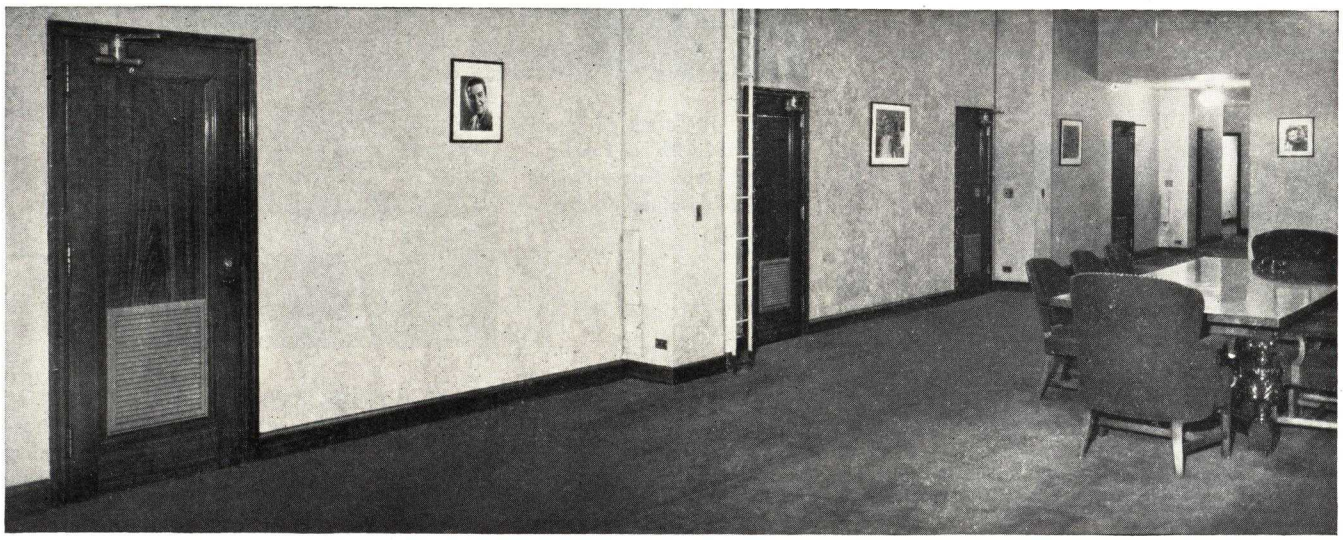
The Rig & Reel Company
Parkersburg, West Virginia
Using: 15 S-4

Alameda County Court House
Oakland, California
Using: 101 Type S-3

Tennessee Eastman Corporation
Kingsport, Tennessee
Using: 106 D-2 and D-4

Medical Arts Building
San Antonio, Texas
Using: 666 D-2

Brooklyn College
Brooklyn, New York
Using: 18 S-2



Executive Offices—20th Century Fox Film Corporation, 444 West 56th St., New York, N. Y.

ESTABLISHED 1876

THE ASTRUP COMPANY

Manufacturers and Designers of Awning Hardware and Awning Fabrics

PLANT AND GENERAL OFFICES
2937 West 25th Street, CLEVELAND, OHIO
OFFICES AND WAREHOUSES
EASTERN: New York, 39-41 Walker St.
FLORIDA: Miami, 742 S.W. 8th St.
CENTRAL STATES: St. Louis, Mo., 1908 Locust St.
PACIFIC COAST: San Francisco, Calif., 1118 Mission St.

Products

ASTRUP AWNING and TENT HARDWARE.
ASTRUP ROLLER GEAR MECHANISMS: Manually and Electrically Operated.
ASTRUP TENSO-LOK ARMS: For Open Face and Recess Box Store Front Construction.
ASTRUP LID OPENING and CLOSING MECHANISM: Hinge Type, Pivot Type.
ASTRUP AWNING FABRICS.

Astrup Awning Fabrics

Painted—Woven—Fire Resisting

Astrup Awning Fabrics are made from the finest materials procurable and are carried in many varied designs and patterns. These fabrics are exceptionally attractive, brilliant and vivid in tone and coloring. Their wide variety allows for a selection that will harmonize with any store front design; special designs can be manufactured when desired.

ASTRUP AWNING EQUIPMENT FOR STORE FRONTS

Operating Gears and Arms—Astrup Operating Mechanisms and Tenso-Lok Arms have been specially designed to harmonize and blend with modern store front architecture. Each fixture is compact, durable in construction, positive in operation, long lived and requires minimum installation expense. *When awning is completely rolled up, Tenso-Lok (Lateral Type) Arms fold horizontally and are concealed and do not detract from the Architectural beauty of the Store Front.* Operating fixtures are available for inside or outside operation and for open face and recess box construction.

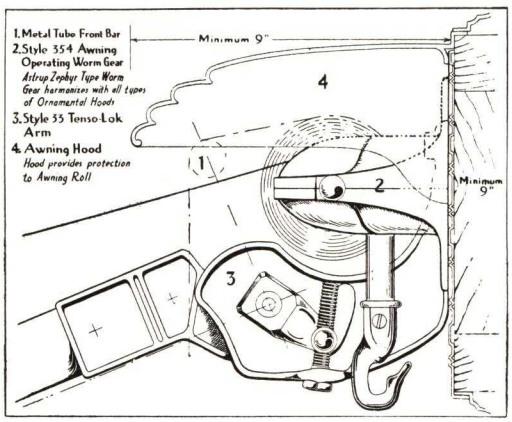
Awning Rollers—Astrup Steel Tubing is specially rolled of high carbon stock to prevent sag, and give maximum efficiency in awning operation.

Awning Rollers of Astrup Steel Tubing less than 20 ft. require no center support. Awning Roller should be located not less than 9 ft. 6 in. above sidewalk level.

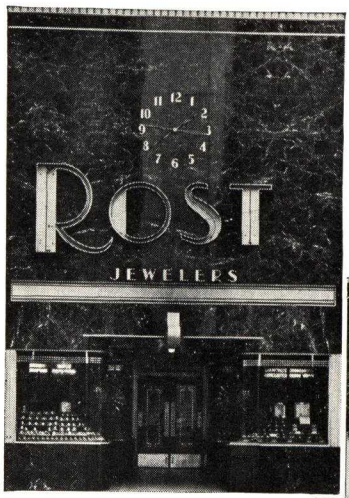
Awning Front Bar—Should be located not less than 7 ft. above sidewalk level. Some city regulations require 7 ft. 6 in. Ends of front bars should be capped or plugged with Astrup Ornamental Plug Ends for resistance to weather elements.

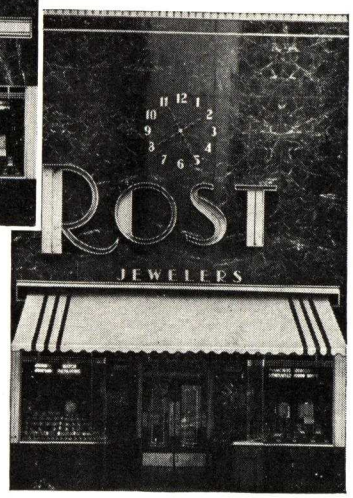
"Display-Window" Protection—For proper sun shade protection awnings should project at least as far forward from face of window as the bottom of the window is below clearance limit of awning. Astrup Tensolok Arms are made in various lengths to provide for any desired awning wall and projection or pitch of awning.

Astrup Electrically Operated Equipment—Complete with Limit Switch (to control distance that the awning is to roll and unroll), Button Switch, Control Switch, Motor, Operating Gears completely mounted and wired ready for installation. Simple to install, efficient in operation, trouble-free, inexpensive. Write for detailed folder.



Detail of Typical Open Face Awning Construction with Awning Hood





Actual Installation of Recess Box Fitted with Lid Panel and Operated with Astrup Pivoted Type Lid Mechanism

For Construction, see illustration at bottom of following page.

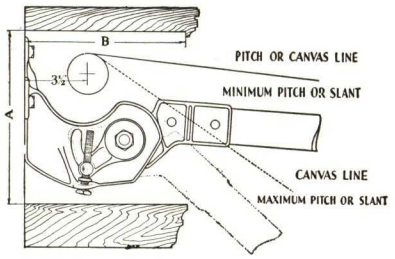
Actual Installation of Awning with Hood

Note to Architects

In order to obtain the most beneficial and practical results of the type awnings described on these pages we suggest you specify that Astrup Awning Operating Mechanism and Tenso-Lok Arms be used in the frame construction.

If requested, we will write your preliminary specifications, check your drawings of awning bars and offer any suggestions or recommendations we can.

ASTRUP RECESS BOX MECHANISM



Tenso-Lok Recess Arm Bracket

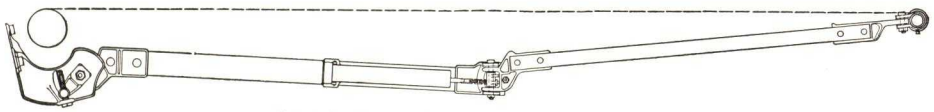
Recess box dimensions A and B vary with angle of awning and arm. Write for recess box sizes, and advise height of box above sidewalk and projection of awning from building

Trend of modern architecture is to provide concealed or recess awning box construction. This allows all operating awning mechanism and cloth to be concealed when awning is completely rolled up. Tenso-Lok (Lateral Type) Arm installation permits all metal parts to be concealed within recess box.

Tenso-Lok Arms equipped with center spring control force unrolling of awning and keep top cloth cover "taut" when awning is completely unrolled—assuring neat, trim appearance. They also insure fractional slant adjustment. Unexcelled for compactness, durability and protection against elements. Tenso-Lok Arms made in length from 3 ft. 6 in. to 12 ft. Furnished in Black Japanned, Hot Galvanized, Cadmium and Chromium Finish, Solid Bronze and Stainless Steel.

Tenso-Lok Arms are made in two numbers for recess boxes—Styles 31 and 34. Style 31 is furnished in 3 ft. 6 in. to 6 ft. 6 in. lengths. Style 34, in 7 to 12 ft. lengths.

All roller recesses should be weatherproof, with drain plate provided. If framed in wood, the backing (to which the awning parts are fastened) must not be less than 2 in. thick and of solid construction. Steel back plates should not be less than ¼ in. thick. Awnings up to 20 ft. require no center supports. For wider spans, split cover awnings are recommended (see illustration "Hood Awning," preceding page).



Extended View of Tenso-Lok Awning Arm

LID OPENING AND CLOSING MECHANISMS

Modern recess boxes may be fitted with covers to "close up" and conceal recess box openings. This method completely conceals awning mechanism and cloth and provides complete weatherproof protection.

Lids should be made of same metal as building front or of metal to harmonize with it.

Recess box should extend beyond glass line on both sides to allow canvas to properly protect window opening, i.e., 5½ in. on operating end and 3 in. on opposite (blank) end provides adequate coverage.

Lid Spring Equalizers are recommended for use on all lids.

Angle brace bar should be placed at bottom of lid or panel (when lid is not expressly designed to provide rigidity) to prevent lid from "buckling." This angle brace should be placed on inner side of lid (as low as possible but sufficiently high enough to clear inside of recess box opening) and should extend horizontally the full length of lid. Also straps are recommended to be placed vertically on inside of lid panels at each lever arm or pivot member position.

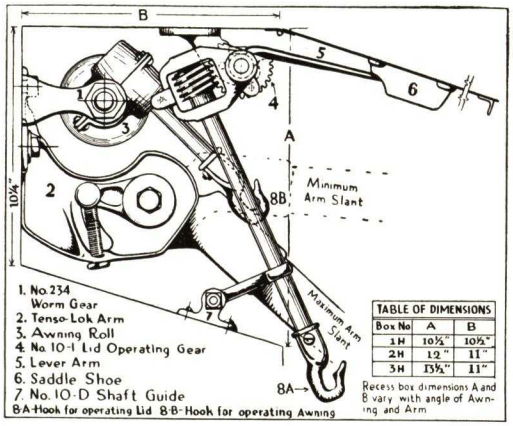


TABLE OF DIMENSIONS		
Box No	A	B
1H	10½"	10½"
2H	12"	11"
3H	13¾"	11"

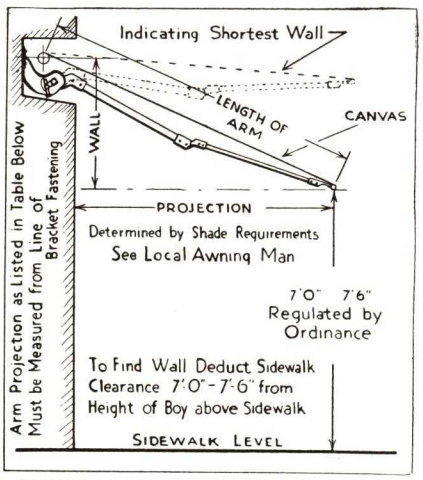
Recess box dimensions A and B vary with angle of Awning and Arm

Hinged Lid Construction

This type lid construction permits the lid to be hinged to front of recess box independently of the lid operating mechanism.

The lever arms (fitted with bronze rollers) project the lid and facilitate smooth operation. This construction automatically locks the lid in open and closed positions preventing damage by wind.

Lid cover plates and hinges furnished by store front contractors.



Pivoted Lid Construction

This type lid construction permits lid to be actuated by lid pivot members that are attached to lid shaft which extends horizontally across width of recess box. Lid pivot members are long and not only project the lid but also offer rigidity.

Only the Pivoted Lid Mechanism is furnished by Astrup; lid covers and weatherstrips furnished by store front contractors.

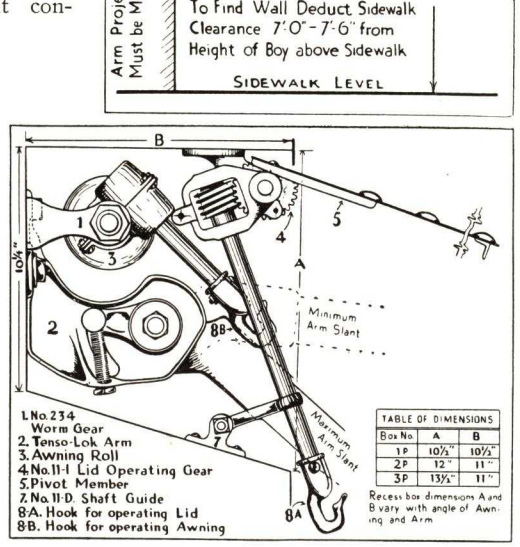


TABLE OF DIMENSIONS		
Box No.	A	B
1P	10½"	10½"
2P	12"	11"
3P	13½"	11"

Recess box dimensions A and B vary with angle of Awning and Arm

ENGINEERING SERVICE

The facilities of our Engineering Department are at the disposal of architects and construction engineers.

Astrup has recently prepared a complete manual, "Astrup Awning Hardware for Modern Store Front Construction" which covers in detail Awning Recess Box Construction. This bock will be furnished on request.

J. H. DAZZO MANUFACTURING CO.

Designers, Manufacturers, Distributors and Erectors of Various Types of Awning Equipment

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73 Thompson Street, NEW YORK, N. Y.

Products

Awnings of all types, Manual and Electrical Operation. Awning Mechanisms, Roller and Fixture. Folding Arms, Collapsible and Recessed.

Overhead Arms (*patented*), Exposed and Recessed. Specially Designed Arms. Fireproof Metal Awnings.

Specialties

Awning Metal Boxes, to meet architects' specifications. Awning Box Covers, Awning Hoods, Lateral Arm Construction. Unique and unusual awning units furnished complete, ready for installation.

Details of Construction

Roller—1-9/10 in. high carbon tubing.

Gears—Adjustable ball bearing, steel cut, incased in housing.

Shafts—¾ in. cold rolled steel rod, incased in tube, concealed behind posts or small protruding shaft through recess slot.

Operating Boxes—Hardened bevel gears, incased in bronze housing with split drive-shaft for crank handle.

Front Bars—2-in. outside diameter tubing, of metal desired, with 1-9/10 in. steel inner lining. Front bars have a small strip drilled to bar for fastening the cloth. Holes are spaced approximately 8 in. apart.

Dazzo Arms—Multi-truss overhead arms and flexible folding arms; inner bearings add greater strength and allow freedom of operation.

Lateral Arms—Fanner or Astrup's. *We distribute and widely recommend both.*

Castings — Compact and sturdy construction, of desired metal, and designed to harmonize with store front designs.

Awning Metal Boxes—Various types of awning metal boxes for recessed and lateral arms. *Descriptive catalog on request.*

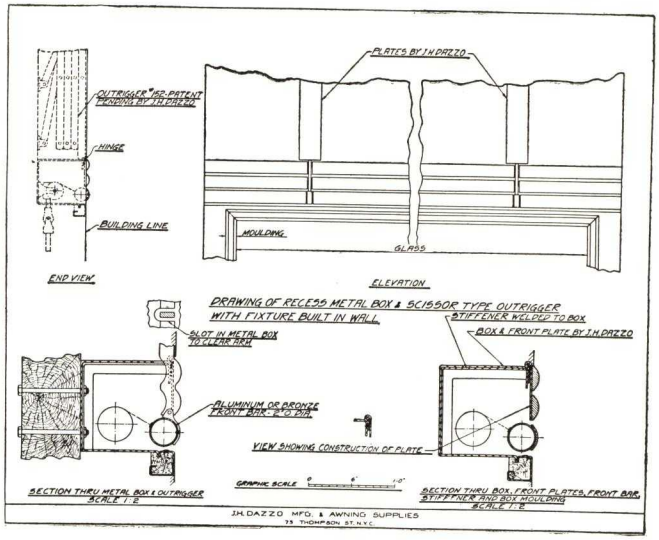
Awning Metal Box Covers—All types, hinged, lid or pivoted, of bronze or other metals. A wide selection of stock sizes is always on hand. *Write for catalog.*

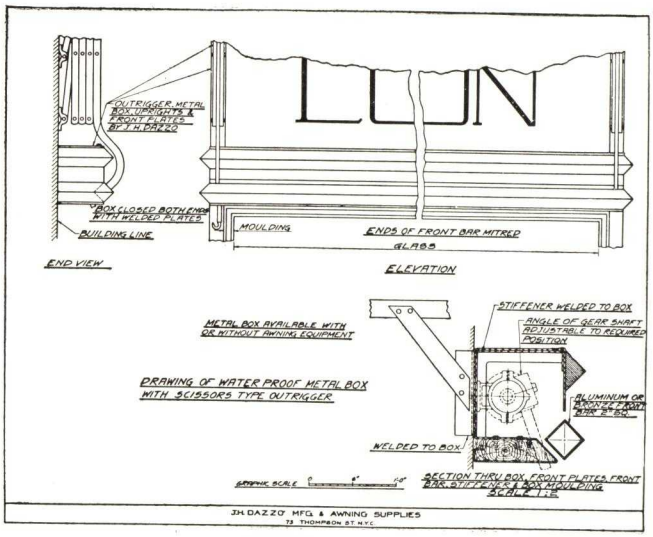
Co-operative Service

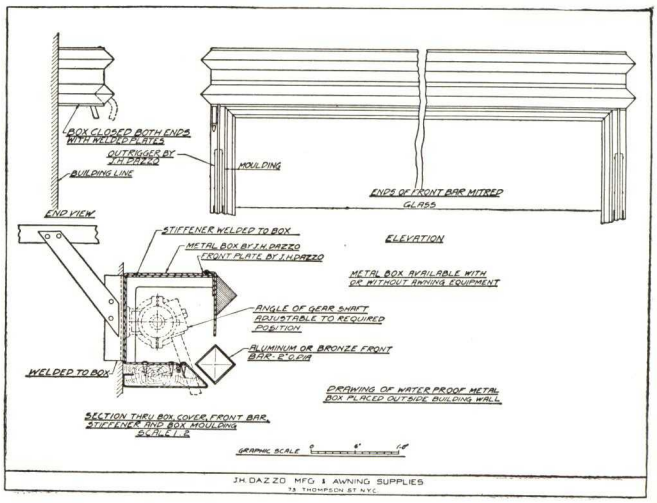
We offer our full co-operation to architects, builders, decorators, and owners. Complete information, specifications, samples and detailed drawings will be gladly furnished on request.

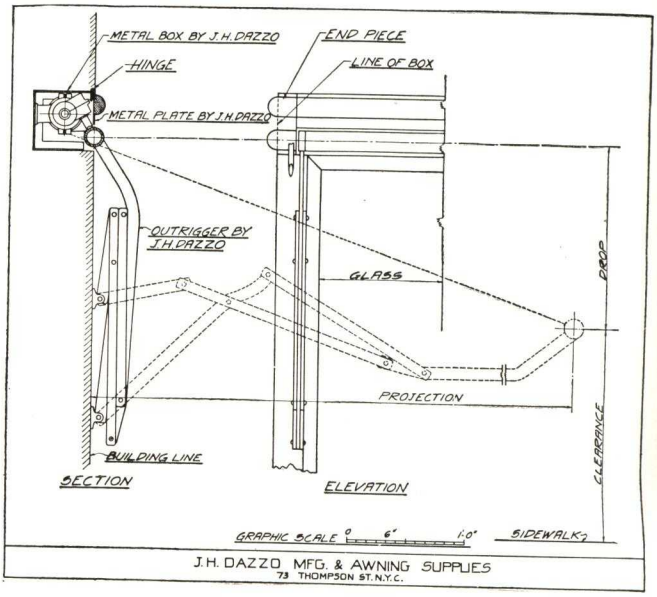
Notice to Architects and Builders

When designing store fronts, it is advisable to make provision for awning equipment, such as recessed awning boxes and piers for fastening arms. Whenever possible, recess boxes should be run over piers 1½ to 2 in. to permit awning mechanism to protrude out of box and to fasten outriggers on piers. Without this space, it is necessary to offset the arms, which almost invariably mars the beauty of the store front.

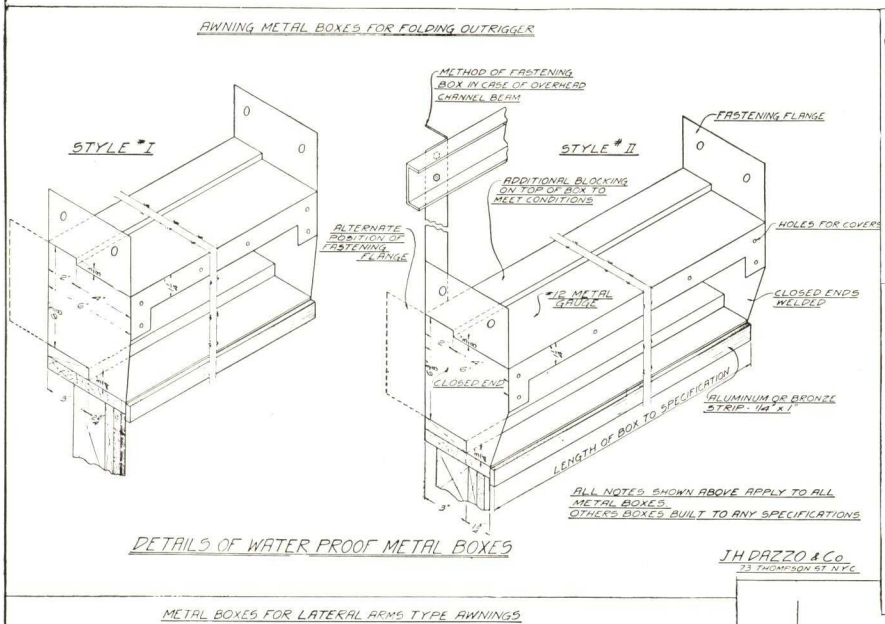


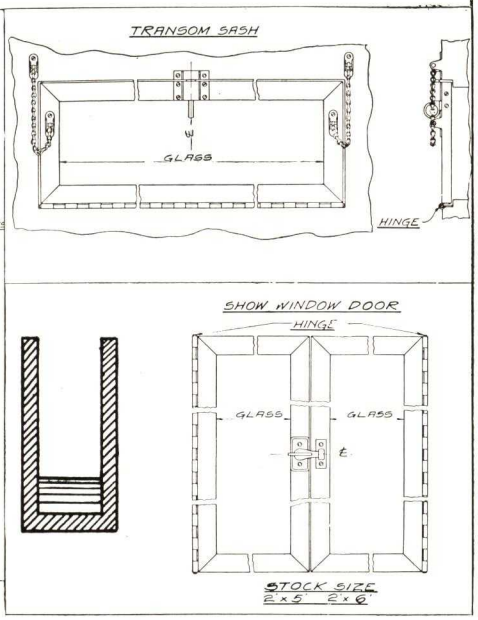


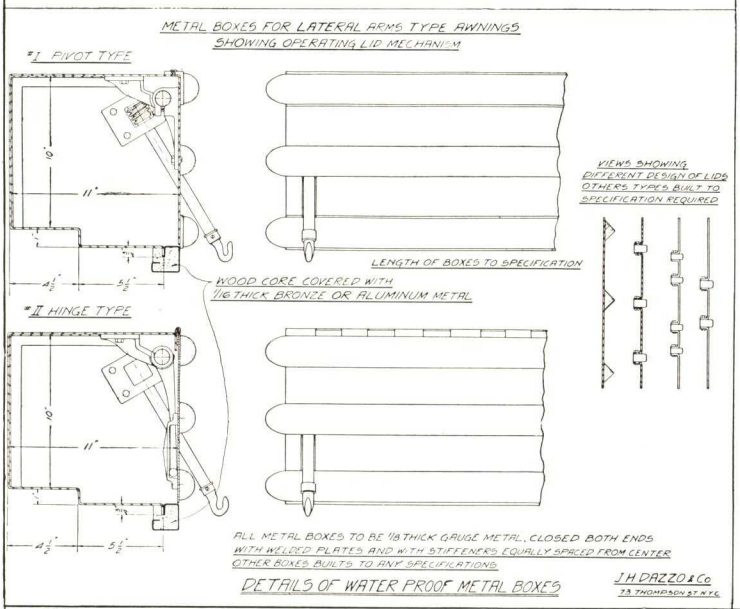


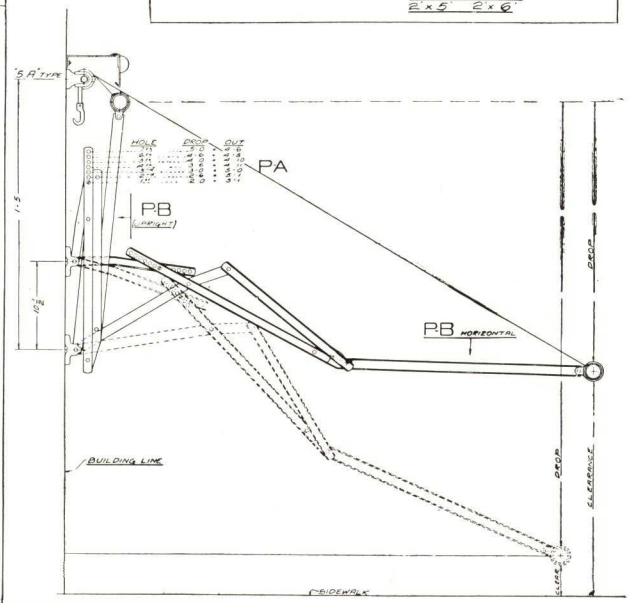


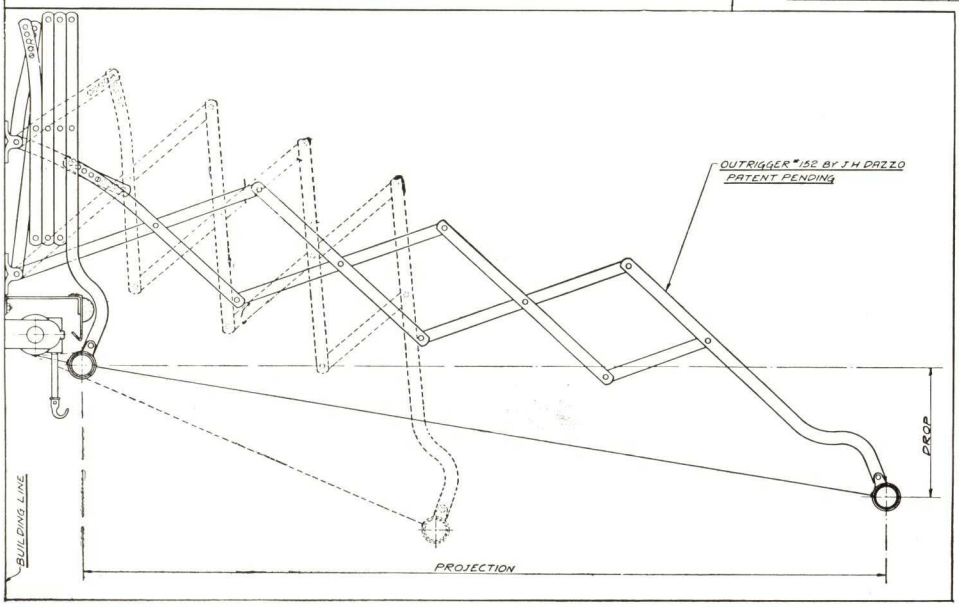
CONSTRUCTION DETAILS OF DAZZO AWNING CONSTRUCTION











Some of Our Recently Completed Units

Riggs Restaurant
43 West 33rd St., New York, N. Y.

Wise Shoe Store
1113 "F" St., N. W., Washington, D. C.

Regal Shoe Store
470 Seventh Ave., New York, N. Y.

Adam Hat Store
9 No. Meridan St., Indianapolis, Ind.

Mangel's
1804 Elm St., Dallas, Texas

Brooklyn Show Case Co.
816 Flatbush Ave., Brooklyn, N. Y.

Strand Shop
686 Main Ave., Passaic, N. J.

THE FANNER MANUFACTURING CO.

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PLANT AND GENERAL OFFICE
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EASTERN OFFICE AND WAREHOUSE, 74 Duane St., NEW YORK, N. Y.
CANADIAN FACTORY AND OFFICE, Main and Frid Streets, HAMILTON, ONTARIO

Sold Through Awning Jobbers in All Principal Cities

Products

AWNING HARDWARE, GEAR ROLLER FIXTURES, LATERAL ARMS, LID OPERATING FIXTURES, CANOPY FIXTURES.

Other Fanner Products

Stove trimmings, foundry chaplets, radiator fittings, barrel agitators, beer barrel fittings, heel washers, malleable and gray iron castings, stampings, wire specialties, barbed wire reels, twisted wire hoops.

Awning Products—Construction and Facilities

Fanner Awning Products are made of the finest malleable iron castings in our own foundry and machined and finished in our own shops. We are the only manufacturer within the industry that has such facilities and the extra values Fanner products possess reflect the supervision we exercise in their production. Years of experience in the manufacture of awning products, coupled with constant research and experimentation in this field, keep the product abreast of modern architectural requirements.

Hot Galvanized Finish — Malleable iron provides the strength that awning hardware requires but it is not indestructible when left exposed to air and weather. For this reason all Fanner Hardware is furnished with a hot galvanized finish. Hot galvanizing when applied properly is the most effective protection there is for iron and steel products. We do our own galvanizing and use the finest zinc obtainable and the most modern method of applying. Fanner Hardware is distinctive for its rust-resisting qualities and for its attractive appearance.

Fanner Gear Roller Fixtures

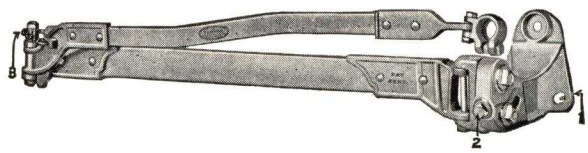
An assortment of twenty-six types of worm gears for the operation of awnings, comprising everything from low cost gear fixtures to modern ball-bearing equipped fixtures.

No matter what type of awning is required, the Fanner Line provides the proper type of worm gear. Supplementary fixtures are available in equally complete assortment.

Fanner Improved Lateral Arms

Lateral arm awnings eliminate the necessity of littering up a building with a lot of awning hardware. The fixtures can be fastened on the transom bar or in a recess box. Fanner Improved Lateral Arms are made in three designs that meet every requirement of modern store front architecture. They fold so compactly that recess boxes can be kept to their minimum in size.

The positive and efficient operation of the arm is made certain through the use of an adjustable center tension spring that can be adjusted to meet the requirements of each awning. This feature is protected by patents granted us.

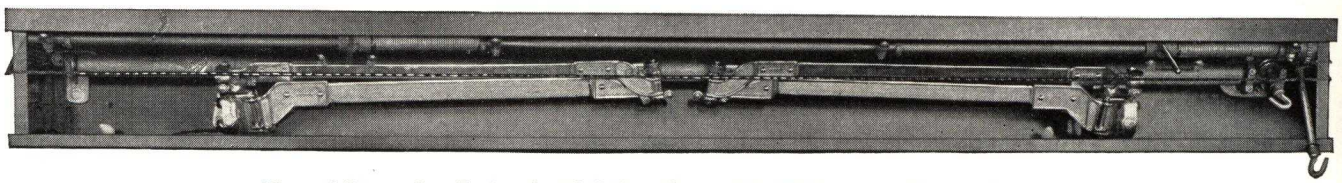


Features That Make the Fanner Improved Lateral Arm Outstanding

(1) Side Adjustment Controlled by Set Screws—Micrometric adjustment possible. No loose parts to confuse the erector.

(2) Slant Adjustment Controlled from the Front of the Wall Bracket—It is easy to get at—especially advantageous when the arm is installed in a recess. Close adjustment possible—positive adjustment certain.

(3) Adjustable Center Tension Spring—Insures efficient and positive operation of the arm. Can be adjusted to meet the requirements of each awning.



View of Recess Box Equipped with Lid or Cover with All Necessary Fixtures Installed

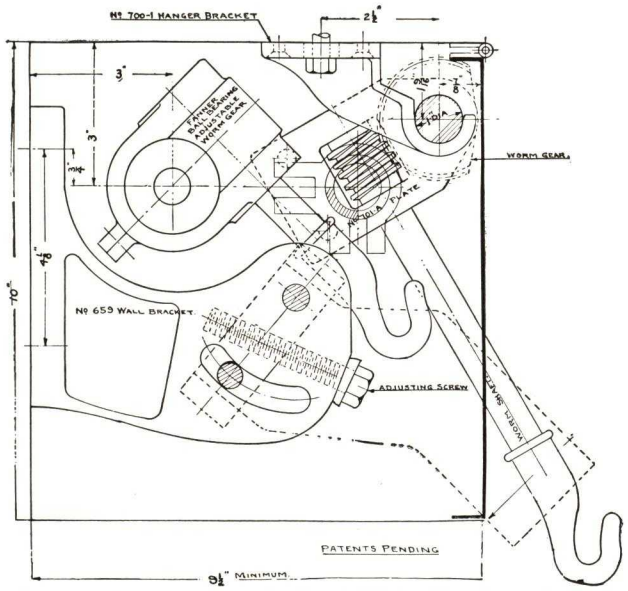
Gear mechanism for the awning and the lid erected at the same end of the recess box, both gears to be operated by means of winding shaft with eye to fit hooks attached to drive shafts of gears.

Fanner Lid Operating Fixtures for Recess Box

In modern store front architecture a recess box is nearly always provided to accommodate the awning fabric and fixtures. With this type of construction the entire assembly—lateral arms, gear fixtures and fabric—disappears within the recess box when the awning is rolled up. Many of these recess boxes are now being equipped with a lid or cover and with this type of construction the recess box and awning is completely concealed when the awning is rolled up. Thus the store front is improved in appearance and the awning is adequately protected when not in use.

Fanner Lid Operating Fixtures when properly specified and installed provide an efficient, long lasting mechanism that will keep the lid uninterruptedly useful. These fixtures are furnished in an assortment of separate parts that are assembled and erected by the awning contractor. Complete details and information about this type of awning construction will be supplied by us on request.

(Architects and building front contractors must provide sufficient space in the recess box for this type of awning. Minimum dimensions of the recess box required are 9½ in. deep, 10 in. high. This size recess will be satisfactory for major portion of awnings but wall and projection measurements of the awning cause recess dimensions to vary.)



Cross Section of Recess Box with Lateral Arm Bracket and Lid Operating Device Installed

Installation Details

With Fanner Lid Operating Fixtures the lid may be hinged direct to the building or to the operating shaft of the lid.

Operating gear can be installed at either end of the recess box.

All the fixtures are made to fit 1-in. solid steel shaft. This size shaft provides the strength that is required especially when the lid is long.

Fixtures assemble to shaft by means of Mac-It setscrews, eliminating the necessity of drilling the shaft and thereby weakening it.

Torsion spring assembly is provided for lids more than 20 ft. in length. These assemblies overcome torque in the shaft and aid in raising the lid.

A Typical Fanner Installation

Split Type Awning 50 Feet Long Erected in Recess Box Equipped With Lid. Fanner Lateral Arms, Gear Fixtures and Lid Operating Fixtures Used Throughout. View Shows Awning Unrolled With Lid Raised.

Erected by Joseph L. Lutz Co.
Jersey City, N. J.

View with Awning Rolled Up and Lid Lowered. Awning Fabric, Fixtures and Recess Opening Completely Concealed.

Numerous Fine Awning Installations Like This Erected Throughout the Country Prove the Worth of Fanner Fixtures.

ESTABLISHED 1872

F. J. KLOES INC.

Designers, Manufacturers and Erectors of Awning Hardware

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DISPLAY ROOM, OFFICE AND FACTORY
269 Canal Street, NEW YORK, N. Y.

Product Specialties and Engineering Service

KLOES AWNING ROLLER GEAR MECHANISMS FOR BUILT-IN AWNINGS: manually and electrically operated equipment.

KLOES PATENTED FLEXIBLE FOLDING OUTRIGGERS for Store Front Awnings: Bronze, Brass, Duraluminum and Galvanized Steel.

KLOES PATENTED DISAPPEARING FOLDING OUTRIGGERS: designed and made to specifications.

KLOES PATENTED FOLDING OUTRIGGERS for Large Terrace Awnings. Special constructions to suit requirements.

KLOES SIDEWALK CANOPY FRAMES and FITTINGS; also STATIONARY AWNING FRAMES and CONNECTING FITTINGS.

KLOES RESIDENTIAL and TERRACE AWNINGS of any description.

KLOES TERRACE SOCKETS for future awning equipment, vibration-proof and weatherproof.

MANUAL and AUTOMATIC PANEL OPERATING EQUIPMENT.

Also an unexcelled line of Window Shades and Curtains.

Service

Our Construction Department will be pleased to co-operate with architects and engineers. Detailed designs and specifications for awning installations that will conform with the architect's requirements will be supplied on request. See specimen below at left.

AWNING EQUIPMENT FOR STORE FRONTS

Specification Limitations

Rollers and Operating Gears—Awning rollers should be located at not less than 9 ft. 6 ins. above pavement level. Roller recesses for built-in awnings must be at least 6x6 ins. in cross section.

Rollers and operating gears may be placed on face of store front, or rollers and operating gears may be built into recess above display windows. Built-in roller gearing to be operated by means of long detachable handles or built-in crank gearing. Roller gearing may be completely concealed. *(Note: See detail on following page.)*

Kloes roller mechanisms all have machine-cut gears in solid bronze cases. Fittings made to suit requirements of conditions.

Awning Outrigger Frames of Various Shapes—Awning front bars are made of tubing to span, without sagging, the distance across store fronts or between supporting outriggers. Front bar tubings in round or rectangular sections are made of metal to match the material of the store front.

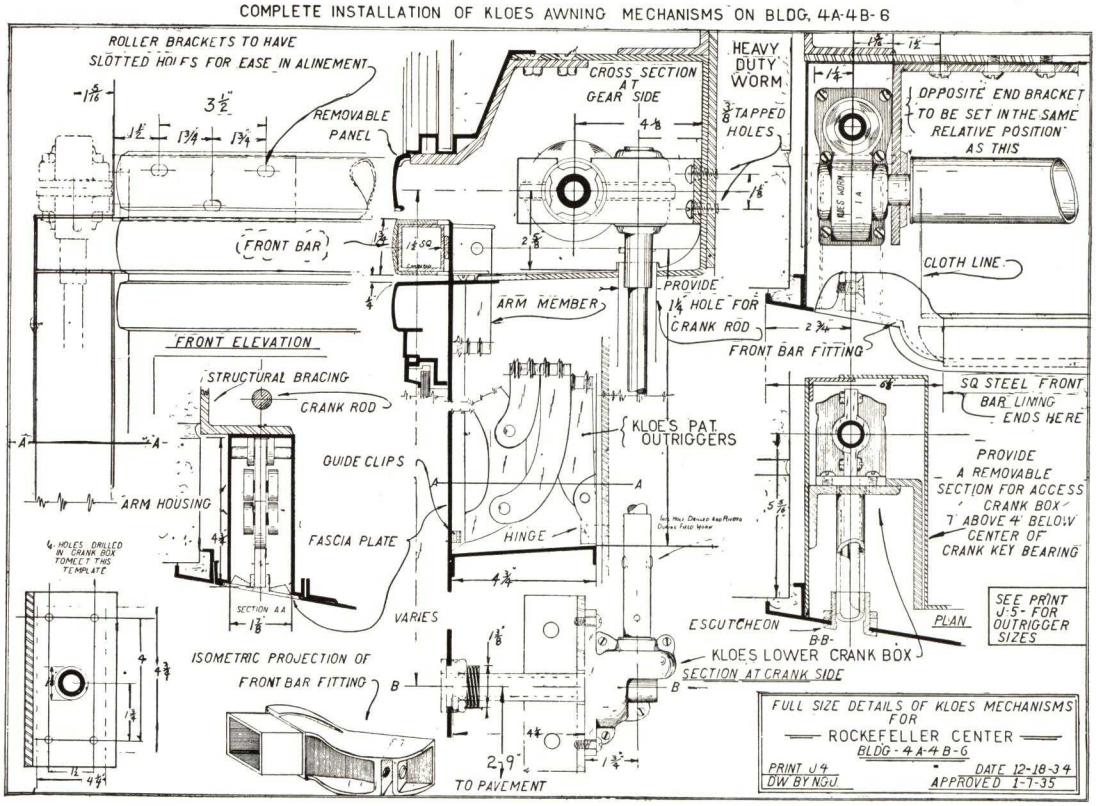
Awning outrigger frames, when extended, must be at least 6 ft. 9 ins. clear of pavement. In some towns local restrictions limit clearances beneath awning frames at 7 ft. 6 ins. or more. To effectively shade display windows the awning outriggers should carry the awning bar to a line at least as far forward from the face of the window as the bottom of the window is below the clearance limit of the awning.

Kloes flexible folding outriggers, plain or ornamental, can be obtained to provide any desired proportion of drop and projection.

Canvas Coverings—Awning covers made to suit any requirements. *Fire-resisting* or other chemically-treated fabrics of any description.

ROCKEFELLER CENTER

COMPLETE INSTALLATION OF KLOES AWNING MECHANISMS ON BLDG. 4A-4B-6



Fancy Extensions and Outriggers

For store fronts specially designed to have awning outriggers concealed within recesses we can furnish outriggers having ornamental members, which, when in raised position, appear as part of the window trim ornamentation, or where no ornamentation is desired outrigger members can be designed to close the recess openings so as to appear to be part of the window framing. Minimum clear width of recesses must not be less than 1½ in. for the usual store front awning.

Outriggers which are to be concealed are made to fit the conditions and type of construction called for in the architect's design. *(Note: See illustration on following page.)*

Shades and Screens

Kloes electric motor control units are used on stereopticon screens, skylight shades, or for other purposes as well as for awnings.

Glazed Fronts

Where glazed facial fronts are to be constructed necessary data with reference to method of fastening awning equipment may be had beforehand, thereby avoiding later marring of the front.

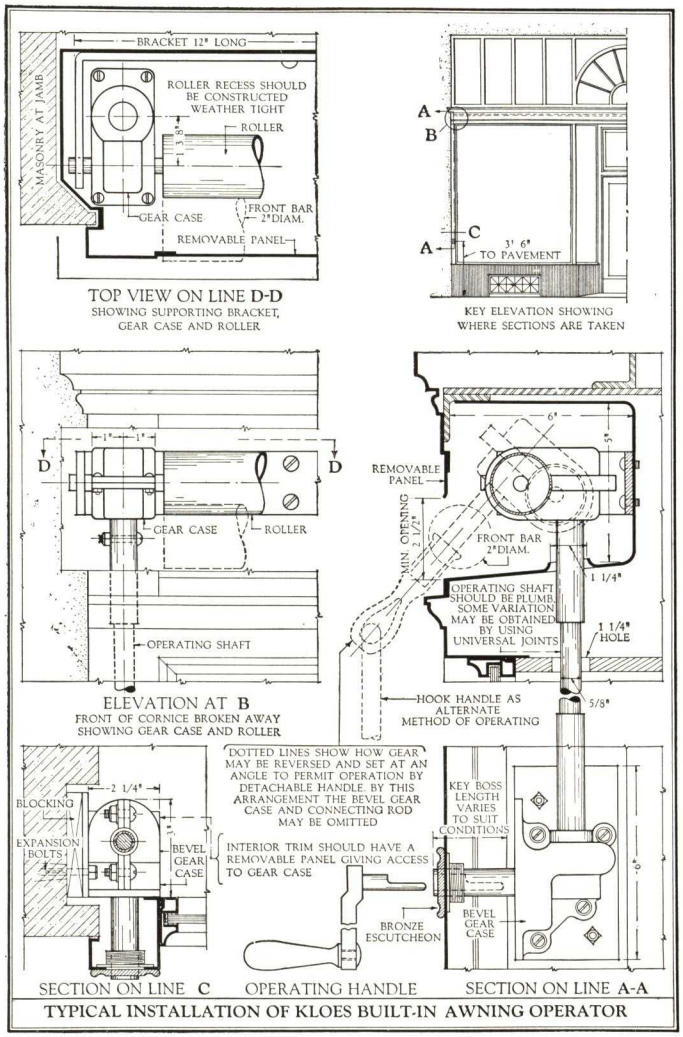
A Few Buildings on Which Kloes Awning Mechanisms Are Now in Use

Empire State Building, New York
Rockefeller Center, New York
Hotel Lincoln, New York, N. Y.
Gimbel Brothers, New York, N. Y.
Bloomingdale Brothers, New York
Waldorf-Astoria Hotel, New York
Netherlands Hotel, New York
Hess Bros., Allentown, Pa.
Best & Co., New York, N. Y.
Saks Fifth Avenue Store, New York, N. Y.
Salmon Tower, New York, N. Y.
Savoy-Plaza Hotel, New York, N.Y.
Liberty Lincoln Building, Philadelphia, Pa.
S. H. Kress Co., Various Cities
A. I. U. Building, Columbus, Ohio
Strawbridge & Clothier, Philadelphia, Pa.
Fox Theatre Building, Detroit, Mich.
Reynolds Building, Winston-Salem, N. C.
Statler Hotel, Boston, Mass.
Lamson Store, Toledo, Ohio
Rosenberg Store, Milwaukee, Wis.
Polsky Department Store, Akron, Ohio
Dominion Building, Montreal, Can.
Eaton Department Stores, Canada

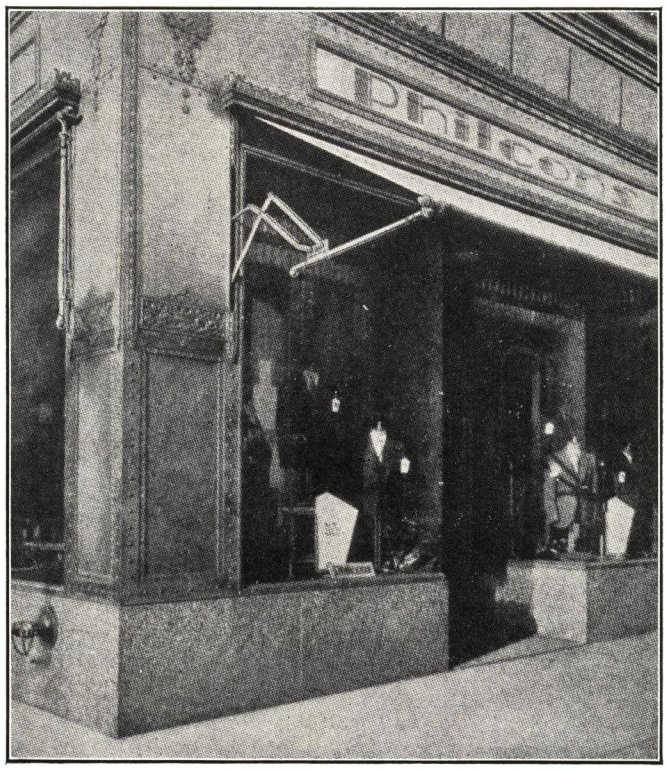
Complete equipments supplied and shipped for local installation. Easy Assembly Prints and Directions supplied with equipment.

KLOES BUILT-IN GEAR ROLLER AWNING MECHANISM

Kloes Awning Operating Mechanisms and equipment have been specially developed for use on store fronts and similar situations, and are to be concealed when not extended. The awning canvas, which is sometimes provided under a separate contract, is rolled up on rollers which, with the necessary gearing mechanisms, are built into recesses provided (by others) in the construction of the window framing.



TYPICAL INSTALLATION OF KLOES BUILT-IN AWNING OPERATOR



Corner of a Large Building Having Twenty Store Fronts All Equipped with Kloes Concealed Equipment

Note compact cornice construction in which awning roller mechanism is located. When in raised position awnings are entirely out of sight, leaving only column effects of outer members conveying design features of architect's selection

Concealed Awnings—When *Kloes* concealed awnings are provided there is no canvas or unsightly mechanism visible from the street when the awnings are in raised position. This equipment is unexcelled for compactness and durability.

Kloes Operating Gears—All gear cases are made of bronze, machined to be grease tight, and all gears are machine cut. Complete outfits are made up in our own shops to measurements and details as may be shown on architects' drawings or we will provide designs and shop drawings.

Erection—Our skilled erectors are available for installations at any point if desired, but any capable mechanic, carpenter or iron-worker, can be relied upon to effect a satisfactory installation, following the detailed instructions and prints supplied.

Control Points—The gearing mechanisms which control operation of the awning roller can be driven by hand or by motor and the point of control can be on the street front or on the inside of the window.

Recess Dimensions—Roller recess for ordinary store fronts up to 18 ft. wide need not exceed 5 ins. height by 5 ins. depth; for wider store fronts 6x6 ins. is minimum. Roller recesses should be weatherproof.

If framed of wood the back plate to which the bearings are to be attached should be 1¼ ins. thick. Recess boxes made of ⅛ in. thick steel plates are serviceable and economize space.

Awning rollers up to 20 ft. 0 in. in width are supported in end bearings only. For wider awnings intermediate supports are used to extend the length of roller to any required distance.

Gear Control—A popular type of construction provides for operation of the awning roller by means of a long detachable handle. In this case the gear control member becomes a short shaft terminating in an inconspicuous eye end which projects diagonally through the fact of the recess opening. This method is shown on the drawing as an alternate.

Concealed Gear—A more inconspicuous type of construction has a vertical connecting passage through one of the trim frames of the window or through a chase in the masonry pier into which a bevel gear crank case with a connecting rod reaching to the roller gear is placed. The crank case may be set up to be operated from the street front or from the inside of the store. The drawing shows this type of control.

Kloes Built-in Gear Roller Awning Mechanism may be used with any type awning outrigger whether straight pivoted, vertical folding, or lateral folding.

A complete roller installation includes furnishing and setting the roller, the roller operating devices and all of the necessary hardware, bolts, etc., required for supporting the work in place. The awning box, window trim, etc., must be provided by others. The accompanying illustration shows the details of the roller and gives suggestions for construction of all enclosing and supporting work.

Kloes Built-in Gear Roller Awning Mechanism Does Not Detract from the Architectural Beauty of the Store Front

CABLE ADDRESS: "AWNINGS"

TELEPHONE: BRYANT 9-2600

NEW YORK AWNING CO., INC.

Designers and Manufacturers of Stevens "Nyaco" Awnings and Equipment

401-403 West 36th Street, NEW YORK, N. Y.

Products

AWNINGS (For All Purposes).
AWNING MECHANISMS, ROLLERS and FIXTURES.
FOLDING ARMS (Collapsible and Disappearing).
ROOF and TERRACE AWNINGS.
SIDEWALK CANOPIES; REMOVABLE AWNINGS.
FIREPROOF METAL AWNINGS.
"NYACO" FIXTURE EQUIPMENT in All Metals.

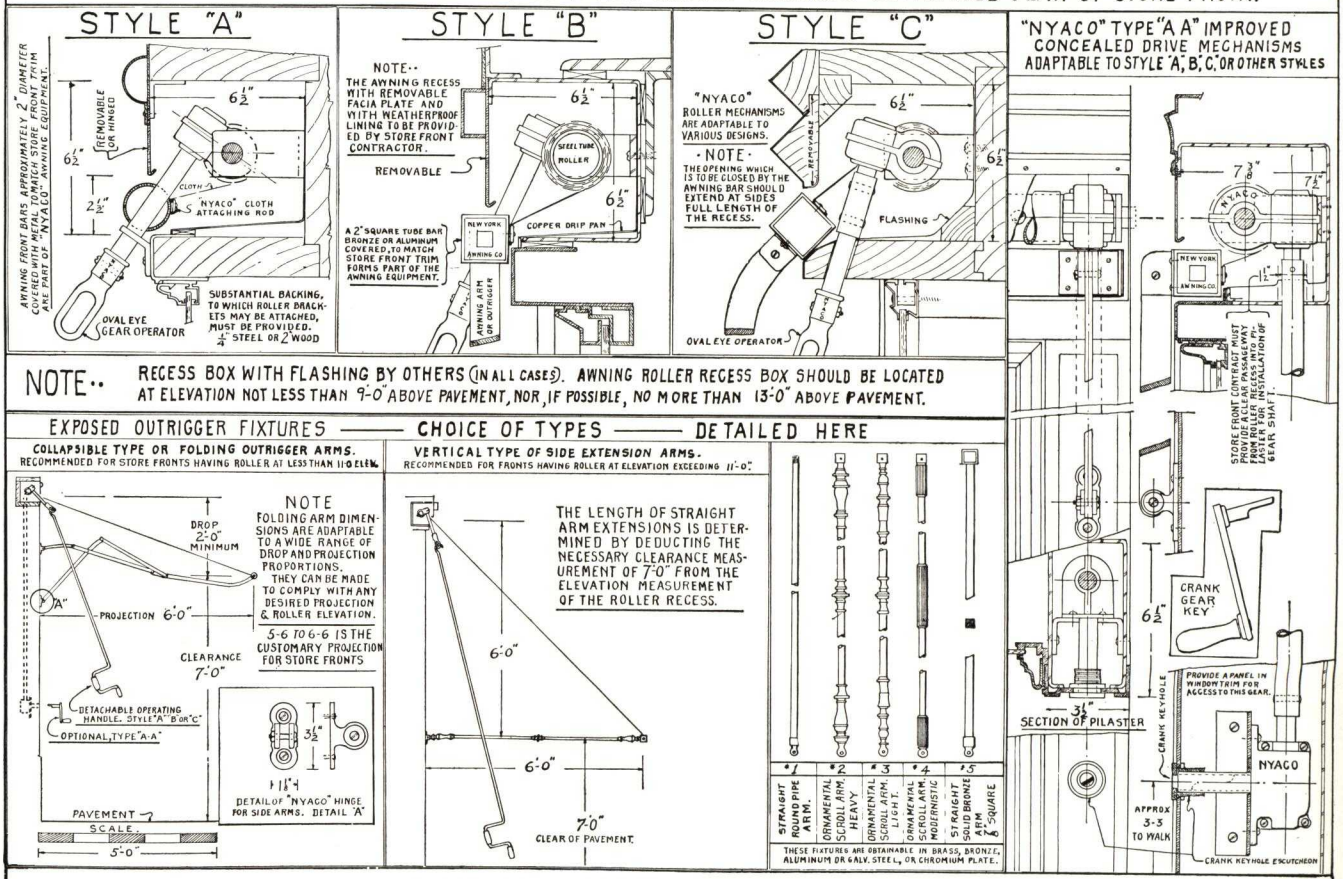
QUALITY SERVICE NYACO TRADE MARK ESTABLISHED 1893

Specialties

FIRE-RETARDING FABRICS.
AWNING LETTERING "VISIBLE AT NIGHT."
"NYACO" VESTIBULE TYPE AWNINGS.
LATERAL ARM CONSTRUCTION.
UNIQUE and UNUSUAL INSTALLATIONS.
ELECTRICALLY CONTROLLED AWNINGS.
EXCLUSIVE DESIGNED AWNING CLOTH.

DETAILS OF "NYACO" BUILT-IN CONCEALED RECESS AWNINGS

"TYPICAL LAYOUTS ONLY" CAN READILY BE CHANGED TO MEET EXISTING CONDITIONS OR PROPOSED PLAN OF STORE FRONT.



NOTE.. RECESS BOX WITH FLASHING BY OTHERS (IN ALL CASES). AWNING ROLLER RECESS BOX SHOULD BE LOCATED AT ELEVATION NOT LESS THAN 9'-0" ABOVE PAVEMENT, NOR, IF POSSIBLE, NO MORE THAN 13'-0" ABOVE PAVEMENT.

EXPOSED OUTRIGGER FIXTURES — CHOICE OF TYPES — DETAILED HERE

ARCHITECTS' COMPLETE SPECIFICATIONS

Recess Boxes—Are to be supplied by the store front contractor, of suitable size and construction for NYACO type ( ) awning equipment.
Awning Equipment—To be NYACO style ( ) furnished with all exposed parts in (state metal desired—aluminum, brass, bronze, galvanized steel or brass chromium plated).
Awning Operation—To be by means of NYACO oval and detachable handle (or NYACO concealed type AA, if your store front construction warrants it).
Awning Side Arms—State style desired (NYACO vertical folding, square, round or ornamental).
Awning Cloth—NYACO 8.42 oz. U. S. Army duck, in color to be selected.

IMPORTANT NOTICE

NYACO furnishes *complete awnings*—specially made to your order. Please do not confuse us with supply concerns or agents selling stock fixture equipment only. For your protection, specify—"COMPLETE AWNINGS BY NYACO." (Thank you.)

Prominent "Nyaco" Installations

Rockefeller Center, New York
S. H. Kress & Co., Miami, Fla.
Child's, Atlantic City, N. J.
Lerner's, Denver, Colo.
Kline Bros., Atlanta, Ga.
Gulf Building, Pittsburgh, Pa.
The Town House, Bermuda
Lerner's, Cincinnati, Ohio
Essex House, New York
Meyer Bros., Paterson, N. J.
S. H. Kress & Co., 5th Ave., New York
N. Y. Central Bldg., New York
Milgrim's, East Orange, N. J.
Lerner's, Tacoma, Wash.
Sak's, 5th Ave., New York
Daily Record Bldg., St. Louis, Mo.
Chrysler Building, New York
Lerner's, Detroit, Mich.
Colgate's, Jersey City, N. J.
Kress Bldg., Birmingham, Ala.
Corning Glass Bldg., New York
Empire State Bldg., New York
Loveman, Joseph & Loeb, Birmingham, Ala.
Klein's Dept. Store, San Juan, P. R.
Ivey's Dept. Store, Asheville, N. C.
Sojourner's Lodge, Cristobal, Canal Zone
The Bermuda Press, Bermuda
Birk's Building, Montreal, Canada

We Serve Over 50 Local and National Chain Store Organizations

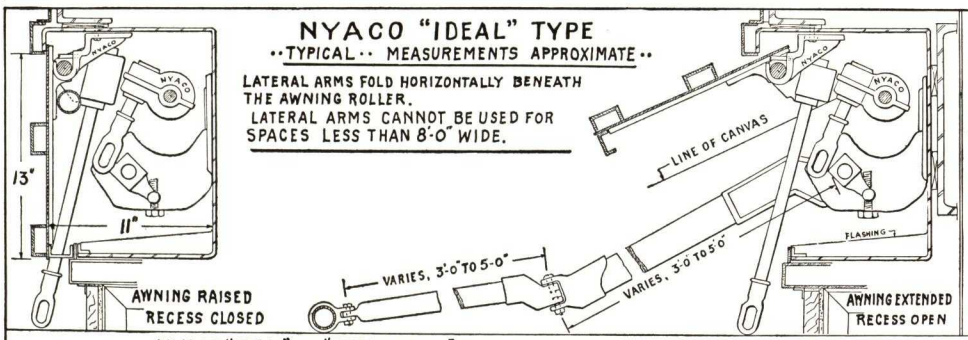
THE NEWEST "NYACO" SENSATION
A Completely Concealed Lateral Arm Awning
No Lower Fastenings Required—All Arms and Fixtures Concealed

RECENT INSTALLATIONS

Miami, Fla.	Kansas City, Mo.	Albany, N. Y.	Charlotte, N. C.	Norfolk, Va.
St. Petersburg, Fla.	Cincinnati, Ohio	Chicago, Ill.	Charleston, S. C.	Washington, D. C.

NYACO "IDEAL" TYPE
··TYPICAL·· MEASUREMENTS APPROXIMATE··

LATERAL ARMS FOLD HORIZONTALLY BENEATH THE AWNING ROLLER.
LATERAL ARMS CANNOT BE USED FOR SPACES LESS THAN 8'-0" WIDE.

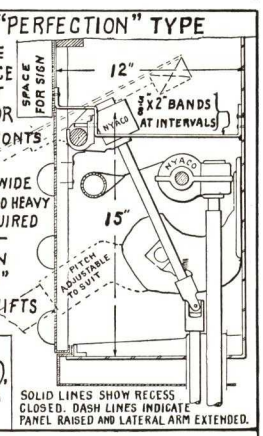


NYACO "PERFECTION" TYPE

OUR EXCLUSIVE COUNTERBALANCE ARRANGEMENT ESPECIALLY FOR WIDE STORE FRONTS

NO FRONT TOO WIDE
NO FACIA PANEL TOO HEAVY
NO SPRINGS REQUIRED

INSIST ON "NYACO"
AVOID MAKESHIFTS



SOLID LINES SHOW RECESS CLOSED. DASH LINES INDICATE PANEL RAISED AND LATERAL ARM EXTENDED.

NOTE NYACO "IDEAL" AND "PERFECTION" TYPE MECHANISMS OPERATE FACIA COVER PANELS & AWNING ROLLERS WITH EITHER OUTSIDE OVAL EYE OPERATOR OR WITH CONCEALED CRANK BOX & SHAFT, (SEE TYPE "AA"), PROVIDED SUITABLE WINDOW FRAME PILASTERS ARE AVAILABE. THE STORE FRONT CONTRACTOR MUST PROVIDE A RECESS BOX OF REQUISITE SIZE & CONSTRUCTION FOR NYACO EQUIPMENT. WE WILL FURNISH COMPLETE DETAILS.

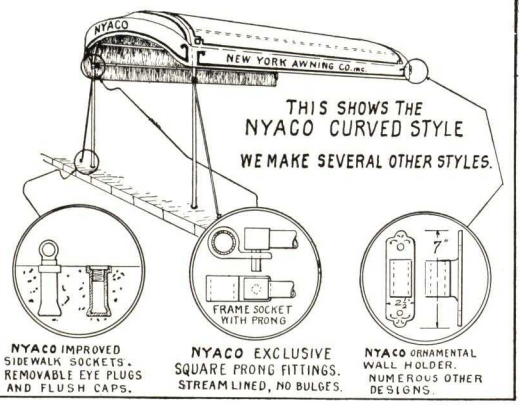
"NYACO" AWNINGS at ROCKEFELLER CENTER NEW YORK

When you visit "Radio City" be sure to examine the modern and improved type of store front awning construction. "Nyaco" awnings have been installed on all buildings in the development. The Special Fire-retarding Cloth constructed in exclusive brilliant terra-cotta color for use on all awning work was introduced by

"NYACO"

British Empire Bldg.	Palazzo d'Italia
R.K.O. Building	R.C.A. Building
La Maison Francaise	Center Theatre
International Bldg.	Plaza Office Bldg.

"NYACO" SIDEWALK CANOPIES
ENTIRELY REMOVABLE



"NYACO" AWNINGS USED ON MANY FAMOUS RESIDENCES

INDIVIDUAL DESIGN
EXCLUSIVE FABRIC
SUPERIOR WORKMANSHIP

A Few "Nyaco" Residential Installations References

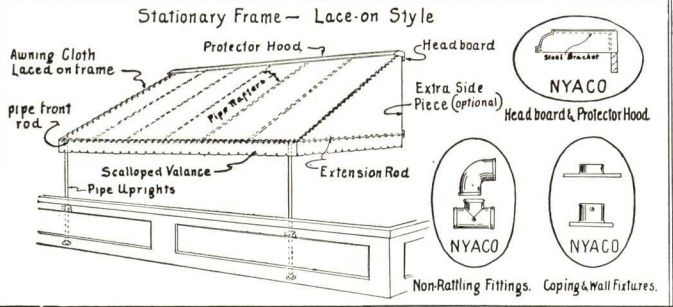
Walter P. Chrysler	W. W. Aldrich
Cornelius F. Kelley	Alfred P. Sloan
Wm. B. Leeds	Alfred Loomis
Bernard F. Gimbel	Robert Bacon
John J. Astor	Edsel Ford

Avoid Fire Hazard

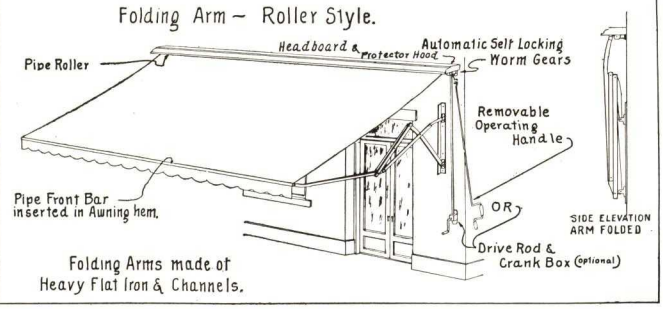
Use "Nyaco" Awnings having cloth with special fire retarding treatment. *Send for samples.*

"NYACO" TERRACE OR ROOF AWNINGS

Stationary Frame — Lace-on Style



Folding Arm — Roller Style.



Folding Arms made of Heavy Flat Iron & Channels.

A Few Representative Buildings Having "NYACO" Installations

THE SUNVENT METAL AWNING COMPANY

Sunvent Metal Awning, Sunvent Exterior Blind

3712-18 Bronx Boulevard, NEW YORK, N. Y.

Something New Under the Sun

The Sunvent Metal Awning is custom built for openings up to 8 ft. — a vented awning, simply designed with interlocking sections and remote control. Made in special alloy aluminum, finished in various color schemes obtained from our standard colors.

Not merely an awning, it functions as a venetian blind, shutter, ventilator or heat ray deflector, and affords maximum fresh air, direct light, full vision, shade and privacy.

Outstanding Features

Durability—Made of rust-resisting materials, the action of the elements has no effect. All component parts have successfully undergone exhaustive tests for strength, friction, shrinkage, etc. It can be exposed throughout the four seasons of the year.

Flexibility—A combination awning, vented awning, exterior venetian blind or no-draft ventilator. (see illustrations).

Noiseless—Slats formed to interlock which eliminates clatter or metallic flapping.

SunRay Deflector—Metal reflects back into space the greatest portion of the sun's heat rays.

Window Insulation (Initial Stage of Air Conditioning)—The Sunvent Metal Awning has brought back the awning to modern importance as a valuable heat reducer—especially in conjunction with air-cooling equipment—not only because solar radiation is deflected, but also because the ventilating function of Sunvent induces free circulation of air beneath the awning. This feature eliminates "heat pockets," prevalent where other materials are used. Sunvent nullifies the heat transfer ordinarily conducted through the window—resulting in noticeably cooler room temperatures.

Light Control—Slats can be venetianed in either awning or blind position with inside remote control, permitting the diffusion or elimination of outside light rays.

Fireproof—Fire-Protective — Entire metal construction renders them fireproof, thus eliminating worry from outside sources. In shutter position, they also serve as a fire preventive.

Window Protector—Rugged construction provides instant protection to windows during disturbances and high winds. Also discourages vandalism and malicious mischief.

Economical

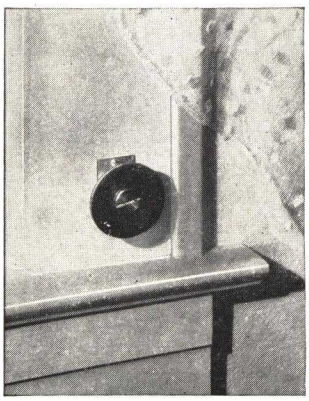
The initial cost of installing Sunvent Metal Awnings is your final cost. Compared with fabric, the life of non-corrosive metal is indefinite. It does not rot, fray, tear or burn, consequently it maintains a neat and trim appearance. Being permanent, all-year awnings, the repeated cost of erection and removal is also saved.

On buildings which are air-conditioned, Sunvents provide window insulation resulting in additional operating economies.

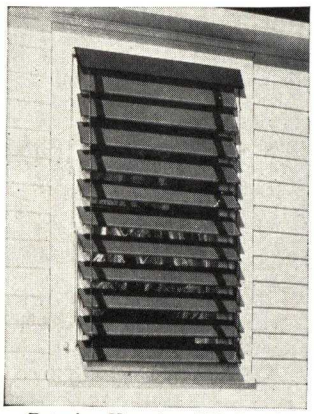
Remember Sunvent is more than a mere awning. Its various benefits, throughout many years of constant service, are inestimable. The results of false economy are costly—it is true economy to buy quality. *Economize with Sunvent Metal Awning.*

Sunvent Exterior Blinds

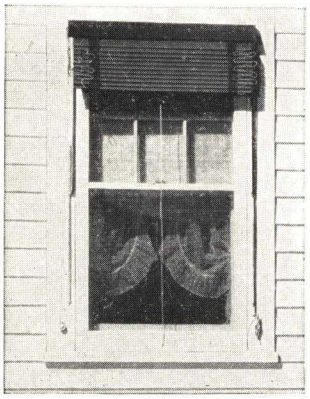
Sunvent Exterior Blinds (not shown) differ from Sunvent Metal Awnings in that they have metal pins at the ends of the slats, which run in channel guides positioned at sides of openings.



Remote Control—Located inside window. By this device the ventilating function of Sunvent Metal Awning can be regulated conveniently, without opening window or screen.



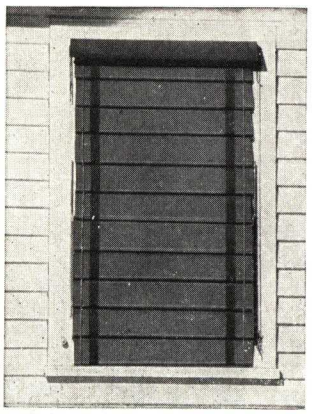
Exterior Venetian Blind — Controlled from interior. Arrests heat on *outside* of window. Eradicates "dust-catcher" annoyance; and sustains the effect of beautiful curtains.



"No-draft" Ventilator — In the "up" position the awning nests compactly beneath a neat metal canopy. It deflects gusts of wind, rain and sleet, thereby protecting a lowered window.

Awning — Neat, trim, attractive and enduring. Noiseless, too, because sections are held together firmly by their interlocking construction—no flapping or metallic clattering.

Vented Awning—An outstanding feature—regulated by remote control. Venting permits free circulation of air, direct penetration of light, and affords full vision.



Shutter-Blind—A turn of remote control device closes the vents and forms a complete enclosure. Eliminates "boarding-up". Discourages vandalism and malicious mischief.

THE BOSTWICK-GOODELL CO.

Manufacturers Venetian Blinds for Over 40 Years

NORWALK, OHIO

VICTORIA VENETIAN BLINDS

Specifications

Head—1⅛ in. thick by 2¼ in. wide on 2⅜ and 2-in. slats; and 1¾ in. wide on 1¾ and 1⅝-in. slats.

Top Tilting Rail—⅞ in. thick, reinforced with metal clips over ends to prevent wear and splitting.

Bottom Slat—⅞ in. thick on 2⅜ and 2-in. wide slats.

Bottom Slat—⅜ in. thick on 1¾ and 1⅝-in. wide slats up to 60 in. wide.

Easy Lift Blinds—Have 1⅛-in. thick bottom slat, on all width of slats.

Moulded Edges—On head, tilting rail, and thick bottom slat.

"B-G" Worm Gear Tilt—Die cast from rustless metal, will not corrode, *choice of three types:*

All cord, sprocket wheel, or ball chain type.

Pulley Wheels—Solid steel, indestructible and longest wearing, also ball bearing.

Automatic Cord Stop—For holding blinds when raised. Its construction eliminates excessive wear on cords.

Raising Cords—On end of head (end lift).

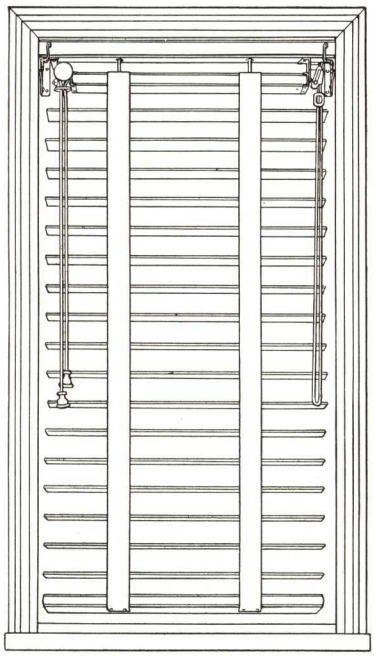
Cord Levelers—Solid brass, attached to raising cords, keep slats horizontal when blind is raised or lowered.

Cords—Braided, flexible, glazed against wear, made especially for Venetian Blinds, in colors to harmonize with tape.

Tapes—Best quality, woven ladder, imported or domestic, with or without ornamental facings.

Center Supports—Between head and top tilting rail supplied on blinds large enough to require them.

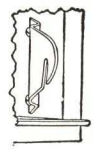
To be sure you receive genuine "Victoria Venetian Blinds" look for the name plate shown above on thick bottom slat.



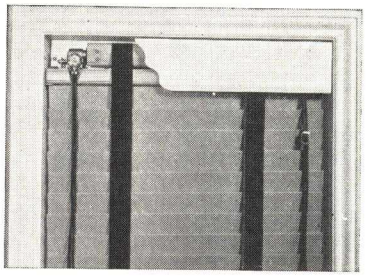
Detachable Blinds—Top tilting bar quickly detachable from head.

Hardware—And other metal parts (except cord holders) steel brass finished nickel-plated or cadmium-plated, also solid brass.

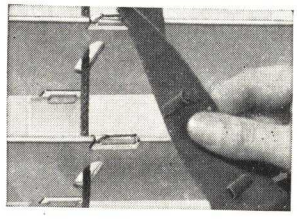
Sill brackets



Side sill brackets



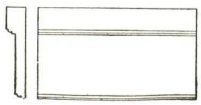
"Bos-Good Type"—Has operating parts above head, covered with fascia if desired.



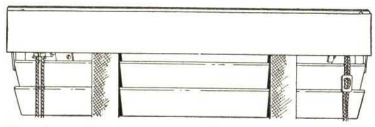
B-G Detachable Tape—For 2⅜, 2 and 1¾ in. slats. Easily removed (without tools) *without* removing cords for dry cleaning or renewal.

Different Colors—Can be used on each side without a special dyeing charge, if standard colors are used.

As tape is attached to both edges of slat, tilting control is positive and slat cannot be disarranged by the wind.

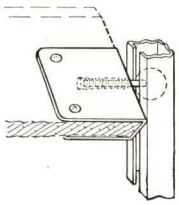


Fascia or cornice boards—several patterns

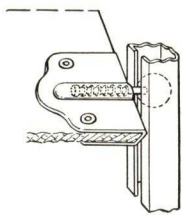


Cornice No. 38 Gives Closed Head Effect

Channel Side Guides—Steel, brass finished or color of blinds, or solid brass or bronze, or aluminum. Steel furnished, unless otherwise specified. ¼x½-in. with metal shoe or ½x½-in. with brass ball, or ½-in. round with ball with spring tension.



½ x ½ in. guide and brass ball on ¼ in. thick slat at intervals of 1½ ft. of height



Square channel and ball on every 7th thin (⅛-in.) slat

For Large Windows

Roll Head Blinds—With ⅞x3½-in. head board, extra heavy side brackets, steel roll, 2⅛-in. diameter, bronze cable, instead of cord through slats for raising, worm gear for tilting slats, with or without oscillating roll, with or without ratchet, with or without hand tape.

Oscillating Roll—Has 3½-in. metal drums for operating cords all inclosed in box 6⅜ in. high, 5¾ in. wide, with front easily removable to get at mechanism.

Mechanical Operator—On oscillating roll head blind, has a set of worm gears that operate in connection with a 5-in. sprocket wheel over which there is an endless brass chain with which the blind is raised and lowered. The blind will automatically remain at any elevation.

BURLINGTON VENETIAN BLIND COMPANY

Manufacturers of Venetian Blinds for Over Half a Century

BURLINGTON, VT.

REPRESENTATIVES IN ALL LARGE CITIES

VENETIAN **BLINDS**

Keep Out the Sun—Permit Perfect Ventilation—Control the Light

A Company Specializing in Venetian Blinds

Venetian Blinds have been a specialty of this company for over fifty years and have been constantly improved to make them as perfect as possible. They are thoroughly modern and will fit into any surroundings. No order is too small to receive prompt and careful attention, and no order too large for factory capacity.

Burlington Venetian Blinds are installed throughout in many of the prominent buildings of the country, and a list of installations will be gladly furnished on request to this office or to our representative in any large city.

Types

BURLINGTON (without headpiece), generally used for openings up to 48 in. wide.

BURLINGTON "E-Z" Single Lift (with headpiece), generally used for openings between 48 in. and 72 in. wide.

BURLINGTON "E-Z" Double Lift (with headpiece), used for blinds over 72 in. in width.

BURLINGTON Traverse Roller, used for extremely large blinds.

BURLINGTON Frame Blinds, for square and semi-circular openings where operating blinds are not feasible.

Manufacture

All our blinds are made to order only. They are the output of a large well-equipped factory, employing men skilled in this line. Sizes of blinds are secured by our representatives as well as the color of finish desired. Each order is then run through the factory according to the specifications received for that order.

Quality of Materials

Slats—We use only the best quality of materials which in our experience of over fifty years has given satisfactory and lasting construction. All wood used is first air-dried and is then kiln-dried to the proper moisture content. Unless some other wood is specified we use Linden, as we consider it the best obtainable for this purpose and gives the best results. It is light, durable, does not twist and will take any kind of finish. Other woods will be used, however, if so desired.

Sizes of Slats—Slats ⅛ in. thick and 2⅜ in. wide are generally used. In small windows either 1½, 1¾ or 2 in. in width are used. The blinds with wider slats are lower priced as fewer slats are required.

Ladder Tape—The tape and interwoven cross straps supporting the slats are of the very best quality of imported or domestic manufacture and may be had in any color.

Cord—We use a hollow braided cord as it does not twist when handled. It is specially treated to prevent wear. Hollow braided cotton center cord is used on Double Lift blinds.

Finishes—Blinds are finished natural wood varnished, stained and varnished, painted, enameled or lacquered in any color.

Operation

Raising and Lowering of Blinds—All our blinds are raised and lowered easily and are secured at any desired elevation by our automatic cord stop. This device is positive in action and may be used on any type of operating blind having a headpiece. It is mounted in the headpiece and the necessity of using a horned hook on the window trim to hold the blind is avoided.

Note: The operating cord is ordinarily placed at the right side of the blind but when conditions require it the position of the operating and tilting cords may be reversed.

Cord Adjusters—The cord adjusters or equalizers are placed on the raising cord in order to keep the blind slats level in the window and to raise the blind evenly.

Burlington Blinds Tilt Easily and Noiselessly—The tilting of slats in all types of our blinds (slats are "raised" flat under each other) is accomplished easily and noiselessly by operating cords at the left of the blind. They are held fixed until changed by our worm gear tilting device which locks them at any desired angle.

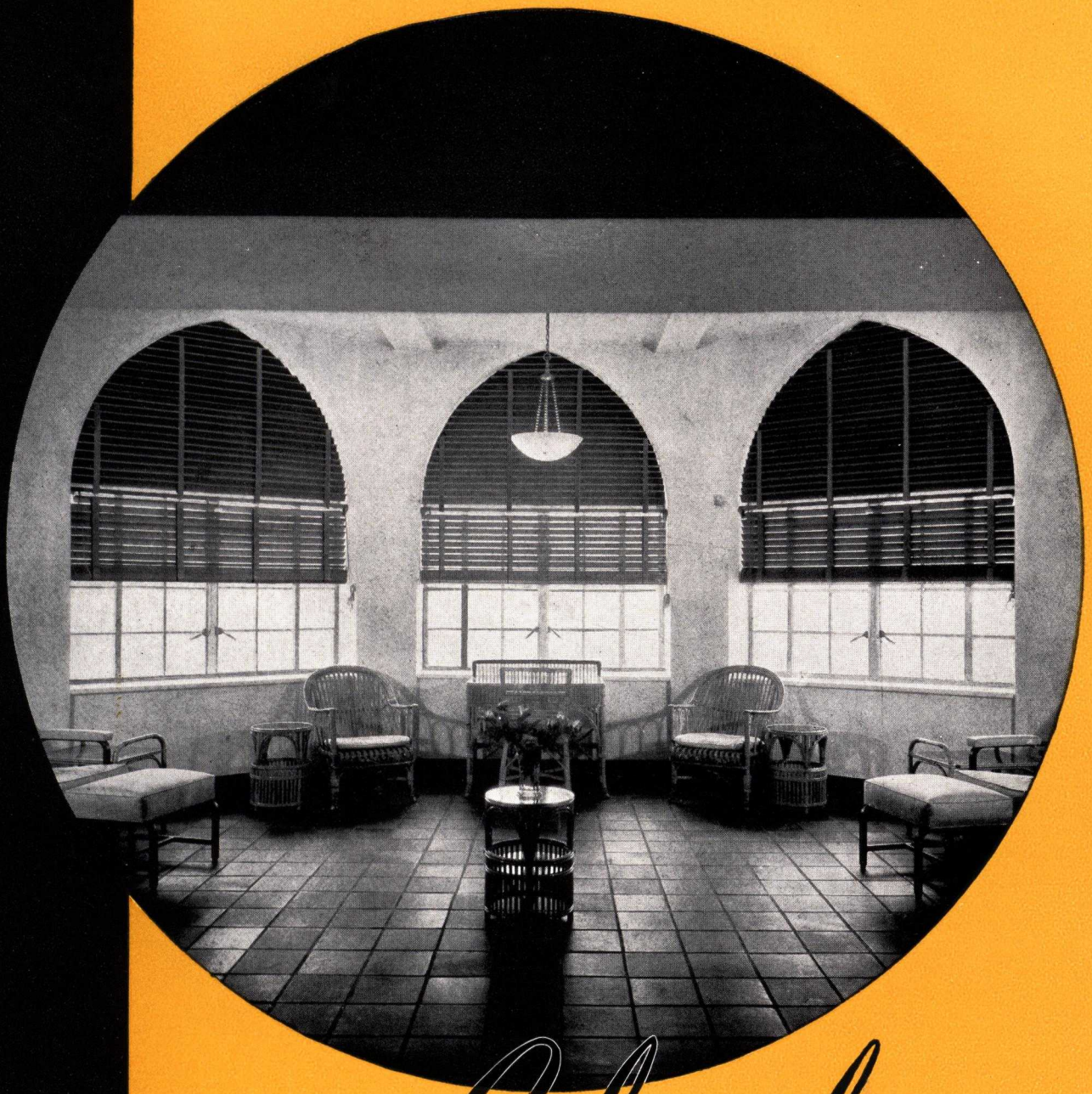
Brackets—Detachable blind brackets are sent with each blind which allows the removal of the blind from the brackets without the use of tools, and if required by the window trim special brackets are furnished. To prevent blind swinging in the window opening, hold-down brackets can be used. These engage with the bottom bar of the blind when the blind is completely lowered.

Guides—These are most desirable to prevent blinds swinging in the window opening where the wind is strong. Either Rods or Channel Guides can be used. Rod guides are made of brass and channel guides are made of brass, aluminum or steel. The fittings engaging with master slats placed at intervals in the height of the blind and used in connection with the guides are of solid brass. With channel guides the blind can readily be removed from the window without removing the guides.

Frame Blinds—When it is desired to shade arched windows we provide a frame for the curved portion set with stationary slats placed in a horizontal or radial position and spaced to admit light and ventilation. Square top transoms can be treated in a similar manner.

Ease of Installation—All our blinds are shipped completely finished with the necessary hardware and instructions for proper installation of each type of blind. As each blind is built to fit each opening they are easily installed with a few screws.

Details and samples will be mailed on request.



Columbia
VENETIAN BLINDS
and
WINDOW SHADES

THE COLUMBIA MILLS INC. 225 FIFTH AVENUE, NEW YORK, N. Y.

Columbia

WINDOW TREATMENTS

VENETIAN BLINDS **WINDOW SHADES**

SHADE CLOTH **SHADE ROLLERS** **AWNING ROLLERS**

THE COLUMBIA MILLS, INC. are the largest manufacturers of Venetian Blinds and Window Shades. With factories in the East, Middle West, and Far West they are fully equipped to give the best in service and workmanship on jobs of any size. Columbia Quality products are continually standing up under the most rigid conditions.

SALES CHANNELS

• Venetian Blinds

Columbia Venetian Blinds are sold by Authorized Dealers, located throughout the country. These dealers have been appointed for their responsibility and their capacity to best fulfill the Architects' requirements. They are prepared to co-operate with the profession in planning and carrying out installations.

The names of authorized dealers in your locality will be furnished upon request. Their services can be fully relied upon and will meet with your approval.

• Window Shades and Rollers

Columbia Window Shades and Rollers are obtainable in specialty window shade shops, reliable department stores, at decorators, and at house furnishing stores all over the country, so that there is never any difficulty in procuring replacements, regardless of who makes the original installation.

ARCHITECTURAL SERVICE

Architects are invited to avail themselves of Columbia's Architectural Service Department. An expert will assist you in solving your Venetian Blind and Window Shading problems, and will help you to prepare specifications. Each of our branches (listed below) maintains such a service. Through this means you may be assisted in the selection of the proper type of window treatment, and be recommended to reliable dealers to supply your needs.

THE COLUMBIA MILLS, INC.

GENERAL OFFICES: 225 Fifth Avenue, New York

BRANCH OFFICES

BOSTON
CHICAGO
CINCINNATI
DALLAS
DENVER
DETROIT
JERSEY CITY
KANSAS CITY
LOS ANGELES
MINNEAPOLIS
NEW ORLEANS
PHILADELPHIA
PITTSBURGH
PORTLAND
ST. LOUIS
SAN FRANCISCO
SEATTLE

COLUMBIA VENETIAN BLINDS

The Residential Blind Showing the Appearance of the Smaller Scale of the 1¾-in. Slats

COLUMBIA manufactures three brands of Venetian Blinds, each for a purpose all its own. These are the Residential, Imperial and Controlite brands.

The three brands are all made with the same high standards of workmanship and material. Every blind is subject to the same rigid inspection and careful supervision. The important differences in the three brands are limited, for the most part, to refinements in operation.

RESIDENTIAL BRAND

For Residences • Has 1¾-In. Slats

The Columbia Residential Blind is particularly smart, designed especially for homes. Its chief feature is its narrow 1¾-in. slats that give the blind a compact appearance. In most cases it can be hung directly to the stop-bead of the window. Being made for residential windows, it is not manufactured in sizes over 100 sq. ft. in area or 12 ft. in width.

The hardware, in keeping with the blind, is neat and unobtrusive. A worm gear is used on this type of blind to regulate the tilting of the slats. It keeps them in position once they are set. An Automatic Stop holds the slats at any height without tying the lifting cords.

IMPERIAL BRAND

For Very Finest Work • Has 2⅜-In. Slats • Area to 250 Sq. Ft.

A Blind of the very finest quality. Designed particularly for commercial installations in offices, public buildings, etc., where the best is desired. It has many unique features found in no other blind on the market.

The slats are 2⅜ in. wide, smoothly finished. A feature is the Columbia Patented Automatic Stop, which holds the blind at any desired height, without the need of first hitching the lifting cords to a cord holder. To lower, a slight pull on the cords releases the blind. The Columbia Patented Worm Gear Tilt Device is included with the Imperial Blind. This insures easy tilting of the slats and holds them in a positive manner once they are set.

CONTROLITE BRAND

Similar to Imperial but Without Some of Imperial Refinements

Where cost is a factor in commercial work the use of the Controlite Blind is suggested. It is a sturdy well built blind, guaranteed to meet the most rigorous tests. Although it does not have all the special features of the Imperial, it will stand up equally as well. Part of its standard equipment is the Worm Gear Tilt Device and Automatic Stop. The Controlite Blind has proven very popular for large commercial installations.

(Left) Mechanically Operated Blind in a Large Bank

(Below) The Controlite Blind in Large Commercial Office

COMPARATIVE DETAILS OF THREE BRANDS

The specifications of the three brands of Columbia Blinds are given in the comparative table that follows. These differences are readily appreciated and will be of assistance in preparing your specifications.

DETAILS	RESIDENTIAL	IMPERIAL	CONTROLITE
Operation	Pulley operated type. (Roller and Mechanical Lifts not supplied with Residential Blinds). Blinds over 60″ in width. are made Compound Pull.	Pulley operated type for blinds up to 100 sq. ft. Blinds over 60″ in width are made Compound Pull.	Same as for Imperial
Head Rail	1⅞″ wide by ⅞″ thick	2⅜″ wide by 1⅛″ thick	2⅜″ wide by 1⅛″ thick
Tilt Rail	1⅞″ wide by ⅝″ thick	2⅜″ wide by $\frac{49}{64}$″ thick	2⅜″ wide by $\frac{49}{64}$″ thick
Slats	1¾″ wide by ⅛″ thick	2⅜″ wide by ⅛″ thick	2⅜″ wide by ⅛″ thick
Bottom Rail	Single Pull: 1⅞″x⅝″. Compound Pull: 1⅞″x⅞″. All Compound Pull Bottom Rails use a regular ⅛″ Slat on the bottom.	Single Pull: 2⅜″x$\frac{49}{64}$″ Compound Pull: 2⅜″x1⅛″. All Compound Pull Bottom Rails use a regular ⅛″ Slat on the bottom.	Single Pull: 2⅜″x$\frac{49}{64}$″ Compound Pull: 2⅜″x1⅛″. All Compound Pull Bottom Rails use a regular ⅛″ Slat on the bottom
Pulleys	Lignum Vitae	Machine Steel Ball-Bearing	Lignum Vitae
Hardware	Bright zinc-plated. Copper plate if so ordered. Worm Gear is not plated and is always furnished in the natural aluminum color, its face painted same color as blind.		
Brackets	Columbia Universal Patented Snap Lock Bracket "U" Type Center Support Brackets supplied with	Same all Blinds taking Center Supports	Same
Tilting Device	Columbia Worm Gear Tite Device. Equipped with Cord Knobs.	Same Same	Same Same
Maximum Size	Maximum area: 100 ft. Maximum width: 12 ft.	Maximum width: 16 ft. Maximum length: 25 ft. Maximum area: 250 sq. ft. irrespective of width or length.	Same as Imperial
Minimum Size	12″x24″ or 2 sq. ft. with 12″ as the minimum width	Same	Same
Finish	High Grade Enamel	High Grade Enamel	High Grade Enamel
Standard Colors of Slats	Eggshell White, Guernsey Cream, Champagne, Citron, Lettuce, Light Olive, Apple Green Oyster White, Colonial Ivory, Peach Skin, Salon Gray, Coral, Azure, Natural wood, Parchment		
Tape Colors	Azure, Peach Skin, Cream, Mingled Linen, Wine, Chocolate, White, Rust, Drab, Nile Green, Apple Green, Tea Rose, Black, China Blue, Red.		
Color of Cords	Apple Green, Nile Green, Rust, Tea Rose, Azure, Cream, Peach Skin, White, Wine, Linen, Chocolate, Black, China Blue, Red.		
Automatic Stop		Supplied with all Blinds	
Special Equipment Furnished Where Specified	Slat Clips along with either inside, outside, or offset Slider Guide Brackets and aluminum moulding. Slat Clips along with brass guide rod and brackets. Snap Stops (see page 5) or Sill Brackets. Special Types of Universal Brackets.		
Special Color	Slats for Blinds, Rails, Tapes and Cords all matched to special colors at an added cost if required.		

TILT RAIL CONSTRUCTION OF IMPERIAL AND CONTROLITE BRANDS

Tilt Rails for Blinds over 40″ wide are made of more than one piece. Anti-sag Center Supports are used to prevent sagging.

Width	Tilt Rail	Tapes	Center Supports
Up to and includ. 40″	1 piece	2	No C.S.
Over 40″ to 69″	2 pieces	3	1 C.S.
Over 69″ to 94″	3 pieces	4	2 C.S.
Over 94″ to 121″	4 pieces	5	3 C.S.
Over 121″ to 148″	5 pieces	6	4 C.S.
Over 148″ to 175″	6 pieces	7	5 C.S.
Over 175″ to 193″	7 pieces	8	6 C.S.

TILT RAIL CONSTRUCTION OF RESIDENTIAL BRAND

Tilt Rails for Blinds over 40″ wide are made of more than one piece. Anti-sag Center Supports are used to prevent sagging.

Width	Tilt Rail	Tapes	Center Supports
Up to and incl. 40″	1 piece	2	No C.S.
Over 40″ to 69″	2 pieces	3	1 C.S.
Over 69″ to 94″	3 pieces	4	2 C.S.
Over 94″ to 121″	4 pieces	5	3 C.S.
Over 121″ to 144″	5 pieces	6	4 C.S.

BUNDLE SPACE FOR IMPERIAL, CONTROLITE AND RESIDENTIAL BLINDS

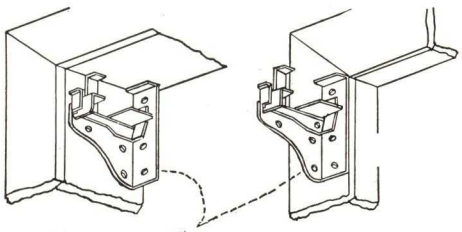
Bundle space represents the space occupied by the Blind when fully raised. The most satisfactory method of installing Venetian Blinds is to allow for a pocket above the window so that the Blind is completely concealed when raised. The tables below give data for figuring size of pockets. Where it is not practical to construct pockets, the bundle space shows how high Blinds should be hung above the opening, if installed on the casing, to clear the window entirely when raised. It will also show how much light will be cut off if the Blind is hung between the jambs. *For illustration, see page 8.*

Type	Bundle Space	Width of Pocket
IMPERIAL AND CONTROLITE BLINDS		
Pulley	3⅜″ plus 1¼″ for each foot in height of window opening	4¼″
Roller No. 1: Blinds up to 40 sq. ft.	5¾″ plus 1¼″ for each foot in height of window opening	5 ″
Roller No. 2: Blinds up to 80 sq. ft.	5¾″ plus 1¼″ for each foot in height of window opening	5½″
Roller No. 3: Blinds up to 120 sq. ft.	7 ″ plus 1¼″ for each foot in height of window opening	6¼″
Roller No. 4: Blinds over 120 sq. ft.	7¾″ plus 1¼″ for each foot in height of window opening	7 ″
Mechanically Operated: Blinds up to 160 sq. ft.	7¼″ plus 1¼″ for each foot in height of window opening	7¼″
Mechanically Operated: Blinds from 160 sq. ft. to 250 sq. ft.	8¾″ plus 1¼″ for each foot in height of window opening	7¼″
RESIDENTIAL BLINDS		
Pulley	2⅜″ plus 1¾″ for each foot in height of window opening	4¼″

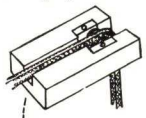
Periodical improvements may effect these specifications to some extent. The above specifications are therefore subject to change without notice.

FEATURES OF COLUMBIA BLINDS

Universal Brackets
Brackets may be attached either inside or outside of casing. Head rail of the blind slips into brackets and locks itself there. Instantly removable by finger pressure on retaining guard.
Bracket installed for inside "A" and "B" style hanging.

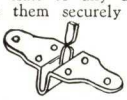


Bracket installed for outside "C" style hanging.

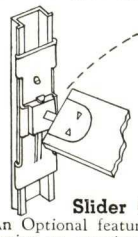


Automatic Stop
The new Automatic Stop which holds the slats at any height without the necessity of fastening the lifting cord.

Worm Gear Tilt Device
Tilts slats to any desired angle and holds them securely in place.



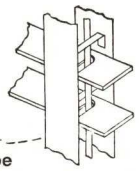
Anti-Sag Center Support
Used on the wider Columbia Blinds to eliminate all possibility of sagging or warping. Gives extra support at center of head rail without interfering with tilting of slats.



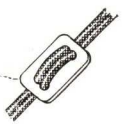
Slider Guides
An Optional feature to prevent billowing or swaying of blind in the wind.

Tilting Cord
Easy to grip. Lifting and tilting cords are of *Columbia* glazed braided cord. Furnished with cord knobs. Knobs painted to match blinds.

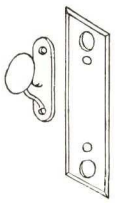
Single Pull, Two-Tape Blind



Tape
Specially woven tape. Cross tabs are woven directly into vertical tapes.



Equalizer
This simple device keeps lifting cords uniform and insures even raising and lowering of the blind.



Cord Holder
Furnished when Automatic Stop is omitted. Adapter plate finished to match color of the blind is furnished where necessary.

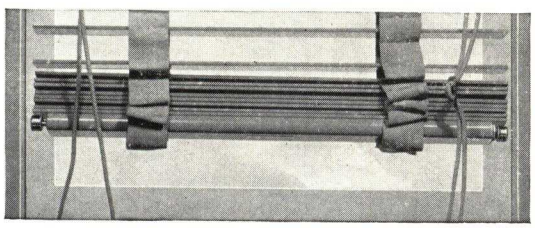
THE COLUMBIA SNAP STOP

Patented

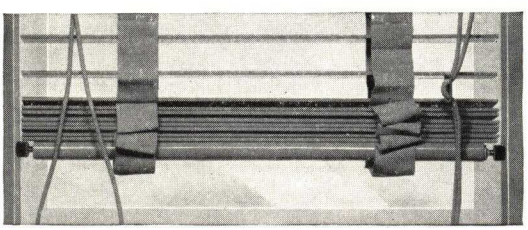
Prevents Swaying and Billowing of Blinds

This is a new patented device for preventing swaying or billowing. It is fitted in the bottom rail and equipped with rubber tipped plungers which grip the window jambs or stops. See illustration below. This device can be used only on inside (A or B) installations. When not in use, the plunger on the right hand side recedes into the bottom rail and is held in position by a trigger.

Slight pressure on the trigger will release the plunger so that the Snap-Stop will hold the blind. To disengage the Snap-Stop, it is necessary only to grasp the bottom rail and move it to the right. This pushes the plunger back into its recess where it is held by the trigger mentioned above. Can be supplied with all three brands of blinds, but at an extra charge.



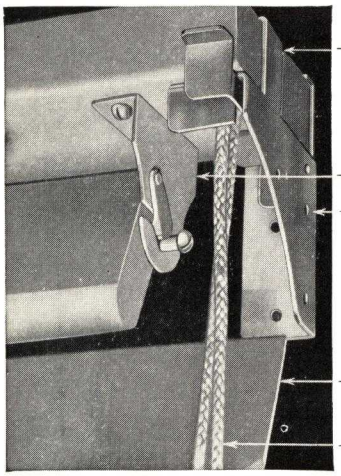
Snap Stop ← Closed



Snap Stop ← Opened

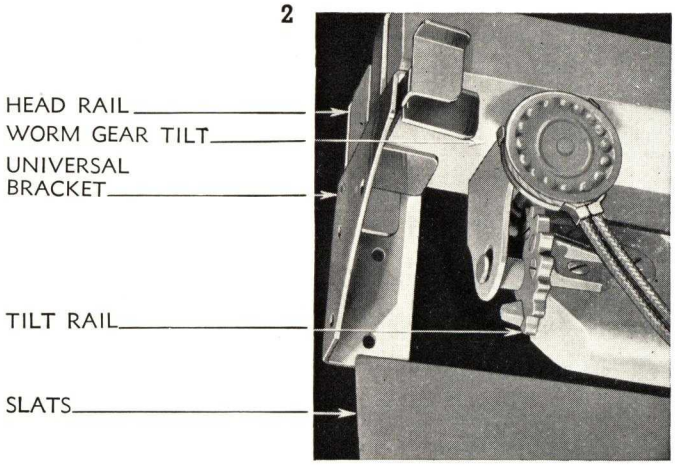
OPERATION AND INSTALLATION

1



Right End of Head Rail of Pulley Type

2



Left End of Head Rail of Pulley Type

OPERATION

The operation of Columbia Venetian Blinds is simple. There are just two cords—one to raise and lower the slats—the other to tilt them.

For blinds installed at ordinary size windows the slats are raised and lowered by means of pulleys. As the size of the blind becomes larger, it is necessary to change the construction somewhat so that the blind will operate as easily and efficiently as the smaller sizes, despite the increased size and weight. These changes are made on Columbia Blinds in the following manner:

On Blinds Up to 100 Sq. Ft. in Area—Pulley operation is used. (Illustration: See Page 8.)

On Blinds from 80 to 120 Sq. Ft.—We recommend that blinds of this size be raised and lowered by means of an Auxiliary Roller Lift. We do not make blinds over 100 sq. ft. without roller lift. (Illustration: See Page 8.)

On Blinds Over 120 Sq. Ft.—Mechanical roller lift is recommended. We do not make blinds over 140 sq. ft. without mechanical lift. (See Page 8).

Headrail—Illustration 1 shows the right end of the head rail of the Columbia Brand. The automatic stop arrangement that stops the blind at any desired height without the need of hitching the lifting cords is placed in this end of Head Rail.

Illustration 2 shows the left end of the head rail of the Columbia Brand. The worm gear device for tilting the slats is shown here.

INSTALLATION

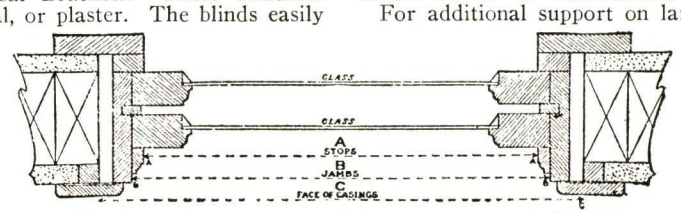
Columbia Venetian Blinds may be installed at any type window, skylight, transom or glass door.

All three brands of blinds are hung at the window by means of Columbia Patented Universal Brackets. These Brackets may be installed on wood, metal, or plaster. The blinds easily slip into them, and a snap lock holds them in place. The Universal Brackets are used for installations either on the inside or face of the window casing.

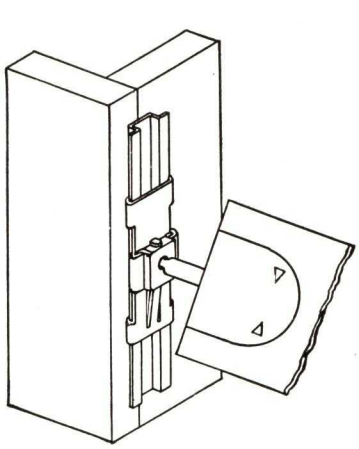
Illustration 2 above, shows the head rail held in place by the Universal Bracket. Illustration 3 shows the three points at the window where blinds are usually installed. "A" installation is chiefly for the Residential Brand. "B" is used where the reveal is 2 in. or more deep. "C" installation is used where "A" or "B" installations are not possible.

For additional support on large size blinds, a U-type center support bracket may be supplied which gives additional support to the Head Rail.

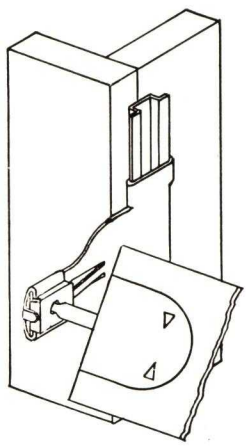
Where there is a great deal of wind pressure, Slider Guide equipment may be furnished to keep the blind from swaying in the wind. The three types of slider guides are shown below.



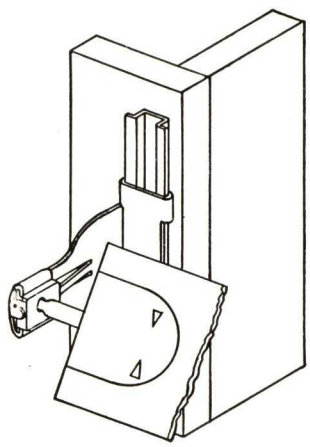
3 Where Blinds May Be Installed



No. 1: Inside Slider



No. 2: Offset Slider



No. 3: Outside Slider

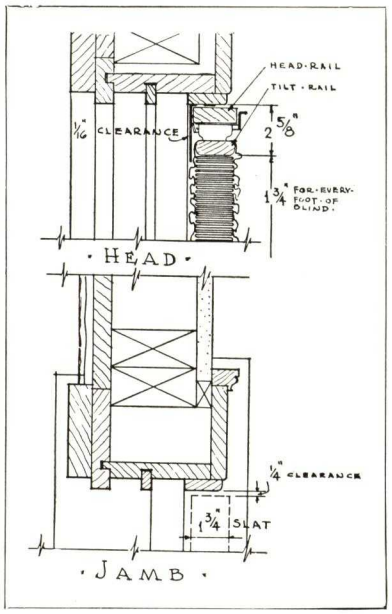
THREE TYPES OF SLIDER GUIDES

The three types of slider guides shown at the left are for inside or outside installations. *No. 1* is used when the blind is hung between jambs. *No. 2* is used when the blind is hung between jambs but where there is not sufficient clearance for No. 1. *No. 3* is used when the blind is hung to the face of the casing.

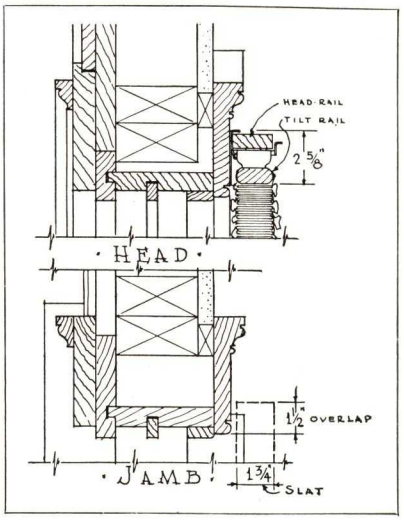
Installation Details Continued on Next Page.

INSTALLATION DETAILS

Continued from preceding page



Provision for Venetian Blinds should be included in preliminary and finished drawings for best results. The drawings on this page indicate the most usual methods of installing Columbia Venetian Blinds.



STOP BEAD

This method of installation is recommended where window reveal is shallow or entirely eliminated. Curtains may be hung in the usual way or under valances. Drawing above shows detail for Residential Blind. For dimensions on Controlite Blind see specifications on page 4.

INSIDE CASING

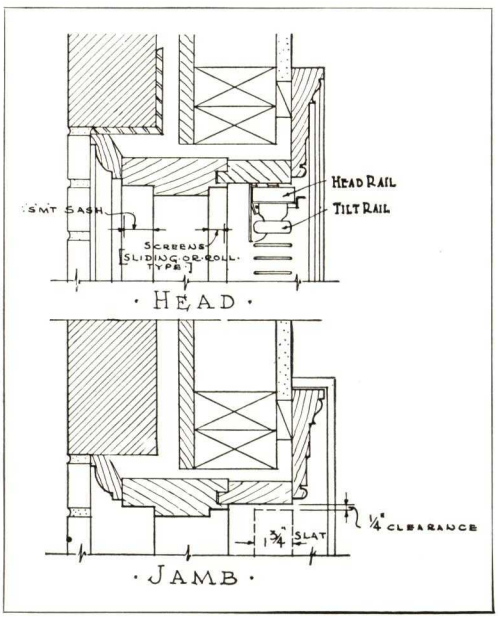
Where reveal or inside casing is sufficiently deep, this type of installation is recommended. Where a battery of windows occur having a total area of 80 sq. ft. or over, either two or more blinds should be used, or a single blind with roller lift, see page 9. Drawing below shows detail for Residential Blind. For dimensions on Controlite Blind see specifications on page 4.

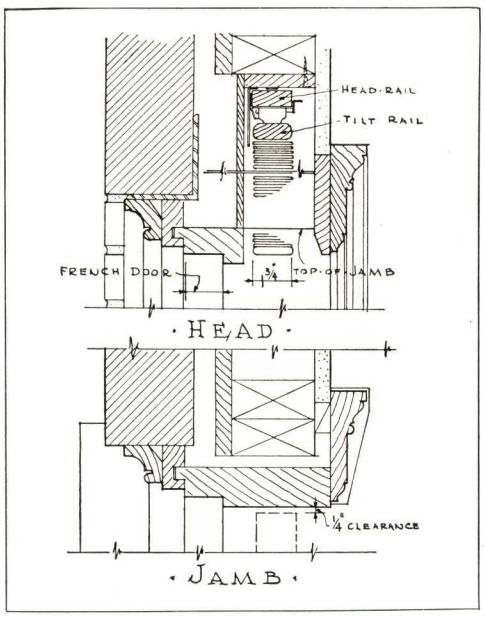
FACE OF CASING

With this arrangement of securing blinds to trim, it is advisable to hang draperies or curtains under a valance board covered with same material or painted to match trim and blinds. Stock valance boards are available. See page 11. Drawing above shows detail for Residential Blind. For dimensions on Controlite Blind see specifications on page 4.

CONCEALED POCKET

A most satisfactory manner of installing Venetian blinds, particularly over French doors or at windows where in-swinging window screens are to be used. For height of pocket see bundle space allowances on page 4. The illustration below shows detail for Residential Blind. For Controlite Blind see specifications on page 4.





DETAILS OF OPERATING MECHANISMS
OF REGULAR PULLEY TYPE BLINDS

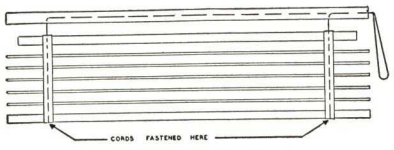
16
98

The raising and lowering of the average size Pulley Type Venetian Blind in all three brands is accomplished by means of pulleys and cords. The arrangement of the pulleys and cords differs for various size blinds.

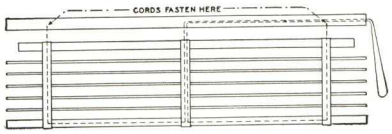
Blinds under 60 in. in width are single pull. The cords are fastened to the bottom rail and run up through the slats behind the tapes and over the pulleys in the head rail.

For blinds 60 in. and wider we use either of the two compound pull arrangements of pulleys and cords as shown below. In these types, pulleys are located in both the bottom rail and the head rail. These arrangements allow the same ease of operation as the smaller blinds.

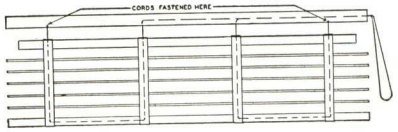
THREE TYPES OF PULLEY ARRANGEMENTS



SINGLE PULL
Two Tapes
For Widths Up to 60 In.

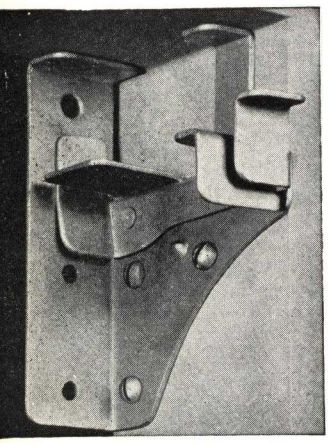


COMPOUND PULL
Three Tapes
For Widths Over 60 In.



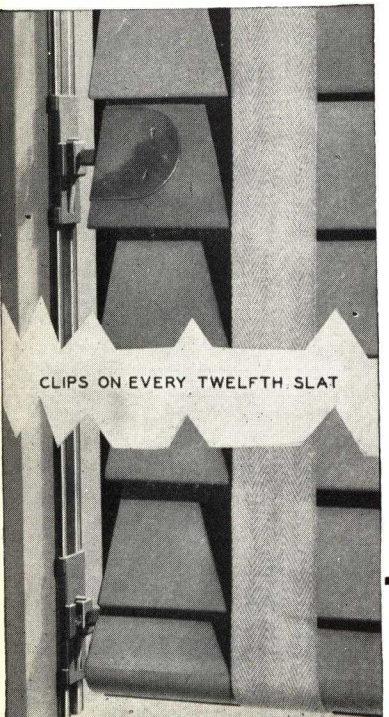
COMPOUND PULL
Four Tapes
For Areas Up to 100 Sq. Ft.

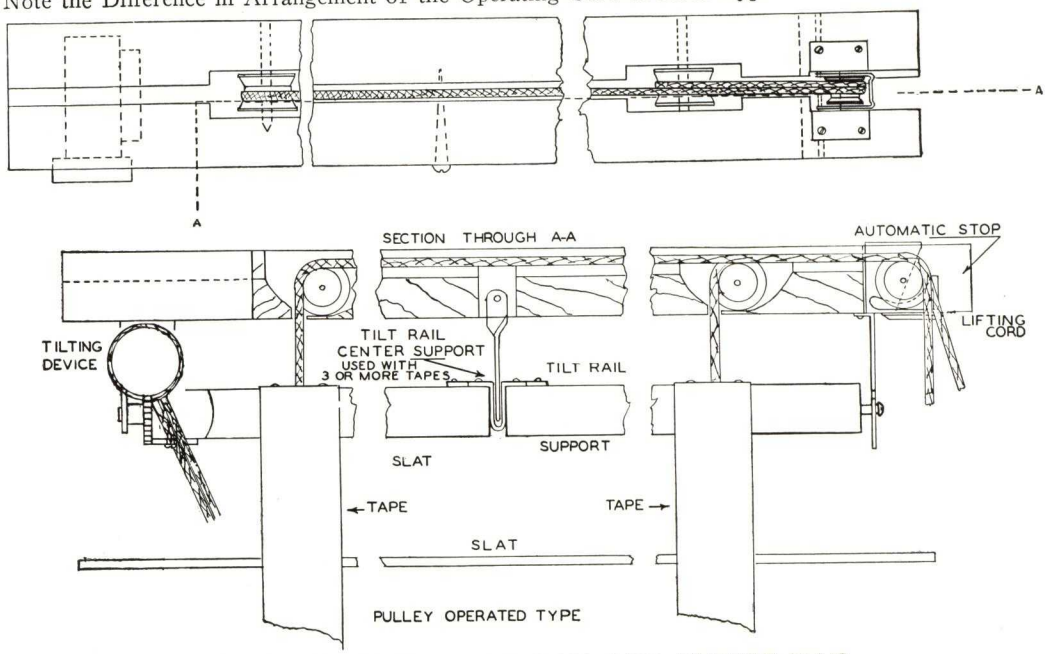
Note the Difference in Arrangement of the Operating Cord in Each Type



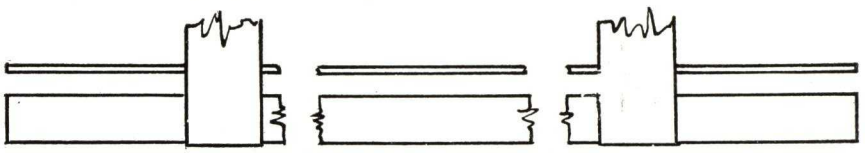
(Above) Universal Bracket

(Below) Showing Intermediate and Bottom Slider Guides



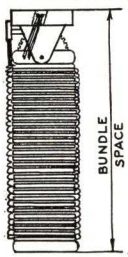


FRONT VIEW OF HEAD RAIL AND TILTING RAIL



FRONT VIEW OF BOTTOM RAIL

MEANING OF BUNDLE SPACE



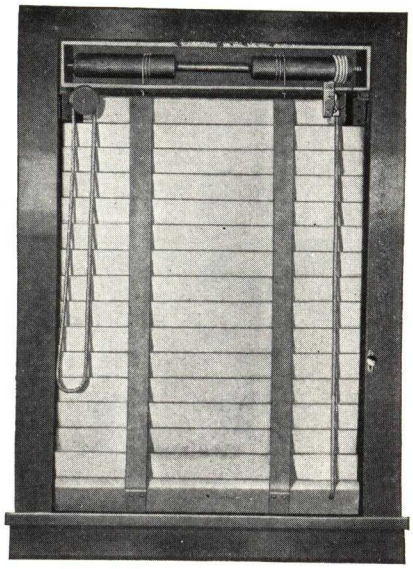
The bundle space is the space occupied by the blind when fully raised. This varies for each blind and depends on the height of the blind as well as the size slat. See notes at bottom of Page 4.

QUALITY OF PULLEY DEVICE AND CORDS

On the Imperial Blind, the pulleys are ball-bearing and steel. On the Controlite and Residential Blinds, they are lignum vitæ. These pulleys will run free at all times and are one reason Columbia Blinds raise and lower easily.

DETAILS OF OPERATING MECHANISMS

OF ROLLER LIFT TYPE BLINDS



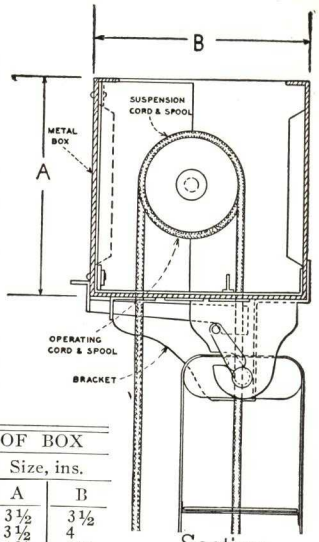
Model Showing Small Roller Lift

THE PRINCIPLE OF THE ROLLER LIFT BLINDS

Made in Imperial and Controlite Brands

Roller lifts are for use on any blind where additional ease of operation is desired, but they are especially recommended for blinds 80 square feet or more in area. We do not build blinds without roller lift operation that contain over 100 square feet. The roller lift is housed in an open top metal box, can be supplied with removable front cover and it takes the place and position of the headrail in the Pulley Operated types. The slats are lowered and raised by means of a No. 4½ braided cord which is wound on oscillating spools, as illustrated. As the spool revolves it travels along its axis so the lifting cords wind evenly on it, thus the slats are always kept in perfect alignment. Illustration at the left shows the No. 1 Roller Lift with the front of the box cut away. For size of boxes see table at right.

SIZE OF BOX		
Blind area, sq. ft.	Size, ins.	
	A	B
40	3½	3½
41-80	3½	4
81-120	4¾	4¾
120 up	5½	5½

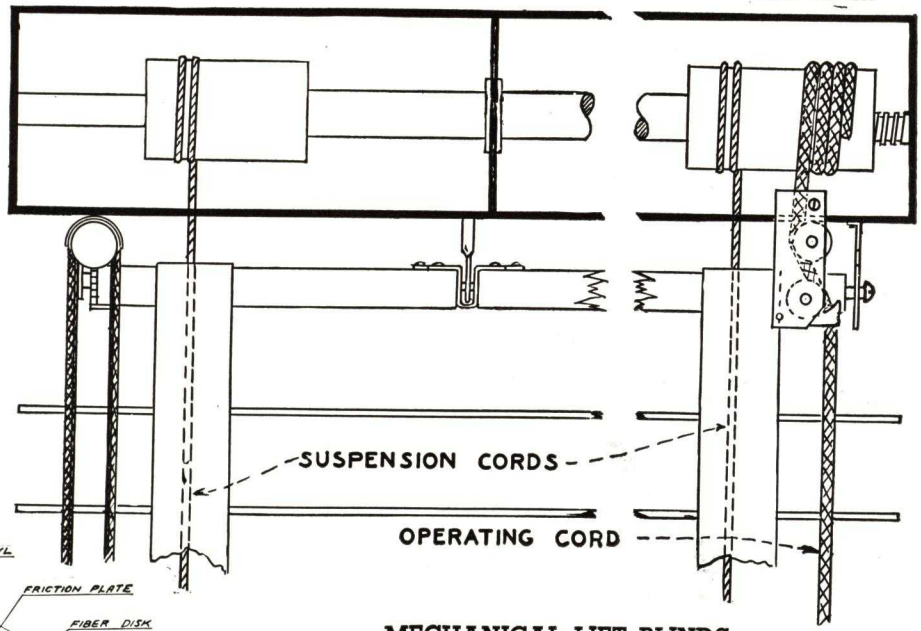


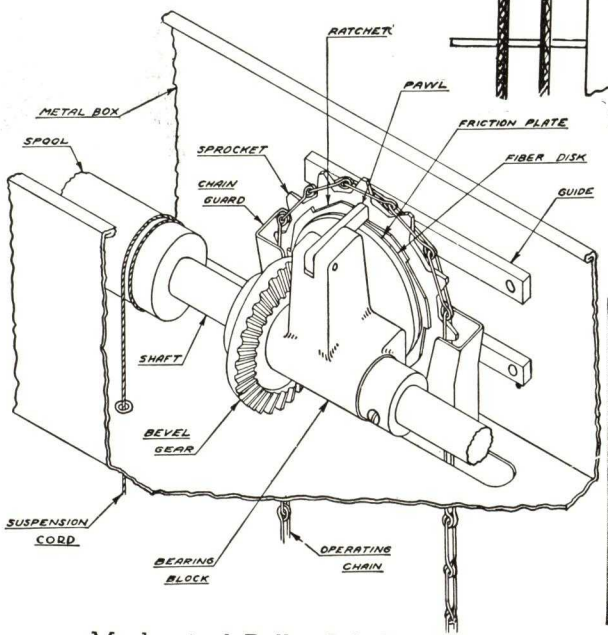
Section Through Metal Box and Head

Right:

Front View of Roller Type Blinds Showing Operating Principle and Parts

Note—Where Metal Box is enclosed in an architectural transom of large windows, provision must be made for removing face of transom and metal box for access to inside of box for replacement of cords in case of accident. Face of transom should be screwed in place.

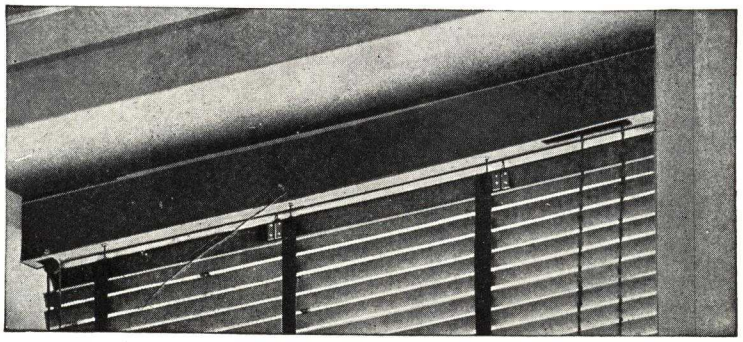




Mechanical Roller Lift Style No. 3

MECHANICAL LIFT BLINDS

On blinds over 120 sq. ft. we recommend mechanical roller tilting mechanisms to insure easy and proper operation of blinds. In any event, we do not make blinds over 140 sq. ft. without mechanical roller lift operation.

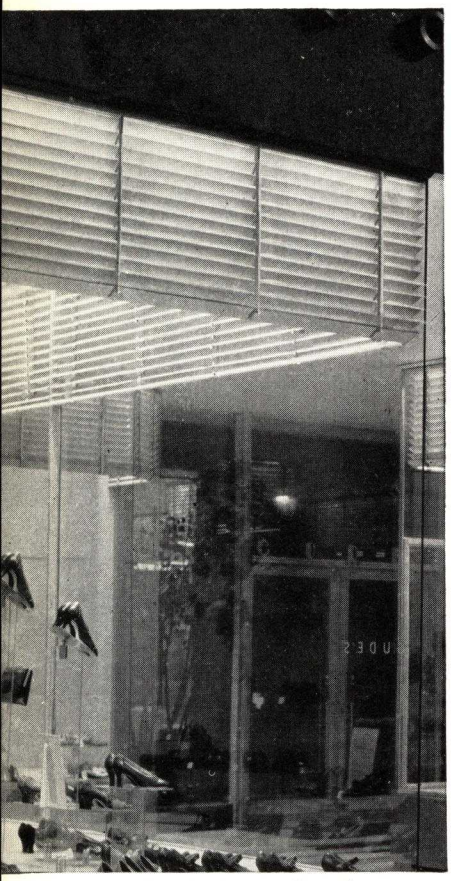


Mechanical Roller Lift Installed

COLUMBIA VENETIAN BLINDS

SPECIAL TYPES OF COLUMBIA BLINDS

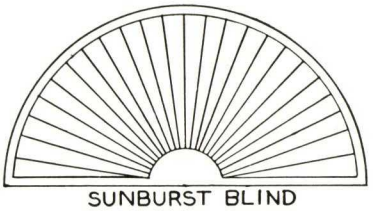
The illustrations below show some of the ways in which Columbia Blinds may be adapted to special treatments such as Skylights, Circle Top and Gothic windows.



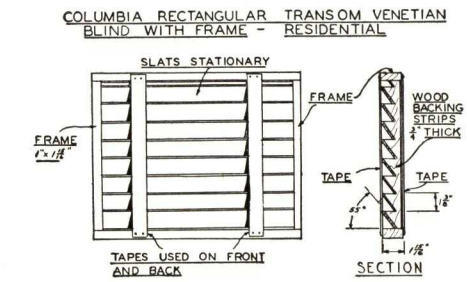
Columbia Valance Blind

The new valance blind shown at the left is designed especially for store windows. It meets the need for an attractive valance made especially for this type of work.

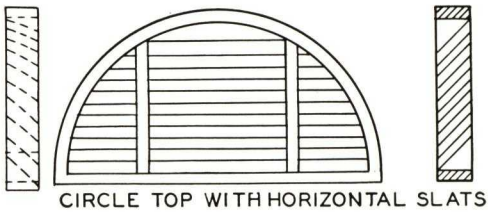
Tapes have been replaced by metal hanging strips, finished in a bright zinc plate. The slats fit into these strips at a fixed angle of 45 degrees. The slats are removable. Metal strips fold up so that window may be cleaned.



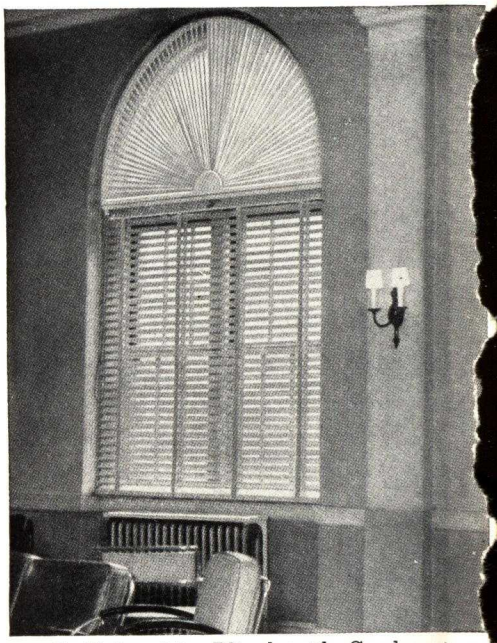
SUNBURST BLIND



FOR DETAILS OF THIS FRAME CONSTRUCTION, WRITE TO COLUMBIA MILLS



CIRCLE TOP WITH HORIZONTAL SLATS



A Columbia Blind with Sunburst

GOTHIC HEAD BLINDS

As installed in the New York Hospital Group, Cornell Medical Center, New York

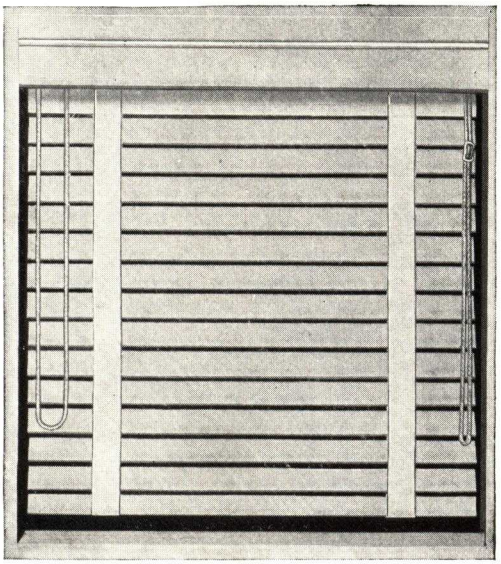
COLUMBIA BLIND FASCIAS

COLUMBIA STANDARD FASCIAS

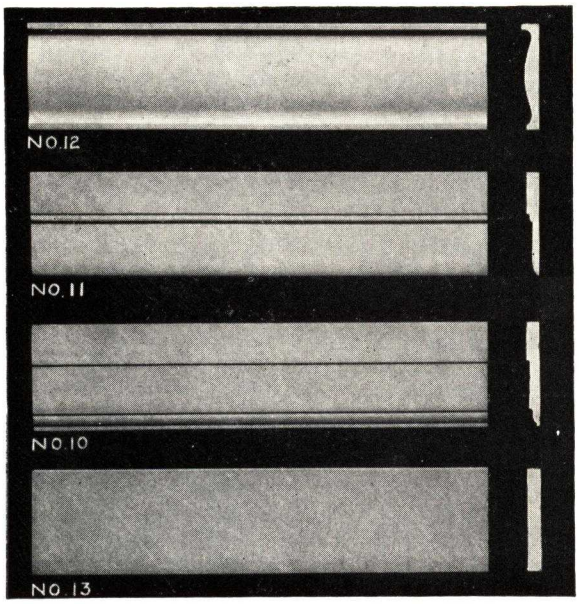
The use of a fascia is recommended with Venetian Blinds as it hides the brackets and operating mechanism at the head of the blind.

Columbia Fascias are made of wood and are furnished in four standard shapes as illustrated on this page. They are ordinarily painted the same color as the slats, but can also be had in special colors.

Columbia Fascia can be used for either inside or outside installations. For the latter, it is customary to have returns at each end making a regular cornice. The length of the returns depends upon whether or not the cornice should hold curtain and drapery rods as well as the blind. In ordering, be sure to give the dimension of the return and to make allowance for easy clearance of the blind in the width.



Columbia Fascia No. 11 Used on Inside Installation



Columbia Venetian Blind Fascia

SPECIFICATIONS FOR CONTROLITE BRAND

Venetian Blind Specification for.....(name)
Building .....(address)

General—All Venetian Blinds called for in these specifications and shown on plans or drawings shall be manufactured by THE COLUMBIA MILLS, INC., 225 Fifth Avenue, New York, N. Y. Only first quality materials shall be used, assembled in a workmanlike manner throughout to conform with the following specifications:

Brand—Blinds to be furnished under these specifications shall be the Columbia "Controlite" Brand.

Operation—Blinds up to 80 sq. ft. shall be regular pulley type assembly and lift raising cords, operating over pulleys on steel shafts. Blinds 60″ wide and less made single pull. Blinds over 60″ wide are made compound pull. Blinds over 80 sq. ft. shall be equipped with Columbia Auxiliary Roller Lifts.

Head Rail—Shall be 2⅜ in. wide by 1⅛ in. thick, exposed edges to be thoroughly sanded and rounded. Cord and pulley routings to be clean cut allowing sufficient clearance for free action of cords and pulleys.

Tilt Rail—Shall be clear well-seasoned wood 2⅜ in. wide by $\frac{13}{64}$ in. thick with exposed edges rounded and Cord slots shall be clean cut 1⅛ in. long by $\frac{5}{16}$ in. wide.

Slats—Shall be of uniform size 2⅜ in. wide and ⅛ in. thick, made of best seasoned Bass Wood, free from pin knots, machine marks, etc. Cord slots shall be clean cut, without fractured edges, not over $\frac{5}{16}$ in. wide slot. Ends and cord mortises shall be thoroughly finished.

Bottom Rails—(Blinds less than 60 in. in width.) Shall be best seasoned wood, 2⅜ in. wide by $\frac{13}{64}$ in. thick, edges thoroughly sanded and rounded. Recesses to be provided for knotting of lift cords.

Bottom Rails—(Blinds over 60″ wide.) Shall be best seasoned wood, 2⅜ in. wide by 1⅛ in. thick. Under side to be recessed for cords and pulleys. Furnished with regular ⅛ in. covering slat on the under side.

Hardware—All hardware to be steel, bright zinc-plated. Face of worm gear painted to match slat color, rest of gear natural aluminum color.

Brackets—All pulley-operated blinds shall be hung on Columbia Universal Patented snaplock brackets, to enable removal of blinds for cleaning, etc.

Tilt-Device—All blinds shall be equipped with Columbia Worm Gear tilt device insuring smooth and quiet operation of blind by use of tilt cords.

Automatic Safety Stop—All blinds shall be equipped with Columbia Automatic Safety Stop which holds the blind in any position without the necessity of fastening the cords.

Center Supports—Blinds over 43 in. in width and wider shall be equipped with bright zinc-plated steel center supports to eliminate possibility of sagging or warping. To be of a design to allow full angle of tilt in either direction without interfering with slats.

Finish—All head rails, tilt rails, slats and bottom rails including ends shall be finished with high grade enamel to produce a semi-gloss velvet finish. Color to be selected from Columbia color line.

Tapes—Shall be first quality with cross straps interwoven, free from defects in warp, woof or weaving. End tapes shall be spaced not less than 4 in. or over 9 in. from ends of slats, intermediate tapes spaced not more than 28 in. on centers.

Cords—All cords shall be first quality No. 4½ braided cord and glazed to minimize wear. They shall be of sufficient length to properly control the tilting and raising of the blind from the floor.

Installation—To be made in a thoroughly workmanlike manner in accordance with manufacturer's standards, and to be subject to inspection and approval of manufacturer's and architect's representative.

Note: Specifications for the roller and mechanically operated blinds, and for the Columbia Imperial and Residential Brands may be had upon request. Subject to change without notice.

COLUMBIA SHADE CLOTH

- NIAGARA
- DAMASKO HEVI-DUTY
- CRESCENT TINT
- VELLMO

Columbia Shade Cloth is manufactured in several grades, each grade for a particular service. Following will be found a detailed description of each quality. Samples of each will be sent upon request to any of our branch offices.

Each quality of Columbia Shade Cloths is manufactured to the same high standards. Each is rigidly inspected. Shade accessories, including brackets for any type of installation can be furnished. For detailed information, refer to the Columbia Roller Catalogue, which will be sent upon request.

NIAGARA

A washable, waterproof shading of the finest quality. Its translucent, warm, clear colors, and velvety texture, combined with the fact that it can be easily washed without injury to finish, shape or texture, make it a beautiful as well as economical window shade. It hangs flat and will not stretch; it will not crack, show pinholes, or flake, even after numerous washings.

The high quality of this shading is preserved indefinitely at an extremely low maintenance cost. Its washability insures the permanence of its beauty.

It may be used for all purposes where a high grade, durable, and attractive shade is desired. It is especially recommended for residences, and for apartments, hotels, schools, and other public buildings. Width to 72 inches.

CRESCENT TINT

An unfilled, tinted cambric. The base is a 72x80-count cambric of the highest quality, made especially for the purpose. It is sized and painted by hand. Being translucent, it allows the sunlight to filter through it, toned into warm soft colors. It is weatherproof, cleanable, and will not crack or show pinholes. It is recommended for fine public buildings and for private homes. Width to 150 inches.

DAMASKO HEVI-DUTY CAMBRIC

Made from the same base as Columbia Crescent Tint, a highest grade, 72x80-count cambric. Like Crescent, it is hand sized, hand painted and cleanable, but it is opaque and heavier in weight. This quality renders it especially appropriate for withstanding continuous hard usage. It will not crack or show pinholes.

Recommended for schools, office buildings, hospitals, and other places where a heavy duty shade is necessary. Width to 150 inches.

VELLMO (LIGHT-PROOF)

Where complete exclusion of light is essential Vellmo is recommended. It will completely exclude light without the sacrifice of color scheme, and is a light-proof shade of real beauty. It is ideally adapted for use in dark rooms, X-ray rooms, and auditoriums where pictures are shown. Width to 150 inches.

COLORS

Columbia Niagara is made in the following tone colors: Eggshell White, Parchment, Chamois, Persian Gold, Peachskin, Strained Honey, Circassian Brown, Hunter Green, Canton Jade and Evergreen. Also Meadowbrook and Frontenac Duplexes.

Crescent Tint, Damasko Hevi-Duty, and Vellmo are also obtainable in the above colors in addition to many other standard colors. Special colors for these three grades are available if desired. Sample books will be furnished on request.

WINDOW SHADE and AWNING ROLLERS

COLUMBIA GUARANTEED WOOD ROLLERS

Columbia Full Round Wood Rollers are made from carefully selected, well-seasoned, kiln-dried wood, and are fitted with nickel-plated brass ends which are absolutely rustproof. Extra weight springs give more than ample lifting power and have great reserve strength. Special semi-closed end construction protects the pawls from dust, moisture, and ravellings. They are made in standard sizes of $\frac{15}{16}$ in. to 1¼-in. in diameter and 18 in. to 6 ft. in length.

COLUMBIA GUARANTEED METAL ROLLERS

Columbia Metal Rollers are manufactured of specially selected prime open-hearth tin-plate. The barrel is lock-seamed, doing away with sharp edges and giving the barrel strength and rigidity. Sagging and buckling of the rollers is prevented by this lock-seam, consisting of four plies of metal.

Brackets for metal rollers are of aluminum alloy. They are lighter, stronger, and of better appearance than the heavy cast iron type.

Metal rollers are made in the following sizes: 1, 1¼, 1½, 1¾, 2¼, 3, 4 and 5-in. in diameter, and in lengths from 18-in. to 26 ft.

COLUMBIA GALVANIZED AWNING ROLLERS

Columbia Awning Rollers are made with galvanized iron barrels. All other parts have a rust-proof, zinc-plated finish except the pawls, which are of brass.

They are constructed throughout for heavy work and are provided with unusually powerful spring mechanisms. Awning roller brackets are sherardized and rust-proof.

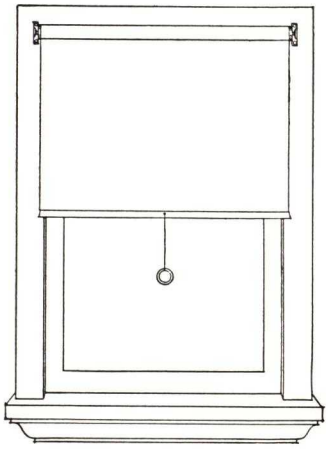
All Columbia rollers are guaranteed against defects in materials and workmanship.

INSTALLATION SUGGESTIONS

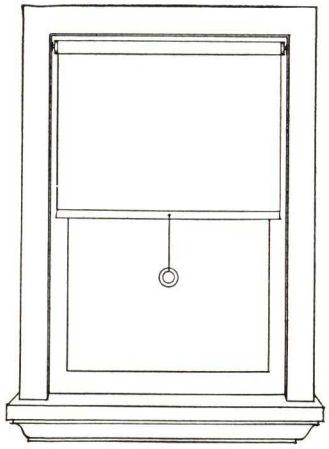
Columbia Shades may be installed at any type of window opening, including all types of casement windows.

Information regarding any particular situation will be furnished through our Architectural Department.

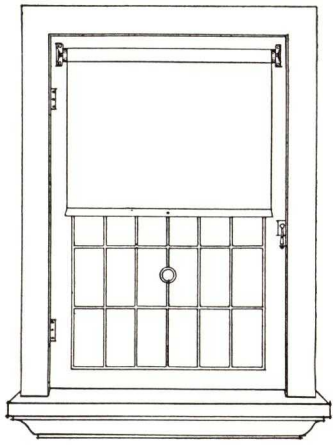
The illustrations below indicate the most widely used types of window openings and the manner in which the shades are installed.



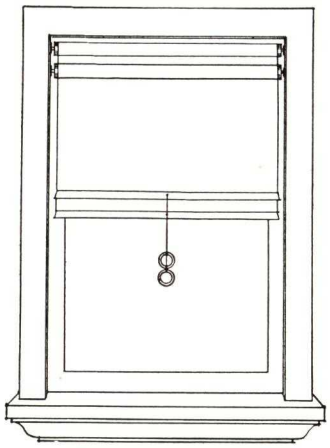
Outside Hung
Brackets fastened to the face of the casing



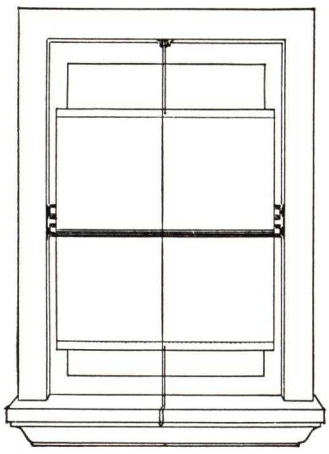
Inside Hung
Brackets fastened to the inside of the casing



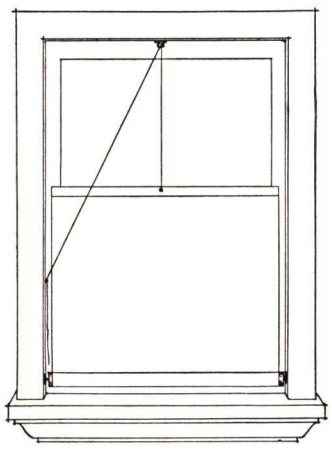
Casement Hung
Brackets fastened to top rail of casement sash



Two Shades Hung on the Inside of the Casing



Double Hung Installation
One shade pulls up and the other down. May be inside or outside the casing



Bottom-up Installation
Inside or outside with stop pulley

STANDARD SPECIFICATION FOR WINDOW SHADES

Window Shade Specification for.....(name)
Building .....(address)

General—These specifications shall cover the manufacture and correct installation and operation of all window shades. Shades shall be made in a thoroughly workmanlike way, cut square and true, and mounted on rollers in the same manner, using suitable substantial fasteners. The materials used in the manufacture of these shades shall be commercially perfect and of first quality.

All shades shall be clean and free from dirt, finger marks, and other imperfections due to faulty handling. A complete shade shall be submitted with bid as a sample and will be held until job has been approved.

The contractor shall be responsible for any damage to the building, which is caused by him or his employees; he must also protect his work from damage until released by its final acceptance and must clear away all surplus material or scaffolding used in the erection of the shades.

Cloth—All shades shall be made of (Niagara, Washable-Waterproof), (Damasko Hevi-Duty Hand-made Unfilled Cambric), (Crescent Hand-made Unfilled Tinted Cambric), (Vellmo Light-proof Cloth), as manufactured by THE COLUMBIA MILLS, INC.

The above cloth to meet Government specifications CCC-C-521 of September 16, 1930.

Color—Shall be.....(as selected)

Length—All shades shall be finished 12 in. longer than actual height of the window frame.

Rollers—All shades shall be mounted on *Columbia* Guaranteed Metal Rollers of ( ) diameter and shall be constructed with lock-stream reinforced barrels.

Alternate clause for wood rollers: All shades shall be mounted on *Columbia* Guaranteed Wood Rollers of ( ) diameter and constructed with rustproof nickel ends.

Slats—All shades shall be equipped with smooth, kiln-dried wooden slats of either ⅞ in. or 1¼ in. in diameter as the conditions demand. Shades over 5 ft. in width shall be equipped with smooth, kiln-dried wooden 2-in. slats in hems.

Eyelets—All shades shall be equipped with stainless aluminum eyelet in center of hem for cord.

Cord—All shades to be equipped with No. (..) cord, same to match color of shades, and securely fastened in the center eyelet, allowing enough length to permit the shade to be drawn to the bottom of the window and rolled to the top without going over the roller and fastened 24 in. above the sill on the left side.

Cord Holders—Cord holders are to be installed 24 in. above the sill. To consist of Parker hollow metal screw-eyes in the event that the casings are of steel or other metal. On wood casings, Crampton cord holders are required.

Brackets (for Metal Rollers)—On steel or other metal casings, aluminum brackets are to be installed in the proper location at the top of the window, and are to be securely fastened in this location by the use of hollow metal or machine screws. In the event that the casings are of wood, brackets are to be fastened by means of brass wood screws.

Brackets (for Wood Rollers)—Brackets for wood rollers shall be stamped nickel-plated steel brackets fastened with brass wood screws if the casings are of wood. On steel or other metal casings, brackets shall be securely fastened either by use of machine or hollow metal screws.

Delivery—All shades shall be completed 30 days after receipt of contract or date agreed upon.

Note: This quotation covers labor, materials and all appliances herein specified above for the necessary installation and complete operation of the shades.

THE COLUMBIA MILLS, INC.

VENETIAN BLINDS

AND

WINDOW SHADES

CHICAGO VENETIAN BLIND CO.

AN ILLINOIS CORPORATION

Manufacturers of Better Grade—Closed-Head Venetian Blinds

1210 So. Morgan Street, CHICAGO, ILL.

PRODUCTS

"Alumilite" Aluminum Slat Blinds with Metal-Box Closed-Head, that eliminates light streaks at top and conceals all operating hardware; Wood Slat Blinds with 2-in. and 2⅜-in. slats and Metal-Box Closed Head or conventional wood head rails.

THE NEW CHICAGO "ALUMILITE" ALUMINUM SLAT BLIND

"The Most Modern Venetian Blind"

"Alumilite" Aluminum Slat Venetian Blinds are, we claim, the last word in Venetian Blind design and construction. They introduce a new theme in color and decoration that makes the window an indispensable unit for beautiful treatment.

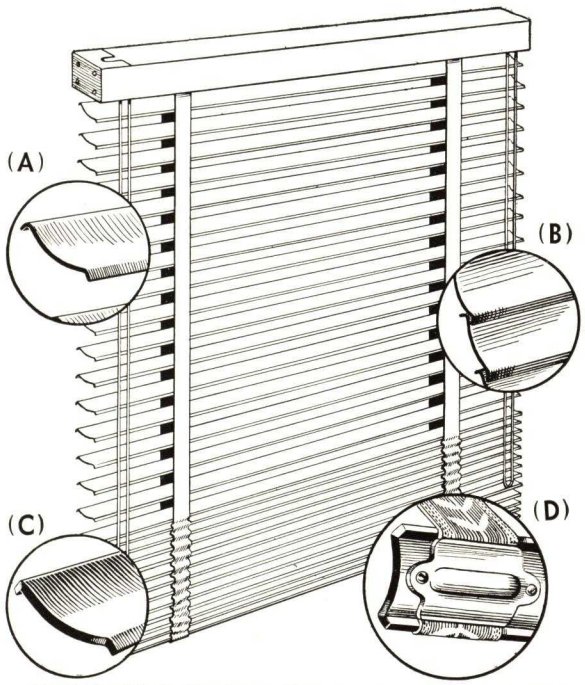
What Are "Alumilite" Aluminum Slat Venetian Blinds—They are blinds composed of aluminum slats which have been subjected to an electrolytic process which builds up an oxide coating on the surface of the aluminum.

Characteristics of the Finish—The "Alumilite" process provides a platinum gray durable finish with a high abrasive resistance, which is also highly resistant to corrosion. It replaces plated metal, eliminating any chipping, flaking, or peeling. The process, in reality, produces a finish which is actually integral with the metal, and which reduces maintenance costs to a minimum.

Eliminates Warpage — The moisture resistant characteristic of aluminum combines with the scientific design and rigid construction of these new aluminum slats to automatically eliminate the troublesome problem of warping—a common fault of all wood slats. These new modern slats will not bend or lose their shape under ordinary usage.

Easily Cleaned—Chicago Aluminum Slats are finished by an exclusive anodizing process — instead of being painted. Thus all dust accumulation is quickly and easily removed with a duster, eliminating the need for scrubbing. Removable tape fittings at the head rail and bottom bar make tapes readily removable for cleaning.

Investment Protection—These unique, new aluminum slats, with abrasive resistant surface, will retain their original beautiful appearance and luster indefinitely without refinishing. They will not tarnish, oxidize, pit nor fade.



(A) "Alumilite" Aluminum Slats are streamlined to facilitate deflection of direct sun rays to produce indirect lighting with elimination of glare and gloom areas inside of room.
(B) Slat design permits proper overlap to shut out light when desired.
(C) Design of bottom bar enhances blind appearance.
(D) Tapes easily removed from bottom bar with special plate. No tacks or staples used.

Easy Operation—The greatly reduced weight of Chicago "Alumilite" Aluminum Slat Blinds permits the largest blind to be operated with the utmost ease—without special operating equipment. In addition, the wear on cords is reduced and cord life is increased by years. The aluminum slats nest easily and closely, and the accumulation is less than one-half that of wood slats, when blinds are raised.

Heat Control—Where "Alumilite" Aluminum Slat Venetian Blinds are installed on a hot sunny exposure of a building, the interiors of rooms will be as cool as the interiors of rooms on the shady sides of the building. Inversely, in the winter, they will reflect the heat of the room back into the room, stopping great heat loss through the windows and thus effect considerable savings in heat cost.

Color and Style—This Aluminum Blind is made only in platinum gray—a neutral tone that does not clash with any color scheme in any surroundings, but lends a soft, subtle, captivating beauty to the setting as a whole. Color effects may be heightened and very successfully achieved by various colors of tapes.

Specifications

Head Member—Shall be an all-metal housing 1¾-in. deep and 2½ in. wide—20-gauge metal.

Tilting Mechanism—All tilting mechanism shall be concealed in the head member and shall consist of a screw-jack power drive tilt, connected to a special shape rod to operate roller rocker arms for raising and lowering supporting ladder tapes, all to be adjusted so as to be positive in operation, and to hold the slats in any tilted position.

Automatic Cord Stop—Shall be concealed in head member, of roller bearing type, positive in action, without causing undue wear on cords.

Removable Tape Fittings—All heads shall be equipped with removable snap-in pins for tapes, so that tapes may be readily removed.

Slats—Shall be of aluminum alloy 2 SH, finished by "Alumilite" process to prevent oxidization, and formed after anodizing to a special shape to lend stability against sagging, and shall be 24-gauge by 2 in. wide. No change will be allowed without the written approval of the architect.

Bottom Bars—Shall be of aluminum alloy, finished by "Alumilite" process to prevent oxidization, and formed to a special shape, and shall be 16-gauge by 2 in. wide. Removable tape fittings shall be provided on bottom bars. Bottom bars of wood finished with three coats of aluminum paint shall be provided on all multiple lift blinds.

Finish—Slats and bottom bars shall be finished by "Alumilite" process. The anodic oxide coat shall be equivalent in all respects to that obtained by having the material act as an anode in a bath of sulphuric acid having a concentration of from 15% to 18%, by weight, of the acid and using a current density of 12 to 14 amperes per square foot of surface. This treatment shall continue for a period of not less than five minutes while maintaining the bath temperature between 85° and 95° F., followed by thorough washing and immersing the material in hot water at 204° to 212° F. for not less than five minutes.

Heads shall be sprayed with one coat of metal undercoat and one finish coat of aluminum paint.

Tapes—Shall be best quality imported or domestic.

Cords—Shall be hollow braided, glazed, non-stretch, in colors to harmonize with tapes.

Hardware—Shall include cord equalizer (plated)—universal installation brackets, slotted to permit adjustment in blind head size (painted head color)—chrome plated knobs for tilt cord, with rubber rings—nickel plated wood screws for installations in wood, and Parker Kalon screws with lead wool for installations in masonry or steel.

Single Lift Blinds—Shall be furnished for all blinds up to 84 in. wide and/or under 84 sq. ft. in area.

Easy Lift Blinds—Shall be furnished for all blinds over 84 in. wide or over 84 sq. ft. in area, with pulleys in bottom bars.

Tape Spacings—The spacings for tapes on Aluminum Slat Blinds shall be as follows: Openings up to 48 in.—2 tapes; openings up to 84 in.—3 tapes; openings up to 120 in.—4 tapes.

Important Note—No metal-box closed-head blinds with aluminum slats will be made: under 18 in. wide, over 120 in. wide.

If blinds under 18 in. wide or over 120 in. wide are required with aluminum slats, they can be furnished with open top wood rails—equipped with a sheet metal facia covering, that will attach to the top of the wood head rail and apron down 3½ in. to cover hardware and conceal light streaks. All rails and facia shall be painted with aluminum paint to match the slats.

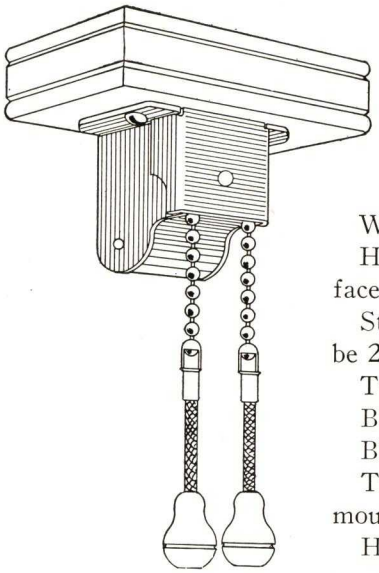
HIGGIN PRODUCTS, INC.

Venetian Blinds

NEWPORT, KENTUCKY

AGENCIES AND DEALERS THROUGHOUT THE COUNTRY

For Metal Frame, Wood Frame and Rolling Screens, Lightproof Shades, Access Panels and Weatherstripping, see our page in File Index



Higgin No. 160 Worm and Gear Tilting Device Encased in Heavy Steel Stamping

HIGGIN VENETIAN BLINDS

Features of Higgin DeLuxe Venetian Blinds

Wood parts—seasoned Basswood.

Headboards have beaded face with beading returned for face installations.

Standard headboards are 2¾x1⅛ in. Headboards may be 2¼ in. wide for 1¾ in. width slat.

Two slat sizes are available—2⅜ and 1¾ in.

Blinds with 2⅜-in. slats are known as Higgin No. 5.

Blinds with 1¾-in. slats are known as Higgin No. 10.

Tilt and bottom bars are $\frac{13}{16}$-in. thickness with edges moulded.

Higgin Tilting Device No. 160 is made entirely in the company's own factory and the design is an exclusive Higgin Feature. Worms and gears are of hard drawn brass machine cut. Fully enclosed case is of heavy steel stamping. Bearing holes are reamed for accuracy.

Tilting device is actuated by strong bead chain.

Higgin DeLuxe blinds may be fully tilted with less than 12-in. movement of tilt cord and bead chain.

Tilt cords are provided with wood tassels, slat color.

All operating hardware attached to headboard is enameled same as slats and other woodparts.

No. 147 automatic cord stop has scored brass pawl, assuring accurate gripping of cord with minimum of wear.

Ladder tapes are detachable. Special Higgin Clips permit taking up or letting out tapes to lengthen or shorten blinds.

Lifting cords are detachable.

Solid brass pulleys.

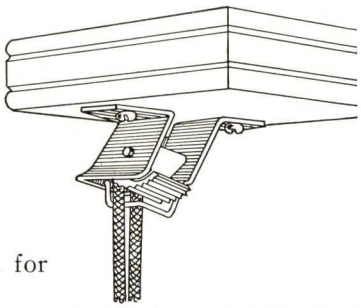
Several styles of side channels, all Higgin made, are available.

14 standard color finishes for wood parts.

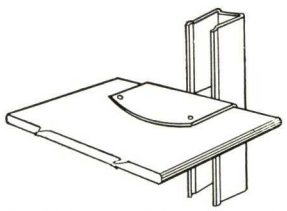
19 standard colors of tapes.

7 designs of valances or facias available.

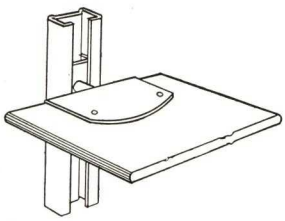
Sunbursts and other transom fixed slat blinds.



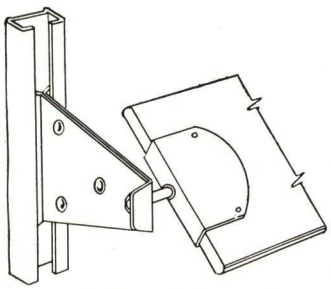
No. 147 Automatic Lifting Cord Holder with Brass Scored Pawl and Stamped Steel Case



No. 118 Open Channel Guide with Rubber Tipped Pin on Slats
Quiet operation



No. 166 Shallow ($\frac{5}{16}$-in. Deep) Channel Guide for Between Jambs



No. 166 Channel Arranged for Face of Wall with Extending Brackets to Receive Slats

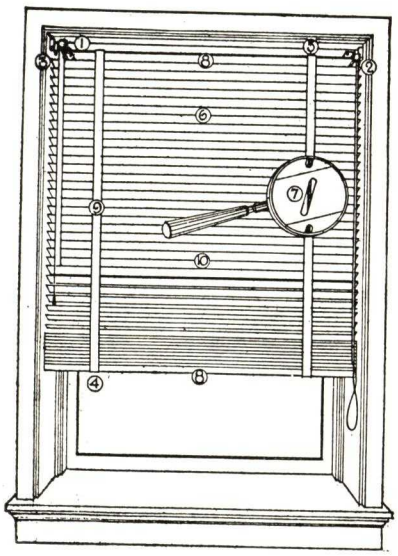
INTERSTATE SHADE CLOTH COMPANY

Manufacturers of Interstate Venetian Blinds and Window Shade Products

812-820 Jefferson Street, Hoboken, N. J.
TELEPHONE: Rector 2-3840; Hoboken 3-1848-49

SALES REPRESENTATIVES FOR
THE LAPSLEY-INTERSTATE SHADE CLOTH CO.
Light and Lombard Streets, Baltimore, Md.
TELEPHONE: Plaza 3290

INTERSTATE VENETIAN BLINDS



Universal Type (2⅜-in. Slats)

1. **Improved Gear Tilting Device** . . . Compact . . . reduces light streak between head and tilt rails.
2. **Automatic Cord Brake** . . . a single pull one way keeps the blind in place and a pull the other way releases it. This device eliminates the old cord knob fastener.
3. **Head Holding Bracket** . . . a simple snaplock holds the blind in place. Entire blind can be removed instantly.
4. **Improved Tape Fastener** . . . eliminates the use of objectionable upholstery tacks and allows easy removing of slats for cleaning.
5. **Self Lubricating Pulleys** . . . over which the cord travels, will not squeak nor rust under any climatic condition. An improvement over the other types.
6. **Port Orford White Cedar** . . . no other wood is equal to Port Orford Cedar for Venetian Blinds. Its use throughout is your insurance against warping.
7. **Holes in Slats** . . . are routed out smoothly for free cord action. Punched holes produce ragged edges which wear out the cords quickly.
8. **Tilt and Bottom Rails** . . . so shaped and bored that blinds pull up freely and close tightly.
9. **Ladder Tapes and Cords** . . . only the finest qualities are used. The best ladder tape, cross tapes interwoven . . . Samson's special hollow braided non-twisting glazed Venetian Blind Cord.
10. **Color Combinations** . . . Slats and tapes in contrasting colors are most effective. Our high-grade lacquer produces a beautiful and lasting finish.

Home Type (2-in. Slats)

INTERSTATE WINDOW SHADE CLOTHS AND ROLLERS

Specify Interstate Products by Trade Marked Brands.

Inter-Twill—Sunlite—Paragon—No-Lite Shadowless Cloth, Rolrite Guaranteed Roller

Inter-Twill—the Long Wearing Shade Cloth

INTER-TWILL WINDOW SHADES
THE STRENGTH IS IN THE TWILL

An improved type of shade cloth with the strength in the twill. We believe it is the toughest and strongest shade cloth and will outwear them all. It will stand abuse and rough usage. The threads will not "burn" when exposed to the sun's rays. It has special Interstate protective coating which makes it easily cleanable, reversible and long wearing. Soil is easily removed from its surface. The manner in which the twill fabric is woven insures the extra years of service. It is pure finished, and unfilled, no clay or other fillings used in the manufacture. Made in any color tone and in any combination of colors.

Architect's Specifications

Shade Cloth—"Inter-twill" [Sunlite] [Paragon] [No-Lite] as manufactured by the Interstate Shade Cloth Company shall be used for all windows, and of a color to be selected (state if a solid color or duplex color is being considered).

Rollers—Interstate "Rolrite" guaranteed wood rollers of the proper diameter (for shade wider than 63 in. specify metal rollers).

Interstate Cambric Shade Cloths

The cambric cloth used has a thread count of 72x80 and exceeds the technical requirements of the United States Government specifications as to thread count and tensile strength.

Like all Interstate Shade Cloths the following brands are pure finished, unfilled; no clay or other fillings are used in their manufacture. They are cleanable and color fast.

Sunlite, a Cambric Tint—This is lightly tinted shade cloth made on unfilled cambric cloth in all the popular tints. It is translucent in lighter colors (light without glare) and semi-translucent in darker colors.

Paragon Heavy Duty Cambric—A heavier coated shade cloth, unfilled cambric, semi-opaque in lighter colors and opaque in darker colors. Paragon is a "heavy duty" shade cloth especially adapted for office buildings. Many attractive colors to choose from.

No-Lite, a Shadowless Shade Cloth—This a triplex process shade cloth—made on unfilled cambric cloth and is absolutely opaque in all colors. Any color combination. The undercoat is black, making it shadowless and lightproof. Used extensively for auditoriums, X-ray rooms, and hospital laboratories. No-Lite is used in hotels and residences where shadows would be objectionable. Specify No-Lite when total exclusion of light is desired.

Interstate Shade Cloth is Painted by the Hand Process

Cloth, in one piece of 60 yds. or less, and in widths from 36 to 150 ins., is glued on frames. The next operation is the application of a high grade hide glue size. The cloth is then stretched by hand—*an important operation*—since hand stretching permits the full width to be framed out, all fullness removed and prevents curling and bagging of the finished window shade. Color is applied the following day—one coat to each side (No-Lite is given three coats).

Any desired color can be applied, either the same color on both sides or a different color on each side.

Deterioration in shade cloth is principally due to the sun's burning action. In Interstate Hand-painted Shade Cloths the color, being ground in linseed oil, affords maximum protection to the fabric. Experience has demonstrated that hand-painted shade cloths can be successfully cleaned the same as any painted surface.

If "Holland" type of window shade cloth is desired, specify John King & Son's Imported Sunproof Scotch Beetled Holland *or* Nonfade Scotch Beetled Holland, *spun, woven, dyed and beetled in the U. S. A.*

PERMATEX FABRICS CO.

VENETIAN BLIND DIVISION
JEWETT CITY, CONN.

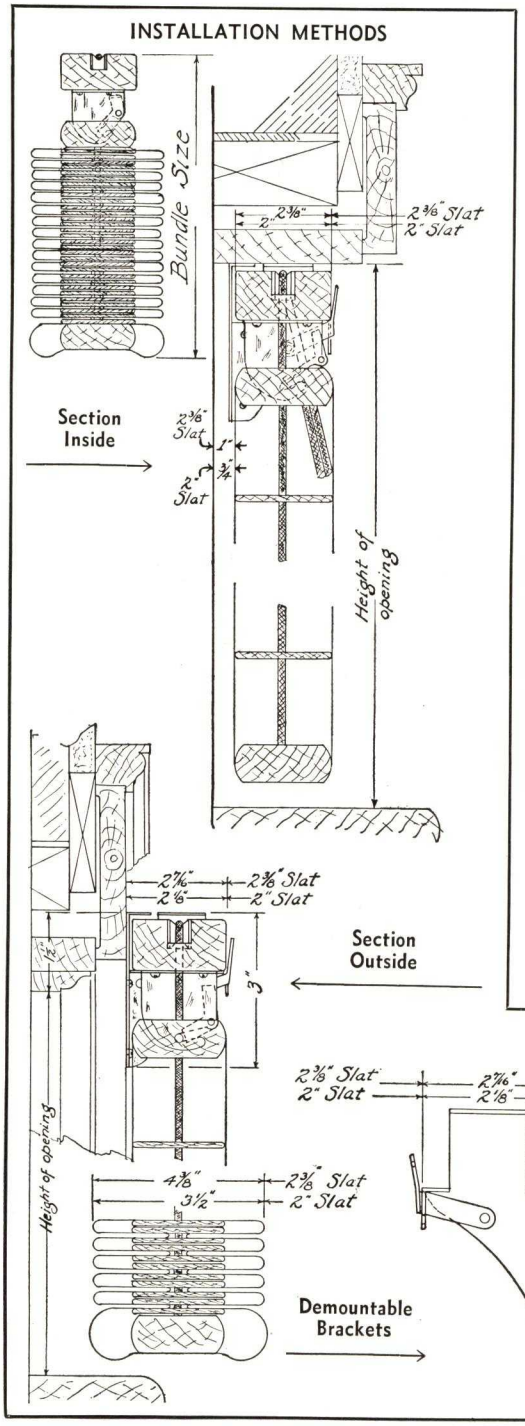
VENETIAN BLINDS

Produced by an Organization Versed in Decorative Requirements

The vast resources of Aspinook and Permatex stand as a foundation for every blind they manufacture. A Studio and Consulting Staff, with years of styling experience, are always available to assist Architects in every possible way. An Engineering Department is constantly working toward refinement and detail. Prolonged laboratory research has developed finishes to withstand the rigorous effects of sun, heat, and exterior exposure.

Each blind is treated as a custom-built item and every order is handled separately with individual attention.

At every stage of production, meticulous pains are taken to insure lasting satisfaction as to beauty, durability and economy.



"Aspinook De Luxe" Specifications

Woodwork—All materials are of carefully selected stock which has been pretreated to prevent warpage in service.

Headrails on both the 2⅜ and 2-in. sizes are 1⅛ in. thick. Pulleys are recessed to permit ceiling or flush jamb mountings.

Tiltrails are $\frac{13}{16}$ in. thick. Cord slots are cleanly machined with ample room for clearance.

Bottomrails are $\frac{13}{16}$ in. thick with beautifully moulded ends. Underside is channeled and recessed for cord and pulleys in the case of compound lifts. Cords are fastened by means of an instantaneously detachable friction clip.

Slats are of basswood or cedar; are free from pitch or sap; and are full ⅛ in. after sanding, and before finishing.

Hardware—All hardware is sturdy, durable, cadmium or nickel plated, or lacquered.

Head Brackets are universal demountable, making it possible to readily remove the entire blind by turning a single locking lever.

Tiltors are steel-geared with enclosed continuous brass worm—deeply meshed, they guarantee positive traction with smooth, silent action.

Automatic Cord Locks are instant and positive in braking; free and easy in disengagement; non-wearing on the cord.

Pulleys are of self-lubricating lignum vitae and are indestructible.

Supports—Extra tilt and headrail supports are supplied for additional tapes.

Tassels of steel, beautifully machined and nickel plated, are optional equipment, if specified, instead of continuous cord.

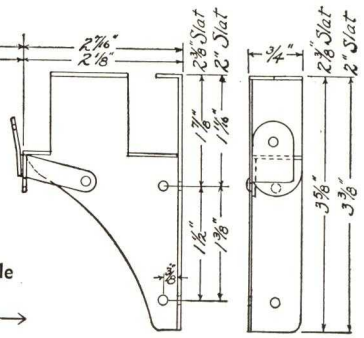
Tapes—Only the best obtainable imported and domestic tapes are used. Cross members are interwoven. Yarn dyed, they are commercially fast to light and rain.

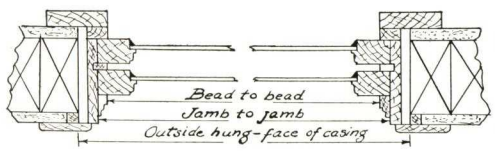
Cord—Hollow braided glazed No. 4½ cord of the best manufacture insures long life and non-curling.

Light Mask—A solid mask which eliminates the objectionable light streak, is a unique feature built into all inside hung blinds where no fascia or cornice is specified. There is, therefore, no necessity for a valance, unless for decorative purposes.

Finish—A semi-dull lacquer or enamel finish of extreme durability has been developed for this blind. Submitted to a super-finishing process to prevent dust accumulation and inclusion in the film, the Aspinook Venetian is the ultimate in fine finishing.

Colors—14 standard colors. 14 standard tapes. 9 fancy woven tapes. *Write for Color Card to aid in making harmonious selection.*





Height, in.	Bundle Size, in.	
	2⅜-in.	2-in.
36	7	7¼
48	8¾	8¾
60	10	10½
72	11¼	12
84	12½	13½
96	13¾	15
108	15	16½
120	16¼	18

SIMON VENTILIGHTER CO., INC.

(ALSO KNOWN AS VENTILIGHTER CO.)

Patented Vane Systems for Scientific Light Control of Skylights and Windows

101 Park Avenue, NEW YORK, N. Y.

Product and Service

VENTILIGHTER, a scientific light controlling device adapted to skylights, windows and sleeping porches, and encompassing within its uses the complete control of light in all its phases.

We shall be pleased to consult with you concerning special requirements.

Estimates and Installation

In writing for information, please submit a sketch illustrating conditions. For skylight Ventilighters, show construction of skylight opening and possible obstructions, such as columns, piping, etc. For window Ventilighters show section of jamb, head and sill.

We furnish blue prints showing a simple method of installation. Our staff, if desired, will undertake complete installation. Catalogue upon request.

Principle of Ventilighter

Ventilighter consists of a series of specially woven fabric vanes, mounted in a metal lattice framework, although metal or other material may be substituted in special instances. The vanes may be opened or closed so as to overlap, ventilation remaining unimpaired, excepting where the all-metal skylight Ventilighter described below is used for complete darkening. The use of various types of vanes corresponding to the individual problem, permits the concentration, diffusion or elimination of light rays.

Fabric Skylight Ventilighters

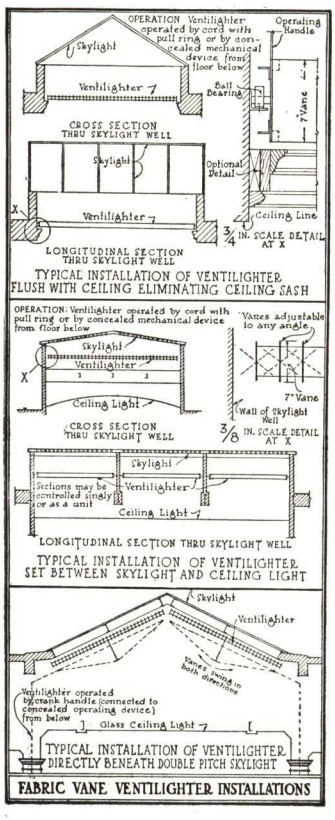
Ventilighter for skylights is a special louvre construction as illustrated, with the louvres or vanes adjustable within the area covered, so that they overlap or open wide at will. When fabric is used the heat of the sun is tempered and a soft diffused light results, which can be controlled in the desired direction.

Glare and shadows are absolutely eliminated. When the vanes are completely closed they overlap but do not touch, hence ventilation is unimpaired. *To emphasize again, light is perfectly controlled, heat reduced, glare eliminated, and ventilation unimpaired.*

All-metal Skylight Ventilighters (Darkening)

A most important phase of our work is the use of metal vanes flanged at the edges so that when the louvres are closed they overlap and darkness is instantly effected. Ofttimes *skylights in auditoriums must be darkened* when motion pictures are shown and the value of causing instant darkness by merely pulling a cord or turning a crank is apparent.

Reversing the above, very often the vanes are made similar in design but enameled white. Thus the vanes when closed act as a big reflector to the artificial lights, creating an *ideal indirect lighting system,* yet when daylight is strong enough to be used, the vanes are opened at the proper angle to reflect natural light to the proper location. Ventilighters may be operated from predetermined points of convenience when proper provision is made; electrically also if desired.

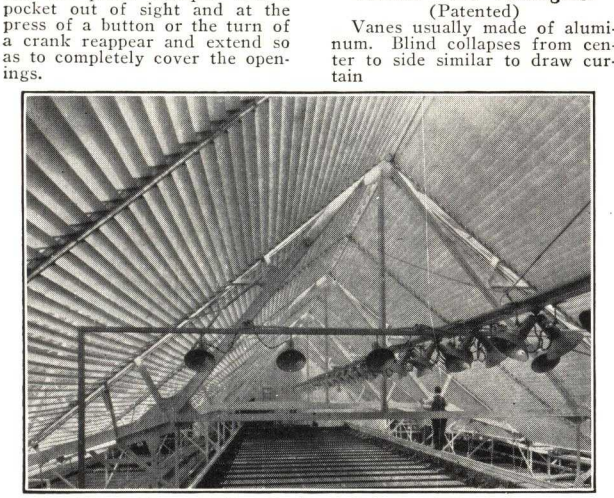


Window Darkening Ventilighters

We also manufacture a special sliding sheet steel device electrically or manually controlled for darkening purposes, so devised that a battery of windows may be darkened at one time, such as proves necessary in auditorium work. When not in use the plates collapse into a pocket out of sight and at the press of a button or the turn of a crank reappear and extend so as to completely cover the openings.

Vertical Vane Ventilighter
(Patented)

Vanes usually made of aluminum. Blind collapses from center to side similar to draw curtain

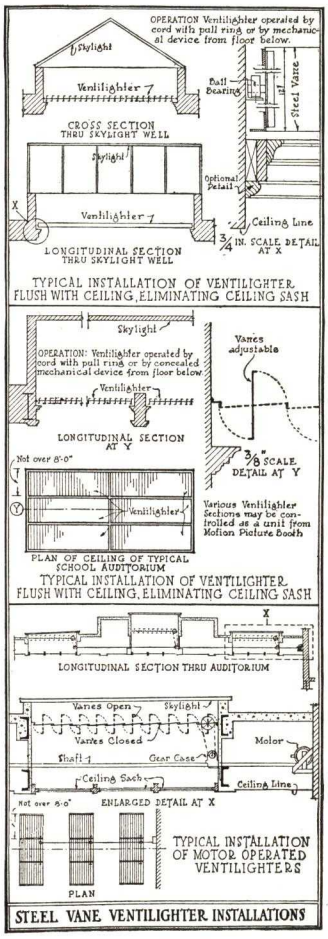


View Above Ceiling Sash of Gallery of Fine Arts, Yale University, New Haven, Conn.

EGERTON SWARTWOUT, Architect FRENCH & HUBBARD, Engrs.

Some Buildings Where Ventilighters Are Installed

BUILDING AND LOCATION	ARCHITECT
Law Building, University of Virginia	Architectural Commission
Federal Land Bank, Houston, Tex.	Alfred C. Finn
U. S. Post Office, Westport, Conn.	Lansing C. Holden, Jr.
Fine Arts Center, Colorado Springs, Colo.	John Gaw Meem
Charles Deering Library, Northwestern University	James Gamble Rogers
Annex, Pierpont Morgan Library, New York	Benj. W. Morris
Conn. Mutual Life Ins. Co., Hartford, Conn.	Benj. W. Morris
Trinity College, Hartford, Conn.	McKim, Mead & White
L. Cass Ledyard Jr. Residence, Syosset, N. Y.	Chas. A. Platt
Lyman Allyn Museum, New London, Conn.	Chas. A. Platt
Sterling Library, Yale University	Jas. Gamble Rogers
New Haven Savings Bank, New Haven	Egerton Swartwout
Hall of Geography, Harvard University	Horace Trumbauer
Savings Bank of Newport, R. I.	Thos. M. James
Wildenstein & Co. Bldg., New York, N. Y.	Horace Trumbauer
Museum of Natural History, New York	Trowbridge & Livingston
Mitsui Bank, Tokio, Japan	Trowbridge & Livingston
Chemical Laboratory, Princeton University	Day & Klauder
Schools, Wilmington, South Orange, etc.	Guilbert & Betelle
Packard Memorial, Lehigh University	Visscher & Burley
First National Bank of Hawaii, Honolulu	York & Sawyer
New York State Office Bldg., Albany	Wm. E. Haugaard
Philadelphia Museum of Art, Philadelphia	Trumbauer, Zantzinger & Borie
Essex County Courthouse, Newark	Guilbert & Betelle
Providence Institution for Savings, Providence	Howe & Church
Providence County Courthouse, Providence	Jackson, Robertson, Adams
Centerville National Bank, Arctic, R. I.	Hutchins & French
Payne Whitney Gymnasium, Yale University	John Russell Pope
D. A. R. Building, Washington, D. C.	John Russell Pope
U. S. Depart. of Commerce Bldg., Washington	York & Sawyer
Government Museum, Quebec, Canada	Wilfrid Le Croix
Union Trust Co., Baltimore, Md.	Smith & May
Hon. Alfred E. Smith Apartment, New York	Shreve, Lamb & Harmon
The Frick Collection, New York, N. Y.	John Russell Pope
New York Central R. R. "Mercury" Train	Henry Dreyfuss
Corpus Christi Church, New York, N. Y.	Wilfred E. Anthony
New York Edison Co., New York, N. Y.	
Corning-Steuben Glass Co., Inc.,	



SOUTHERN VENETIAN BLIND CO.

Sovenco Recessed-In-Plaster Venetian Blind Guides

U. S. PATENT NO. 2087941

MAIN OFFICE AND FACTORY
MIAMI, FLORIDA

A NEW MODERN METHOD OF INSTALLING VENETIAN BLIND GUIDES

SOUTHERN VENETIAN BLIND COMPANY introduces Sovenco recessed-in-plaster brass channel guides for use in the installation of Venetian Blinds, a vital improvement over all existing types of guides. The new *Sovenco guides* are the perfect solution to a practical and beautiful installation of Venetian Blinds.

SOUTHERN VENETIAN BLINDS SOVENCO GUIDES

This improved plaster protecting guide is installed with brass screws directly to the wood buck. The channel is packed with oakum or cotton batting to prevent plaster from entering. The finish plaster is then brought flush with the curved lips of the guide, forming a plaster key, and entirely conceals the guide in the plaster.

Conceal Plaster Shrinkage

The patented curved lips, which are the primary feature of this new guide, conceal the shrinkage of the plaster where it contacts the guide.

Insure Silent Operation

The additional rigidity gained by recessing the guide solidly in the plaster, as described, eliminates much of the usual noise due to operation of the blinds.

No Unsightly Features

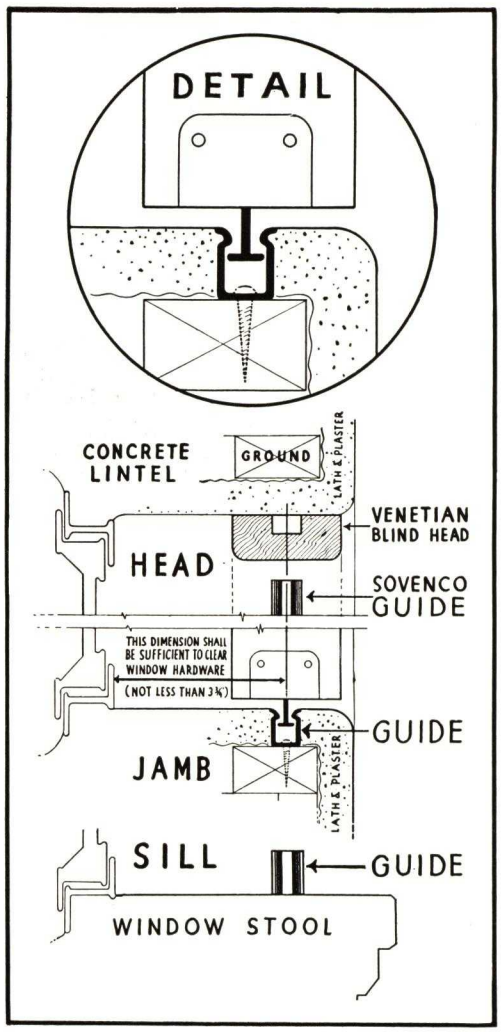
The prominence of mechanical features in Venetian Blinds occasionally has been objected to. *Sovenco Guides* absolutely remove this objection where draperies are not used or where a portion of the jamb must necessarily be visible.

No Binding of Blinds

The permanency of this type of installation precludes any possibility of the guide working loose from its original position and thereby causing the blind to bind.

Specify Sovenco Guides in General Contract

Provision for Venetian Blinds should be made by installing the guides at time of construction. Any make of blinds may be installed with *Sovenco Guides* at any time.



Write for Complete Catalog A-1-A File No. 35-P-3.

Securely Attached

Since they are fastened to the wood buck by brass screws it is impossible for *Sovenco Guides* to work loose or become noisy.

No Cracked Plaster

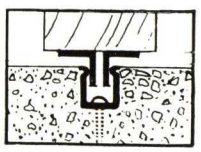
Being recessed-in-plaster at time of construction, *Sovenco Guides* eliminate the necessity of using expansion plugs which often cause the plaster to crack.

Tested and Proved

Sovenco Guides have already been installed in scores of homes, apartments, hotels and public buildings and have proved their superiority over old methods of tenoned slats, rod guides and surface channels.

With Sliding Doors

Sovenco Guides are superior to other guides or runners where installed in concrete, tile, terrazzo or similar floors. Since the guides are entirely embedded, there is no danger of tripping over them. The curved lips conceal cracks due to shrinkage of the floor.



ESTABLISHED 1856

SWEDISH VENETIAN BLIND CORPORATION

Manufacturers and Distributors of Swedish Venetian Blinds

OFFICE AND FACTORY

601 West 26th Street, NEW YORK, N. Y.

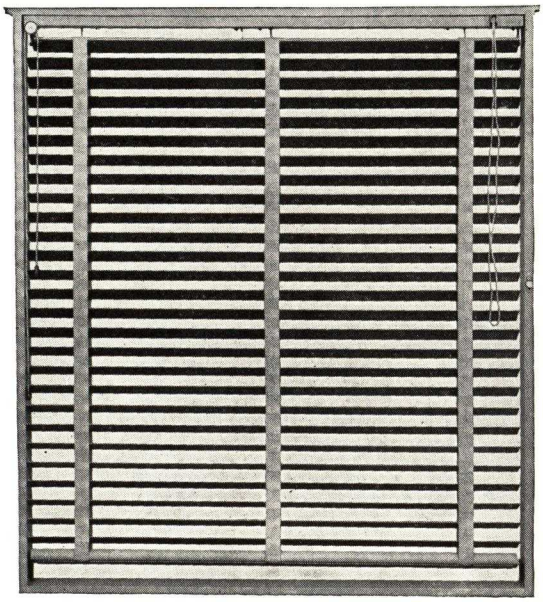
TELEPHONE
LAckawanna 4-8432-3

CABLE ADDRESS
"Venetblind"

For Our Page on Rolling Wood Partitions, see File Index

SWEDISH VENETIAN BLINDS

For All Sizes and Types of Windows—Interior and Exterior



Daylight Control Plus Ventilation

Swedish Venetian Blinds are as satisfactory and durable a blind as there is on the market. They are made of the highest grade material—Port Orford Cedar, thoroughly kiln dried, the best imported interwoven tape, good quality cord, and neat brackets and hardware for hanging. Either wood fibre rollers, brass pulleys or ball-bearing pulleys to prevent cord from wearing, are used.

The experience of years of practical service has developed different systems of operation according to the individual job—guaranteed to give perfect service and easy control in all installations.

Blinds can be adjusted to any angle by a patented regulating device, and can be put up and taken down as easily as a roller shade, requiring no tools. Side attachments such as brass rods or heavy wire, or metal guides with attachments on intermediate slats are recommended for blinds attached to doors or swinging transoms and wherever exposed to a strong wind.

Installation is very easy. All necessary materials are furnished.

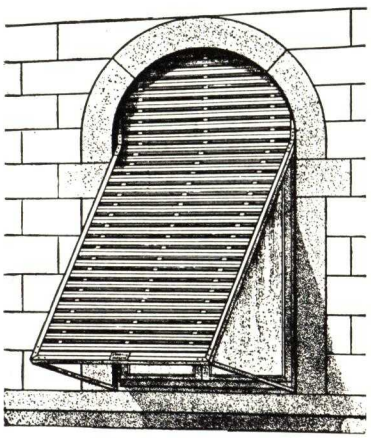
Used Wherever Perfect Shading and Ventilation Are Desired

Swedish Venetian Blinds are used in private residences, sun porches, libraries, offices, hotels—in fact any place where the most satisfactory distribution of light, perfect ventilation and excellence of appearance are desired.

Furnished for outside or inside purpose, with or without guides.

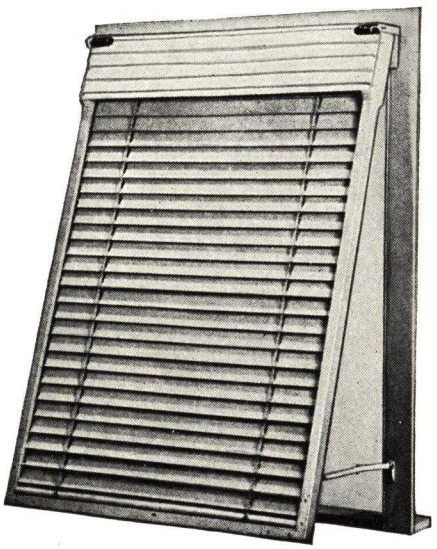
Also made with extensions, taking the place of awnings.

They answer the purpose of shutter to a certain degree when let down.



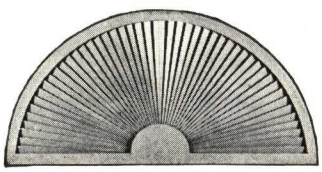
Outside Roller Blind

Made of heavy wood slats (Swedish Pine) connected with non-rustable metal connectors. The slats slide in a neat metal groove. Slats can be adjusted so as to give ventilation and privacy, with only one tape operation inside. Rolls completely out of the way up into a pocket on the inside

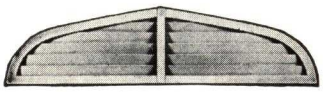


Outside Venetian Blind

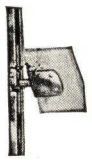
Easily and quickly adjusted to control light, ventilation and privacy



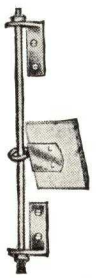
Sunburst Blind



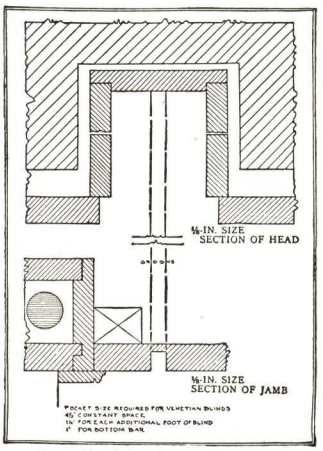
Arch Blind



Channel guides for inside blinds

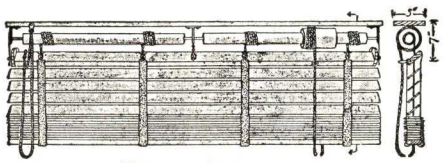


⅞-in. rod guides for inside or outside



Detail of Jamb and Pocket

When above is followed, it will result in a most satisfactory blind installation either outside, between screen and sash, or on the inside, giving a better service than any other blind of its kind



Traverse Roller Type

All blinds containing over 100 sq. ft. area shall be mounted with the traverse roller shown above. This roller maintains the slats in position exactly parallel to the window sill at all times. As it turns it travels from side to side and all the cords wind and unwind evenly

UNITED METAL BOX CO., INC.

168-186 Seventh Street
BROOKLYN, N. Y.

For United Apartment House Mail Boxes, Bathroom, Sink and Kitchen Cabinets, see File Index

"UNITED" ALL METAL VENETIAN BLINDS

Builders, architects, decorators and retailers are invited to consider, one by one, the striking advantages of United Metal Venetian Blinds—their beauty, durability, operating smoothness, silence, fireproof and weatherproof qualities and finally their extraordinary economy. Made for all standard size windows. Available for all custom-built sizes. Finished in all popular colors.

Light-Proof—Slats are 2 in. wide, of equal length. None cut short to provide for brackets. When shut, the thin steel slats mesh tightly. No wind can blow them open. Here, at last, are Venetian Blinds that offer the privacy of a wall of steel.

Fireproof—If United Metal Venetian Blinds offered no other feature except their fireproof merit, this single, predominating advantage would justify their widespread use. Already, builders, seeking to reduce fire hazards, specify them as standard equipment.

Rattle-proof — The tilting, lifting and lowering mechanism is silent. Noiseless, self-lubricating pulleys are used. Slats touch with a soft, muffled sound, hardly perceptible. Individual slats are clipped firmly to the tapes, instead of merely resting upon them so that all move together in quiet unison. Non-twisting cords are specially made to resist wear. Cords cannot creep up out of reach.

Fool-proof—As simple to install as the roller shade. By means of compensating brackets, the blind adjusts itself to variations in size of standard windows.

An automatic stop holds the blind where you want it. The metal slats are tilted down, up or horizontal by a gentle pull at the cord. An automatic tilting device locks slats at any angle and prevents wind from blowing them closed.

Weatherproof—Because metal will not absorb moisture—rain or dampness cannot damage the slats. Slats cannot sag or split, twist or warp. All mechanism is rustproof and neatly concealed in upper housing. Entire blind is enameled and baked at intense temperatures so that no sun can crack or peel the surface.

"UNITED" SELF-CLOSING UTILITY RECEPTACLE

The United, Self-closing, Utility Receptacles are made of furniture steel in standard sizes to meet practically every requirement.

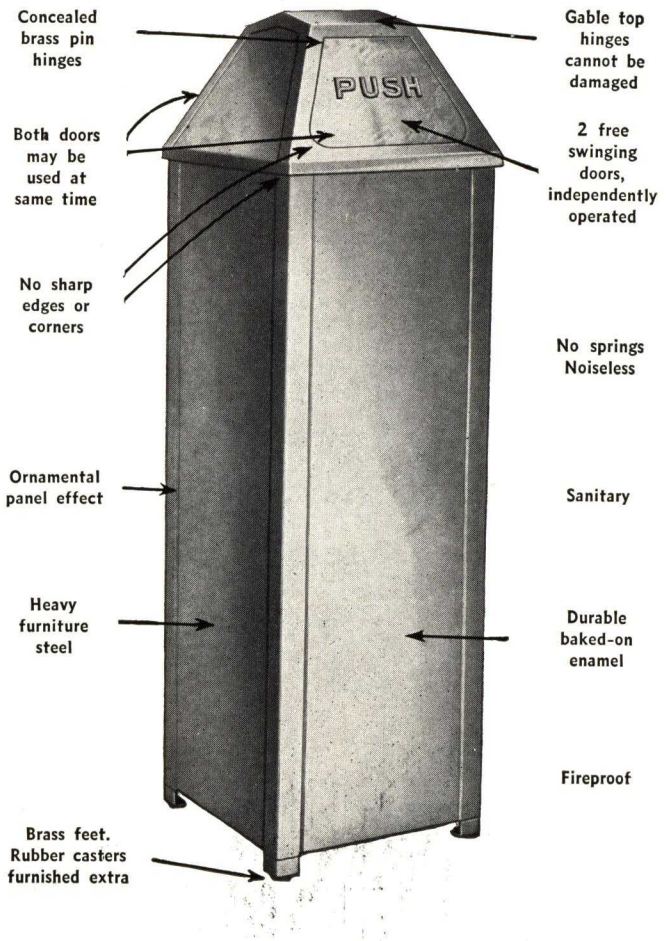
The top is fitted with two independently free swinging doors mounted on brass pin hinges which are noiseless in operation and closely fitted to the openings. Both doors can be used simultaneously. There are no sharp points, corners or edges on any part of the receptacle, eliminating all danger of damage to articles inserted in the receptacle or injury to the user.

Each receptacle is furnished with an inner container; either paper bag, burlap bag or galvanized container as noted in the specification schedule.

The top of the receptacle is mounted on heavy concealed hinges which act as stops to retain the top in open position for removing the inner container, thus eliminating the use of chains for this purpose.

The No. 140 and No. 160 models are for outdoor use and are made of heavy galvanized steel. United Receptacles are finished in high grade baked enamel in colors as indicated in schedule.

The entire receptacle is symmetrically designed and presents the appearance of a finished furniture-like product.



SPECIFICATION SCHEDULE

Cat. No.	Size of base, in.	Body height, in.	Over-all height, in.	Approx. capacity, gals.	Inner container furnished	Approx. shipping wgt., lbs.
110	11½ x 11½	18	24¾	9½	12 paper bags	24
112	11½ x 11½	28	34½	18	1 galv. can	32
115	11½ x 11½	35	41¾	23	1 galv. can	39
130	16 x 16	27	35½	27	1 burlap bag	42
*140	16 x 16	31	39½	31	1 burlap bag	61
150	21 x 21	35	46	65	1 burlap bag	99
*160	21 x 21	37	47¾	65	1 burlap bag	110

*For outdoor use—made of heavy gauge galvanized steel.
Gray or Green, White Enamel or Grained Mahogany.

WARREN VENETIAN BLIND CO.

Manufacturers of Venetian Blinds—Wood Fabric Porch and Industrial Shades

2907 East Hennepin Avenue, MINNEAPOLIS, MINN.

REPRESENTATIVES IN PRINCIPAL CITIES

WARREN'S VENETIAN BLINDS

Used in Many Types of Buildings—Venetian blinds are today specified by leading architects, contractors and builders, for many types of industrial and residential buildings. Office buildings, hotels, schools, colleges, halls, clubs, civic centers, public buildings are included in the first group; while homes (to a much larger extent than formerly) now use Venetians in every room.

Venetians not only replace, but are an improvement upon, roller shades. This is because, by easily tilting the slats at the desired angle, all direct sunrays are deflected to the ceiling, thus flooding the room abundantly with soft, diffused light; and, in the same manner, completely controlling air currents that enter the window, thereby eliminating draft.

Simplicity of Operation—Warren's Venetian Blinds embody improvements which make them extremely easy to operate and which reduce wear to a minimum. These features are illustrated (as much as possible) in the drawing and are listed in opposite column.

The blinds are raised or lowered by the braided cord at right. At any desired height they may be stopped and held firmly by means of the new, automatic cord stop, thus doing away with the old style cord holder.

The slats are easily tilted to any desired position by slightly pulling the tilting cord (usually at the left). The slats may be held at any desired angle by the worm-gear tilt lock, controlled by the tilting cord, which prevents the slats opening when fully tilted in either direction.

Easy to Install—Warren's patented installation brackets greatly simplify the process of placing the blind. No screws are necessary to hold the blind in position, and, when once installed, it may be taken down (for cleaning, etc.) and re-inserted in the brackets as easily as a roller shade, Warren's Venetian Blinds are individually made and assembled. Each order is handled separately and shipped completely assembled, ready to be installed. With detailed instructions, installation is easily and quickly done.

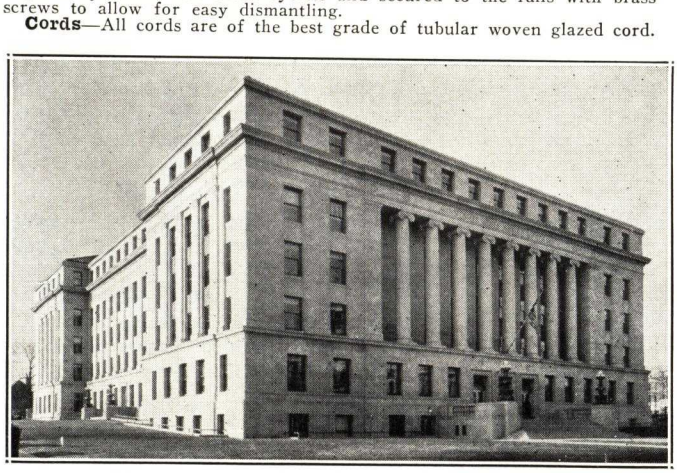
Samples and Data Furnished—We will gladly furnish to architects, contractors or owners, upon request, sample blinds and complete specifications as to construction, operation, materials, color range, etc. But, please send window sizes when estimates are wanted. It saves time and unnecessary correspondence.

Materials and Specifications

Wooden Parts—All wooden parts are of clear white basswood. This wood is free from pitch and sap, light in weight, and does not cup or twist. Slats may be obtained in any of the following widths: 1¾, 2, or 2⅜ in.

Ladder Tape—We use only best quality interwoven cotton tapes. Tape is eyeletted with brass eyelets and secured to the rails with brass screws to allow for easy dismantling.

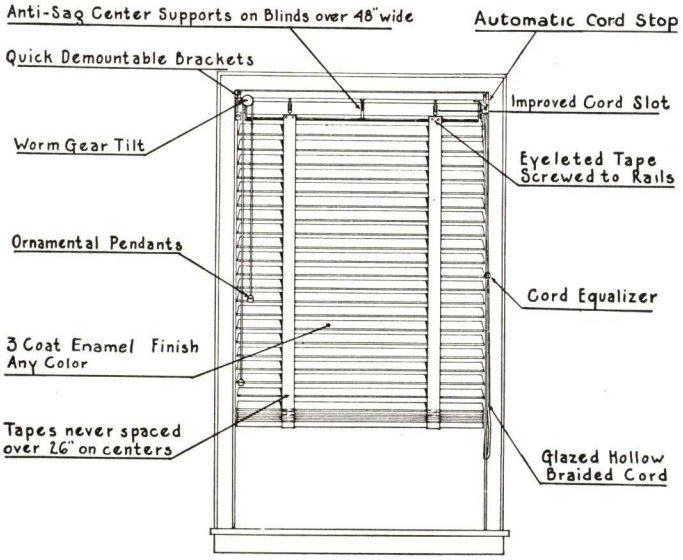
Cords—All cords are of the best grade of tubular woven glazed cord.



Minnesota State Office Building, St. Paul, Minn.

One of many public buildings where Warren's Venetian Blinds were specified and installed

WARREN VENETIAN BLINDS COMBINE ALL OF THESE IMPROVEMENTS



'Easy Lift' construction used on all Blinds over 40 sq. ft. in area.

All Hardware Cadmium Plated Steel.

All Parts and Workmanship Guaranteed for one year.

The tubular weave eliminates twisting and snarling; the glazing prolongs the life of the cord.

Hardware—All parts are of heavy gauge auto body steel, cadmium plated and lacquered to resist rust.

Automatic Cord Stop—A simple but effective friction brake, which instantly stops and holds the raising cord firmly, thus securing the blind at any desired height. An outstanding improvement over old style cord hooks.

Pulleys—Pulleys on all blinds are ½x⅞-in. steel, and mounted on ⅛-in. shafts. Ball bearing pulleys supplied when specified.

Worm Gear Tilt—All blinds are provided with a positive action worm gear tilting device guaranteed to hold the slats at any angle in all sized blinds. It is of extremely simple construction. Tilting cords are finished off with ornamental pendants.

Anti-sag Center Support—All blinds over 48 in. in width are provided with center supports to insure against any sag in the tilting rails.

Side Guides—When desired, blinds can be furnished with a special channel side guide. Pins attached to each end of every sixth slat engage into a ⅜x⅜-in. guide channel.

Finish—All wooden parts are given full three-coat special enamel finish which is extremely durable. They can be had in a wide range of standard colors or finished to match sample submitted. Ladder tapes and cords can be dyed to match the slats.

Typical Installations

A partial list of buildings we have equipped with Warren's Venetian Blinds:

The Baker Building, Minneapolis, Minn.
The Curtis Hotel, Minneapolis, Minn.
Flour Exchange Building, Minneapolis, Minn.
Minneapolis Post Office, Minneapolis, Minn.
State Office Building, St. Paul, Minn.
St. Thomas College, St. Paul, Minn.
The St. Paul Hotel, St. Paul, Minn.
The Lowry Hotel, St. Paul, Minn.
St. Paul Athletic Club, St. Paul, Minn.
The Wilshire Hotel, Detroit, Mich.
The Curtis Building, Detroit, Mich.
Film Exchange Building, Detroit, Mich.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Milwaukee Athletic Club, Milwaukee, Wis.
Forestry Service Building, Madison, Wis.
Tolerton & Warfield Co., Sioux City, Iowa.
Medical Arts Building, Duluth, Minn.

WARREN'S WOOD FABRIC SHADES

Warren's Wood Fabric Shades for Industrial or Porch installation are available in all standard widths and in practically all regular tints. Write for details and prices.

THE J. G. WILSON CORPORATION

ESTABLISHED 1876

GENERAL OFFICES
1841 Broadway
NEW YORK, N. Y.

FACTORY
P. O. Box 599
NORFOLK, VA.

CABLE: "WILCORP, NEW YORK"
OFFICES IN ALL PRINCIPAL CITIES

For Overhead Type and Rolling Doors, Partitions and Wardrobes, see File Index

WILSON OUTSIDE VENETIAN BLINDS AND AWNINGS

Keep Out Heat as Well as Allowing Regulation of Light

TRADE-MARK

For 60 years THE J. G. WILSON CORPORATION has been recommending the use of *Outside* Blinds and Awning Blinds as a means of reducing room temperatures, something inside Venetian Blinds will not do.

By protecting the window area from the sun's strong rays without retarding the free circulation of air between the window and blind, solar radiation is reduced to a minimum.

Exhaustive research, recently completed by a well-known impartial organization, has verified our contention and leaves no doubt whatsoever regarding the superiority, from every angle, of *Outside* Blinds and Awnings.

Types of Blinds

Wilson *Outside* Venetian Blinds and Awnings can be used on any type of window opening save those fitted with casement sash swinging out. They are designed and finished to withstand severe exposure and that they do so is attested by the fact that installations made as long as thirty years ago are still in serviceable condition.

Wilson Type No. 1-4 Awning—Made with collapsible frame and side wings for protection against end light, it was designed primarily for use on high class residences where deep masonry reveals are available for proper application.

Wilson No. 3-5 Awning Blind—An inexpensive adaptation of the No. 1-4, is adaptable for use on any priced home and buildings of any type. It can be installed equally as well on the face of wall as within reveal.

Wilson Type No. 6 Louvre Blinds—Can be used in windows in any type of building, also on porches in residences.

All these types are made in both wood and metal.

Features

When control and distribution of light, as well as complete elimination of solar radiation are desired, *Outside* Blinds and Awnings should always be used.

Wilson Traverse Roller Construction—Makes possible operation from the inside without opening windows or screens.

Wilson Aluminum or Bronze Ladder Tape—Make unnecessary costly annual replacement of tapes.

WILSON INSIDE BLINDS

When the conditions outlined above are secondary to the decorative beauty or effect to be obtained, Wilson Type No. 11 DeLuxe Model Traverse Roller and Wilson Type No. 12 Standard Pulley Bar Blinds (for inside use) will serve their purpose as well now as they have for the past 60 years.

Details, Specifications, etc., of any of the above Furnished on Request

WESTERN VENETIAN BLIND CORPORATION

EASTERN OFFICE AND FACTORY
609 West 26th Street, NEW YORK, N. Y.
CABLE ADDRESS
Westblind

Service from Coast to Coast—Agencies in All Principal Cities

FACTORY LOCATIONS
WESTERN (ILL.) VENETIAN BLIND CO., 351 East Ohio Street, CHICAGO, ILL.
WESTERN (MO.) VENETIAN BLIND CO., 2125 Indiana Avenue, KANSAS CITY, MO.
WESTERN VENETIAN BLIND CORP., 352 Sixth Street, SAN FRANCISCO, CALIF.

WESTERN VENETIAN BLINDS

For Homes, Offices, Banks, Libraries, Schools, Hospitals, Auditoriums, etc.

Why Western Venetian Blinds?

Daylight Without Glare—Western Venetian Blinds permit an even diffusion of light all over the room. Thus, glare, streaked patterns, "twilight zones," dark corners and shadows are eliminated, protecting the eyesight of the occupants of the room.

Ventilation Without Draft—Western Venetian Blinds regulate ventilation by deflecting air currents upward. This eliminates drafts without sacrificing fresh air or necessary light. An obvious aid to health, especially in nurseries, bedrooms, schools and hospitals.

Temperature Control—Western Venetian Blinds aid in regulating temperature. They shut out heat by deflecting the direct rays of the sun as they enter the room. In winter they keep the room warmth from escaping, the wood slats being an excellent non-conductor of heat. Yet, at all times they permit adequate ventilation.

Architectural Harmony—Western Venetian Blinds are now being supplied in a variety of colorful hues, in wood parts, tapes and cords. The present vogue for color suggests a score of new uses to architects, contractors and interior decorators. Western Venetian Blinds in color bring out the true tone values of your decorative plan. The foremost decorators of the country are installing Western Venetian Blinds in many of America's finest homes.

Distinctive Interior Decoration—Western Venetian Blinds provide a soft, perfectly controlled light which enriches and brings out the full color tones of rugs, drapes and furniture in a charming manner. Can be obtained in any color or shade. Our color chart will be brought to you by our representative, or mailed on request.

Privacy and Protection—Western Venetian Blinds meet every requirement for absolute privacy. By angling the slats it is impossible for anyone on the outside to see into the room. Street lights, electric signs, etc., cannot be an annoyance at night. In addition, Western Venetian Blinds present a hindrance to burglars, prowlers or housebreakers.

Quiet—Western Venetian Blinds keep noises down to a minimum even in a brisk wind, when furnished with fibre channel glides. They are quiet and perfectly noiseless in operation. Moreover, they shut out traffic noises and other disturbances to a marked degree.

Economy—Western Venetian Blinds are economical. The original cost is the only one for a long period of time. Western Venetian Blinds, over a period of fifteen years, cost 46% less than the old obsolete shades and awnings, yet serve the purpose of both. Repairs, winter storage, and frequent replacement are practically unknown where Western Venetian Blinds are used. Cleaned quickly and easily with our exclusive *Venetian Blind Cleaning Brush.*

WESTERN VENETIAN BLINDS HAVE 10 POINTS OF STRUCTURAL SUPERIORITY

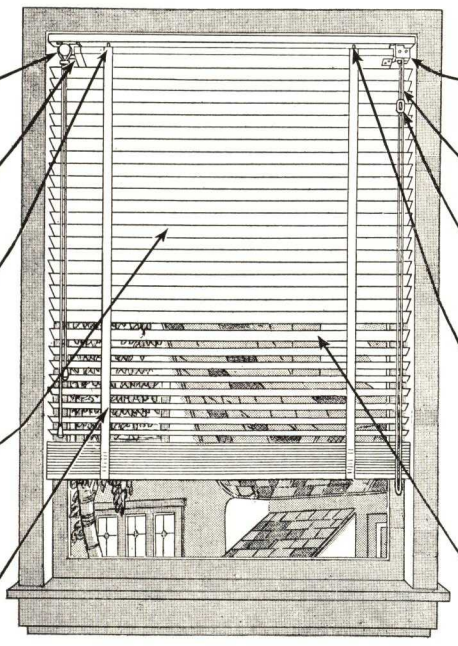
1. **New Tilting Device**—New worm gear tilt exclusive to WESTERN Venetian Blinds enables you to keep slats locked firmly in desired position. Operating device furnished in accordance with weight of the blind. Even largest blinds operate easily.

2. **Removable Head Brackets**—Make it possible to take blind down and reinstall easily.

3. **Exclusive Tilt Rail**—Tilt rail so bored that blinds pull up freely without wearing the cord no matter at what angle they are tilted—exclusive to WESTERN.

4. **First Grade Port Orford Cedar**—Slats and other wooden parts are made from clear selected **Port Orford** White Cedar. **(No seconds permitted.)** Kiln dried in our own plant to prevent warping. Guaranteed not to split, break or warp from ordinary usage during entire life of blind.

5. **Imported Tape**—Carr's imported interwoven tape—highest grade in the industry—is used in WESTERN Venetian Blinds for greatest durability. Now obtainable in fifteen standard colors. Domestic tape supplied when requested.



6. **New Automatic Cord Stop**—Exclusive to WESTERN Venetian Blinds enables you to raise or lower blind to any height desired without tying or untying cord, and which guarantees positive action by merely moving cord to left or right.

7. **Cords Won't Twist**—All cords filled braided 1/8" diameter, glazed to prevent wear. This assures long life.

8. **Slats Always Even**—A special cord equalizer makes blind raise evenly no matter whether one or both strands are pulled

9. **Ball Bearing Rollers**—Rollers; over which all lifting cords pass are steel, double race ball-bearing type, except where climatic conditions make use of fibre desirable. Even a child can easily raise or lower a WESTERN Venetian Blind.

10. **Durable Finish**—Each slat receives a series of coats of special high-grade enamel by a patented process which insures an even and uniform coating not possible by other methods. Scientific research by nationally-known authorities strongly recommends No. 82 Standard finish for best results in daylight control. See our standard color chart for additional finishes.

TYPES OF WESTERN VENETIAN BLINDS

The types of Western Venetian blinds, illustrated on this page, are constructed to fit practically every type of window opening, as well as transoms, circles and doors.

Likewise, ornamental openings are readily treated. The facilities of this company for the treatment of unusual and difficult openings are well known.

A Typical Western Venetian Type "B" Single Lift Blind

Type "B"—Single Lift Type (Straight Lift)—*For windows less than 60 in. wide and for windows from 60 to 80 in. wide, which contain 35 sq. ft. or less.*

Type "B" Single Lift Western Venetian Blind is ideal for the narrow type window. Type "B" is particularly recommended for homes, apartment houses, hotels and dwellings where narrow windows are used. Type "B" because of its narrow characteristic, is particularly adaptable for striking and individual color effects. Because of this fact, Type "B" installation can readily become the focal point of any room. See page 5 for construction details.

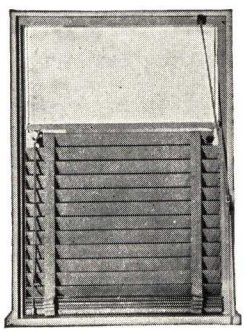
Inverted Type "LO" Oscillating Roller Type—*For any size window, width or area. Should be used in all cases on windows containing over 100 sq. ft.*

Our Oscillating Roller Type is designed for very large openings; and for all openings where great ease in operation and freedom from cord replacement is desired. Blinds are lifted by means of a wire cable wrapping about a roller, oscillating to prevent piling up of cable. Roller is operated by one sash cord, winding on operating spools, the cord traveling up with bottom rail, thereby eliminating surplus cord length. Wear and tear is eliminated and life of blind prolonged due to easy and precisely controlled mechanism. Movable parts are enclosed in wood or metal housing with removable front, giving access to working parts, and a finished appearance to top of blind.

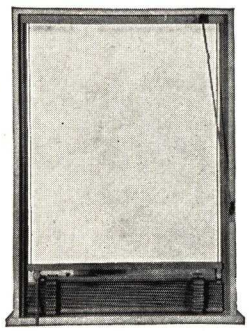
A Typical Western Oscillating Roller Type Blind Installed in the Building of the A. O. Smith Corp., Milwaukee, Wis.

Type "U" Bottom Accumulation Type—*Suitable for windows less than 48 in. wide and for windows from 48 in. to 60 in. wide which contains 35 sq. ft. or less.* (If there is no objection to exposed cords, may be used for windows containing up to 100 sq. ft.)

The blind operates in wood grooves with tenoned slats. Due to construction, no automatic stop is supplied. See page 5 for construction details.



Blind Partly Raised and Tilted

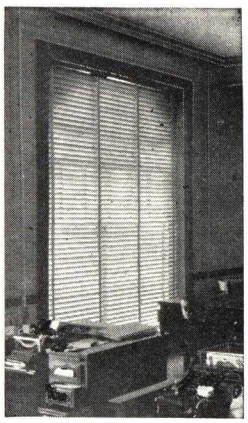


Blind in Lowered Position

Type "A"—Double Lift Type ("Easy-Lift")—*For windows 80 in. or more in width which contain more than 35 sq. ft. Not recommended for windows containing more than 100 sq. ft.*

Our Type "A" Double Lift Western Venetian Blind is ideal for large windows, such as found in all banks, public buildings, large show windows, dust backs for large windows, hotel lobby windows, libraries, school buildings, etc.

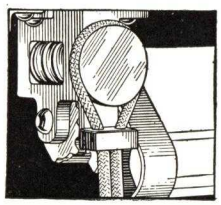
Type "A" blind is raised by four cords. The arrangement of cords causes the blind to raise six inches for each one foot pull. This means a minimum of effort is required to raise the Type "A" blind. Hence, the name "Easy-Lift." See page 5 for construction details.



A Typical Western Venetian Type "A" Double Lift Blind

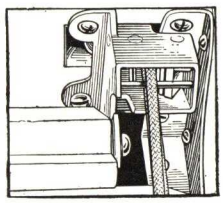
Width of Slats—Western Venetian Blinds are made with standard slat widths of 2⅜, 2 and 1½ in. This applies to all types used in industrial, commercial, and residential installations. The 2⅜-in. slat width is most effective in reflecting light and controlling ventilation and is also extremely attractive. Often narrower slats are believed to give a better effect or conditions necessitate narrower slats and 2-in. or 1½-in. slats can be furnished.

Worm Gear and Automatic Cord Stop—These are exclusive features of Western Blinds. They are manufactured of zinc alloy base and are non-rustable under any conditions.



Worm Gear Tilt

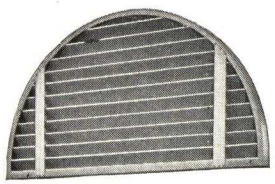
Keeps slats locked securely in any position. Removal of tilt rail and dropping of blind facilitates cleaning of window

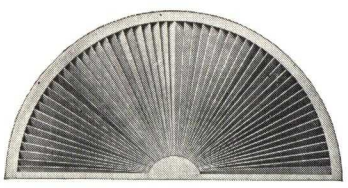


Automatic Cord Stop

Designed to hold the blind at any height desired without the use of cord holders

Irregular Shaped Types with Stationary Slats (Non-operating) — Type "F"—This irregular shaped type is often called a "circle-head" blind. Designed primarily to cover the curved or irregular arched openings above the rectangular parts of windows and doors. This type of blind is made with stationary slats tilted to a 45 degree angle, housed into a solid circular laminated frame ⅝x1¾ in. in section.



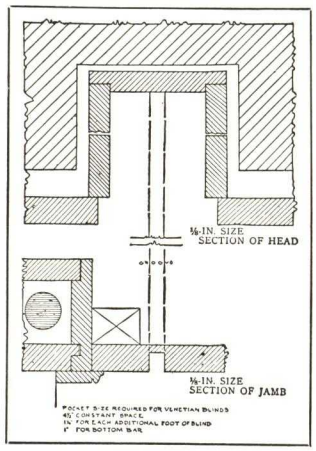


Type "SUNB"—This type carries the same specifications as Type "F" with the following additions: The slats are all fanned out from a common center. With this extreme rigidity there is no need for tapes or center supports. This fan type design is one of great beauty and may be used effectively in the interior decorative scheme of a large room with circle-head windows or doorways.

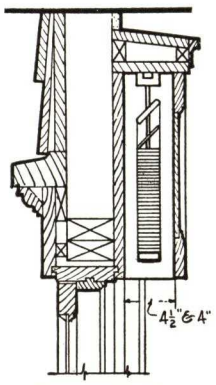
INSTALLATION OF WESTERN BLINDS

Detail of Jamb and Pocket

When below is followed, it will result in a most satisfactory installation of Venetian Blind, either outside, between screen and sash, or on the inside, giving a better service than any other blind of its kind.



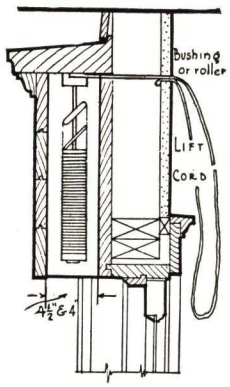
Through the use of the data below, architects are able to design pockets to take care of the accumulation and to conceal it entirely from view. The cut below on the left shows a section where the blind is concealed in a pocket inside of the room. The cut below on the right shows a section where the blind is concealed outside, yet operating from the room.



Section Showing Blind Concealed Inside of Room

DATA FOR USE IN DESIGNING POCKETS

Type	Minimum pocket width			Accumulated space		
	2⅜" slats	2" slats	1½" slats	2⅜" slats	2" slats	1½" slats
"A" "B"	4"	3¾"	3½"	1¼" for each foot in blind height plus 3"	1½" for each foot in blind height plus 3"	2" for each foot in blind height plus 3"
"LO" Regular Oscillator	7"	7"	7"	1¼" for each foot in blind height plus 7"	1½" for each foot in blind height plus 7"	2" for each foot in blind height plus 7"
"LO" Inverted Oscillator	7"	7"	7"	1¼" for each foot in blind height plus 6½"	1½" for each foot in blind height plus 6½"	2" for each foot in blind height plus 6½"
"U"	4"	3¾"	3½"	1¼" for each foot in blind height plus 4"	1½" for each foot in blind height plus 4"	2" for each foot in blind height plus 4"



Section Showing Blind Concealed Outside—Operating From Room

COLOR SELECTIONS

Western Venetian Blinds can be supplied in any color to match the decorative scheme of any room.

The greatest efficiency in light control is derived from Western Venetian Blinds enameled in colors that do not absorb the light, such as aluminum, the various shades of ivory or the very light shades of other colors.

If it is necessary to employ dark colors for a Western Venetian Blind in order to harmonize with the color scheme of a room, it is desirable to specify two-tone slats, making the surface of the slat which faces the window and reflects the sunlight, a cream color. The other side of the slat, as well as the hardware and bottom and top rails, which are seen from within, may then be enameled the dark color desired without losing the important sunlight reflection qualities. See our Standard Color Chart which will be furnished promptly on request.

The following table gives the comparative reflection values of various colors:

Aluminum	84%	Sage Green	40%
White	80%	Sky Blue	35%
Ivory	70%	Olive Green	20%
Buff	65%	Cardinal Red	20%
		Black	5%

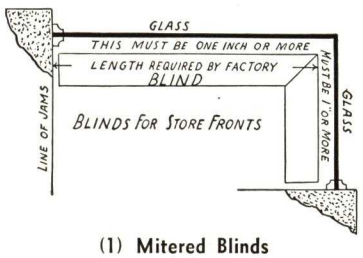
The difference between the percentages given and 100% indicates the light absorption.

Western Venetian Blinds are also supplied with cords and tapes in harmonizing colors to match the room and the color of the blinds. This is a point to remember when specifying colored Western Venetian Blinds. Tapes are now obtainable in twelve standard colors.

OPTIONAL FEATURES

(1) Mitred Blinds—These blinds are designed for conditions where two windows meet at an angle, such as store fronts, etc. Such blinds are mitred to allow free operation of each—maintaining minimum amount of operating clearance and eliminating light streaks.

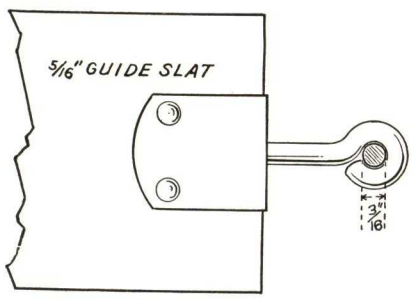
(2) Brass Rods—Brass clips attached to heavy guide slat and connected to rod by brass ring which prevents the blind from swaying in the wind. Recommended for outside use.



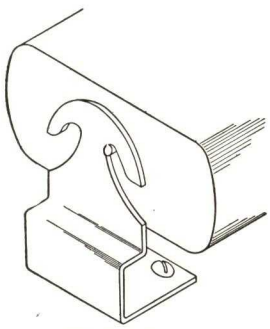
(1) Mitered Blinds

(3) Sill Bracket—This bracket, screwed to the sill holds the blind securely and noiselessly in lowered position.

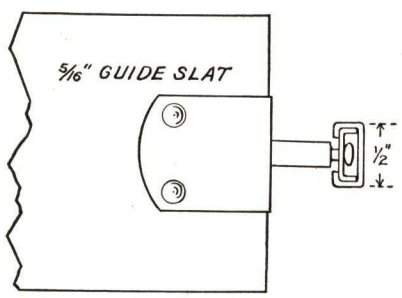
(4) Standard Channel Guides—Our standard channel guides are made of solid brass. Brass clips placed on heavy guide slats at intervals of approximately 18 in. and attached to brass slider in channel by a brass key which permits detaching at will, and which prevents billowing and swaying of the blind.



(2) Brass Rods



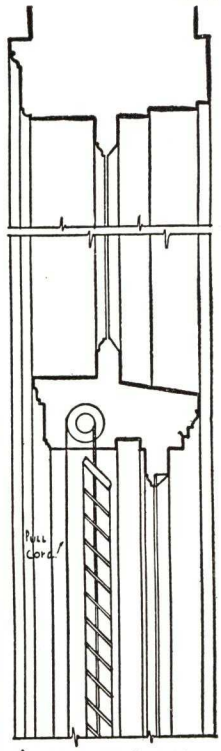
(3) Sill Bracket



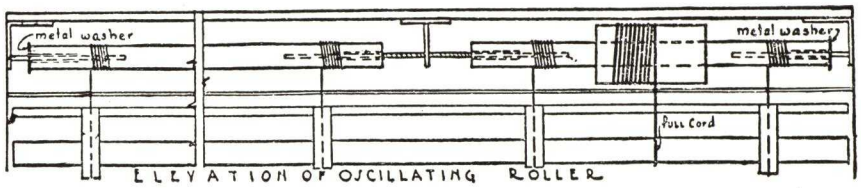
(4) Standard Channel Guide

DETAIL OF OSCILLATING TYPES WESTERN VENETIAN BLINDS

INVERTED TYPE "LO" OSCILLATOR



DETAIL OF BLIND OPERATOR CONCEALED IN TRANSOM.



ELEVATION OF OSCILLATING ROLLER

TYPE "LO" (Large Oscillating Roller Blinds)

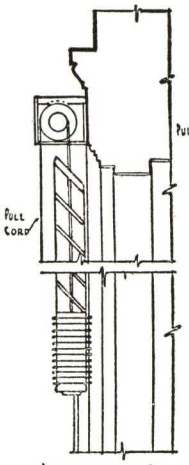
(Installation shown on page 2)

Requisite for windows containing over 100 sq. ft. Standard as to slats, ladder tape, cord and finish. Lifted by $\frac{1}{16}$ in. flexible wire cables wrapping over roller designed to oscillate by sash cord winding on operating spool. Working parts should be housed in a wooden case attached to wall over window. Note arrangement of roller as shown in cut. Size of housing varies according to width and height of opening. Under ordinary conditions a 7x7-in. housing is sufficient.

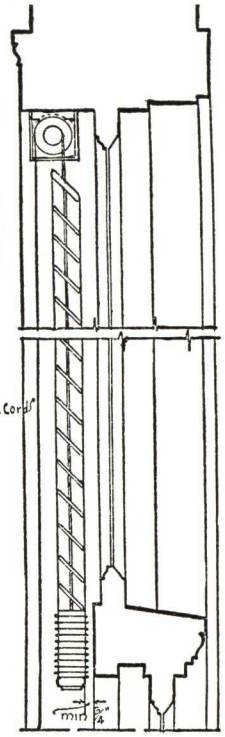
MOTOR DRIVE OSCILLATOR (Extra)

A mechanically perfect device which makes the raising and lowering of blinds purely automatic. Remote switch control is employed with safety cut-off switch. Blinds can be stopped at any desired height instantly.

Motor drive oscillator is extra optional equipment. Recommended for only the largest type "LO" installations.

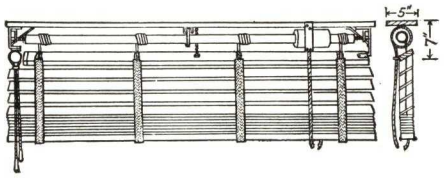


DETAIL OF BLIND ON FACE OF CASING.



DETAIL OF BLIND OPERATOR CONCEALED AT HEAD.

REGULAR TYPE "LO" OSCILLATOR



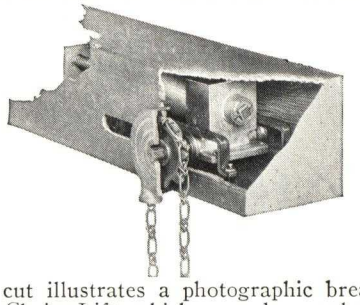
Operating specifications same as the Inverted Type except that the mechanism is not housed.

Used in pockets where conditions permit boring into the top of pocket and screwing blind into head of pocket.

Heavy Duty Worm Gear

Furnished on larger types of "LO" Oscillators, chain lift and motor driven types. Permits blind to be tilted at any angle with ease regardless of size (extra).

PATENTED CHAIN LIFT FOR TYPE "LO"



This cut illustrates a photographic breakaway of the Chain Lift which may be employed on large, heavy types of "LO" (Large Oscillator) Western Venetian Blinds, when desired. (An optional extra.) It shows the oscillating roll box, shaft bearing, oscillating screw, lifting chain, sprocket wheel, worm gear housing and drive shaft. Insures easy, finger tip control of the raising and lowering of very large types "LO" blinds. Housing 6x6 inches.

SPECIFICATION DATA FOR WESTERN VENETIAN BLINDS

Venetian Blind Specifications for.....Building

Address .....

All Venetian Blinds to be manufactured in accordance with following specifications, with necessary hardware, and installed in a workmanlike manner. Brand to be "WESTERN," as manufactured by WESTERN VENETIAN BLIND CO., 601 West 26th Street, New York, N. Y.

Windows marked on plans. (Select type used.)

Type "A" Venetian Blinds shall be furnished with double lift cord threading, "or easy-lift cord arrangement," as specified on following page.

Type "B" Venetian Blinds shall be single lift cord threading as specified on following page.

Type "U" Venetian Blinds shall be bottom accumulation type as specified on following page.

Type "SO" Venetian Blinds shall be small Oscillating Roll lift type as specified on following page.

Type "LO" Venetian Blinds shall be large Oscillating Roll lift type as specified on following page.

Type "SKY" Venetian Blinds shall be Skylight Blinds as specified on following page.

Type "F" Venetian Blinds shall be irregular shaped, stationary slat type, as specified on following page.

Type "SUNB" Venetian Blinds shall be Sunburst, as specified on following page.

General Specifications

For all Venetian Blinds except Skylight (Type "SKY"), Irregular Shaped Stationary Slats (Type "F") and Sunburst (Type "Sunb").

Wood Parts—All wood parts shall be furnished of clear, selected, air seasoned, kiln dried White Cedar, moulded to size, manufactured from lumber of straight grain, free of defects.

TABLE—SLAT AND RAIL DIMENSIONS, INCHES

Slat size	Head rail	Tilt rail	Bottom rail			
			Type "A"	Type "B" Type "U"	Type "SO"	Type "LO"
$\frac{1}{8}$ x2 $\frac{3}{8}$	1 $\frac{1}{8}$ x2 $\frac{5}{8}$	$\frac{7}{8}$ x2 $\frac{3}{8}$	1 $\frac{1}{8}$ x2 $\frac{3}{8}$	$\frac{3}{4}$ x2 $\frac{3}{8}$	$\frac{3}{4}$ x2 $\frac{3}{8}$	$\frac{3}{4}$ x2 $\frac{3}{8}$
$\frac{1}{8}$ x2	1 $\frac{1}{8}$ x2	$\frac{7}{8}$ x2	1 $\frac{1}{8}$ x2	$\frac{3}{4}$ x2	$\frac{3}{4}$ x2	$\frac{3}{4}$ x2
$\frac{1}{8}$ x1 $\frac{1}{2}$	1 $\frac{1}{8}$ x2	$\frac{7}{8}$ x2	1 $\frac{1}{8}$ x1 $\frac{1}{2}$	$\frac{3}{4}$ x1 $\frac{1}{2}$	$\frac{3}{4}$ x1 $\frac{1}{2}$	$\frac{3}{4}$ x1 $\frac{1}{2}$

See table, page 3, for dimension of pocket for concealing slat accumulation.

Slats—To be 1/8 in. thick, ... in. wide, smooth rounded edges. (Indicate whether 2 3/8 in., 2 in. or 1 1/2 in. wide.)

Head Rails—To be 1 1/8 in. thick, ... in. wide, smooth rounded edges on bottom only. (See table on preceding page.)

Tilt Rail—To be 7/8 in. thick, ... in. wide, smooth rounded edges. (See table on preceding page.)

Cord Slots—Cord slots in slats shall be punched or routed making clean cut, smooth edges, minimizing cord wear. Slot in tilt rails (cord saver design) to be so drilled that cords move vertically through the rail without friction, permitting blind to be raised and lowered, while tilted, without binding on cords. Bottom rail drilled "Klosetite" principle.

Tilting Device—Shall be worm gear type, die cast, of zinc alloy base designed to permit the fullest angle of tilt, and locking slats securely at any angle (standard).

Center Supports—Shall be set between tilt rail and head rail on blinds over 48 in. in width, to prevent sagging and warping of tilt rail. These supports shall be so arranged that full angle of tilt is not restricted.

Cord Equalizer—Shall be furnished for pull cords, insuring even rise of both ends of blind when lifted.

Hold-Down Brackets—Shall be furnished to check wind sway.

Auto-Stop Cord Brake—To be die cast of zinc alloy base and to hold blind at any desired height without use of cord holders on casing (standard).

Pulleys—Shall be double race, 22 balls, steel shafts, unless climatic conditions of location of job make fibre pulleys preferable.

Cords—All tilt cords and pull cords shall be 1/8 in. of best quality fill braided and glazed to minimize wear.

Tilt Cord Knobs—Shall be furnished of zinc alloy base or wood and of sufficient weight to hold cords taut.

Hardware—All hardware to be sprayed aluminum. (Optional—All hardware shall be sprayed to match color of blind.)

Installation Brackets—Where installation conditions permit, utility brackets, for installing blinds on face of casings, or between jambs, shall be used. These brackets shall permit of quick removal of entire blind, without taking off installation brackets.

Hangers—Shall be of type to permit instant removal of tilt rail, and lowering of blind to facilitate washing of windows.

Finish—All wood parts shall receive a series of coats of enamel to create a durable finish. Color shall be WESTERN VENETIAN BLIND CO.'s color No. ..... (See WESTERN VENETIAN BLIND CO.'s color charts. Mailed upon application.)

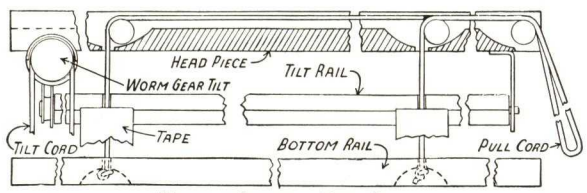
Ladder Tape—Shall be furnished with cross ladders interwoven to main strands, spun from cotton and linen, of high tensile strength, free of weaving defects. Color as selected from Western Standard Tapes.

Channel Guides—Solid brass channels shall be installed, into which solid brass slat clips, placed on both ends of each ninth slat, shall slide, preventing billowing of blind. (Extra, optional.)

Type "B" Venetian Blinds

(For windows less than 60 in. wide, and for windows from 60 in. to 80 in. wide which contain 35 sq. ft. or less.)

Specifications shall be the same as given above under "General" with following addition: Single lift threading of lift cords shall be employed. (See detail below.)



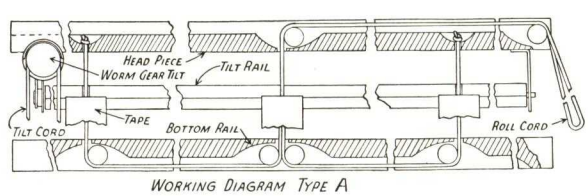
WORKING DIAGRAM TYPE B

Bottom Rail—Shall be 3/4 in. thick ..... in. wide. (See table under "General.")

Type "A" Venetian Blinds

(Double cord threading, or "Easy-Lift.") (For windows 80 in. or more in width which contain more than 35 sq. ft. Not recommended for windows containing more than 100 sq. ft.)

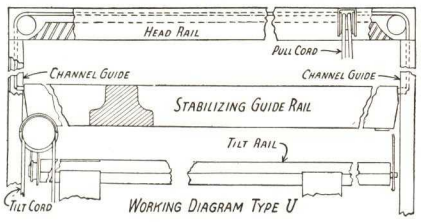
Specifications shall be as given under heading "General" with addition of following: Threading of blinds shall be so arranged that double lift threading principle is employed, making for ease in raising blind. (See detail below.)



WORKING DIAGRAM TYPE A

Bottom Rail—Shall be 1 1/8 in. thick ..... in. wide. (See table under "General.")

Type "U" Venetian Blinds



WORKING DIAGRAM TYPE U

Bottom Accumulation Type—(Suitable for windows less than 48 in. wide and for windows from 48 in. to 60 in. wide which contain 35 sq. ft. or less.) (If there is no objection to exposed cords, may be used for windows containing up to 100 sq. ft.)

Specifications same as given under "General" with addition of following: Stabilizing guide rail 1 5/16 in. thick x 2 in. wide shall be furnished from which body of blind shall be suspended. Cords shall operate through side channel guides. Blind shall rise from the bottom.

Bottom Rail—Shall be 3/4 in. thick ..... in. wide. (See table under "General.")

Type "LO" Venetian Blinds (Regular)

(Large Oscillator—see page 2.) Operation specifications same as Inverted Type except that mechanism is not housed. Used in pockets where conditions permit boring into top of pocket and screwing blind into head.

Type "LO" Venetian Blinds (Inverted)

(Large Oscillator—see page 2.) (Suitable for windows containing 45 sq. ft. or more. Should be used in all cases on window containing over 100 sq. ft. Specifications shall be same as given under heading "General" with addition of following: Blind shall be listed by winding of flexible wire cable on oscillating roll operated by pull of sash cord winding about spool of size determined by weight of blind, mounted on oscillating roller. The entire roll shall be in a case. This case shall be provided with removable sections, giving immediate access to all working parts.

Bottom Rail—Shall be 3/4 in. thick ..... in. wide. (See table under "General.")

Chain Lift—(See page 4.) Chain operated lifts employing the worm gear principle shall be installed. (Extra, optional.) (Special attachment for Type "LO.")

Motor Drive—(See page 4.) Electric motor of proper hp. rating to satisfactorily lift blind, power of which is transmitted to the roll through a series of worm gears, shall be installed. Control switches shall be installed in a convenient position near the window. All wiring shall be in conduits. (Extra, optional.)

Type "F" Venetian Blinds

(Stationary Blinds for irregular shaped window heads.) (See page 2.)

Frame—Segment shall be laminated wood 5/8 in. thick, and of a width to accommodate slat width of (specify 2 3/8 in., 2 in. or 1 1/2 in.) set on an angle of 45 degrees.

Bottom Rail—Shall be 1 1/8 in. thick, width to conform to width of segment.

Slats—Shall be notched into perpendicular members spaced not more than 31 in. apart and covered by tapes. All slat ends shall be fastened securely to segment.

Finish—Shall be same as finish specified under "General for all blinds."

Type "SUNB" Venetian Blinds

(Sunburst)—Specifications same as Type "F" with following addition: Slats shall be fanned out from common centre, no tapes or centre supports shall be installed.

Finish—Shall be same as finish specified under "General for all blinds."

Type "SKY" (Skylight) Venetian Blinds

The slats shall be suspended from a specially built frame. This frame shall consist of a series of cross members 7/8 x 2 1/8 in. of suitable number to prevent sagging. Tilting bars shall be correctly placed at right angles and attached to each slat not more than 36 in. apart, causing all slats to tilt simultaneously.

Slats—Shall be (specify 2 3/8 in., 2 in. or 1 1/2 in.) wide.

Friction Arrangement—This blind shall be provided with a friction arrangement which will hold slats at any desired angle.

Finish—Shall be same as specified under "General" for other types.

Operating Pole—Shall be furnished to open and close.

Chain Tilt—Shall be furnished to operate with endless jack chain in place of operating pole, slats being held by friction arrangement. (Optional.)

Worm Gear Tilt—These blinds shall be operated by endless jack chain through worm gear arrangement. (Extra, optional.)

Type "MET" All Metal Venetian Blinds

Suitable for any window, preferably for outside use. Blind to be built on either type "LO" (Regular) or Type "LO" (Inverted).

Slats—Shall be .032, 20 gauge aluminum 2 3/8 in. wide with lip on edges.

Bottom Rail, Tilt Rail and Housing for Mechanism to be of Port Orford Cedar sprayed to match slats.

Tape—To be solid Bronze or Aluminum (Extra, Optional).

Finish—Natural Aluminum Finish.

YARDLEY VENETIAN BLIND COMPANY

Specialized Woodworkers for 58 Years

COLUMBUS, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

YARDLEY IMPROVED VENETIAN BLINDS

Yardley Venetian Blinds are mechanically simple, neat, compact and troubleproof. Their quality and service have been proved over a period of many years in representative installations in buildings and residences throughout the United States.

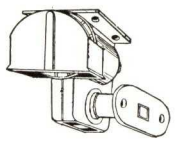
ESSENTIAL FEATURES AND INFORMATION

(1) HARDWARE

A—Lift
The lift mechanism is equipped with full size metal pulleys to assure speedy, quiet, effortless operation.

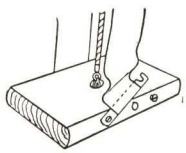
B—Cord Brake
The lift cord works through an automatic stop, to stop and hold blinds at any desired height.

C—Worm Gear
New, improved worm gear provides a positive method of tilting slats.



D—Cord Adjuster
A simple device to keep blind level at all times.

E—Cord Tape Release
Facilitates quick removal of slats and tapes for cleaning.



F—Finish
Metal parts are cadmium plated to resist corrosion.

(2) SLATS

G—Wood
Carefully made of Clear Bass wood or Port Orford Cedar to fill all specifications. Guaranteed against splitting and warping.

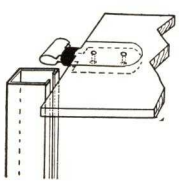
H—Pile Up
3½-in. base plus 1 in. for each foot of blind height.

I—Slat Sizes
⅛ in. x 2⅜ or 2 or 1¾ in.

J—Tilt Feature
Slats in lower half of blind may be closed while those in upper half remain open to provide maximum of privacy and ventilation.

(3) ATTACHMENT

K—Hanging Brackets
Blinds are regularly provided with universal brackets permitting removal of blinds without use of tools. Other brackets are designed to meet any requirements.



L—Channel Guides
Brass channels ½ x ½ in., applicable to either face or inside installations. Guide tips, rubber covered to prevent noise, are provided for each seventh slat.

(4) HEADRAIL AND TILTS

M—Sizes
Head rail: 1⅛ in. x 2⅜ or 2 or 1¾ in.
Tilts: ⅞ in. x 2⅜ or 2 or 1¾ in.

(5) PAINT

N—Finish
Gloss, semi gloss or dull finish effects are available to satisfy decorative demand.

O—Colors
Fourteen standard colors at no extra charge. Special colors to match your sample may be had at extra charge.

(6) TAPE AND CORD

P—Quality
The finest quality of imported or domestic tape is used. Glazed, hollow-braided cord is used to minimize cord stretch and shrinkage.

Q—Colors
A wide range of colors is available.

(7) SPECIAL EQUIPMENT

R—Easy Lift
Multiple lift equipment to facilitate lifting wide blinds.

S—Roll Heads
Oscillating roll heads to lift extremely long or heavy blinds.

T—Hardware
To solve your special hardware problem—mail a sketch to us.

U—Closed Metallic Head Blinds
A compact metal box conceals gear, tilt rail and stop.

V—Cornices
Cornices and fascia available in various designs and prices.

W—Store Window Valances
Wood slats in fourteen standard colors, suspended in polished aluminum hangers 12 or 17 or 24 in. deep.

Installations

Scores of America's finest and most modern buildings have been equipped with Yardley Improved Venetian Blinds. Among them:

Carew Tower, Cincinnati, Ohio—Walter Ahlschlager, Architect.
Jackson Tower, Jackson, Miss.—C. H. Lindsley, Architect.
Kanawha Building, Charleston, W. Va.—Alfred C. Bossom, Architect.
American Educational Press, Columbus, Ohio — Richards, McCarty & Bulford, Architects.
Grant Building, Pittsburgh, Pa.—Henry Hornbostel, Architect.
Court of Claims Building, Washington, D. C.—David Lind, Architect.

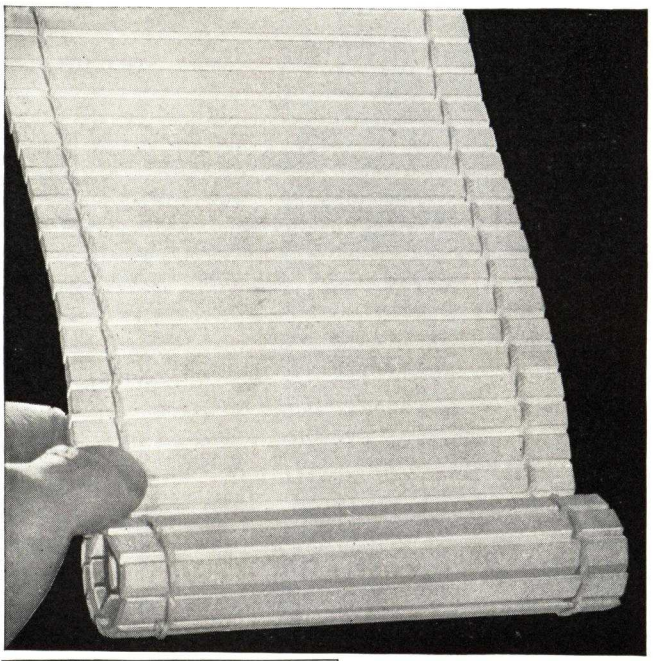
THE AEROSHADE COMPANY

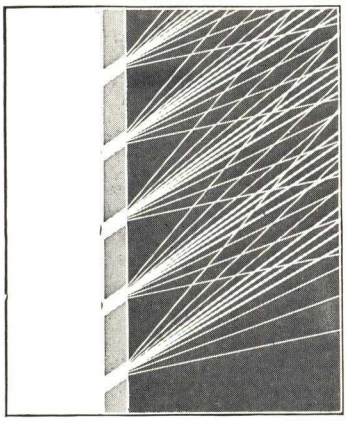
3892 Oakland Avenue, WAUKESHA, WIS.

AGENTS IN PRINCIPAL CITIES

AEROLUX WOOD-FABRIC WINDOW SHADES

Available in a variety of grades and finishes for almost every type of building and with fixtures which adapt them to every kind of sash—wood or steel, sidewall, monitor or skylight.

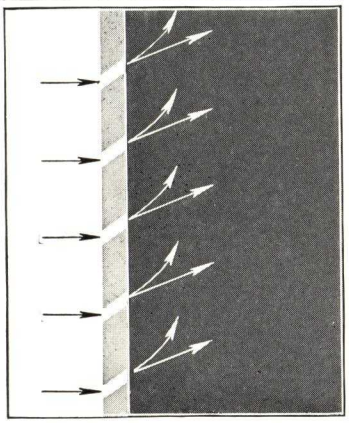




Better Light Distribution

The illustration at the left shows (1) how the bevel edge construction blocks direct sunlight, and (2) the travel of admitted light rays inside the room.

Note that most of the light rays are reflected diagonally upward toward the ceiling from which point they are reflected down and back into the room. This indirect light is glare-free, shadowless, diffused, easier on eyes. More light is *reflected* farther back into the room.



Better Ventilation

Whether outside air is being admitted into the room or inside air is being drawn out through the windows, there's a free passage of air *throughout the entire shade area.* Incoming air is directed upward, mixes thoroughly with the inside air and thus provides an ample and continual change of air without dangerous drafts. Medical authorities prefer this over-all type of ventilation.

The E2 Fabric

The new E2 fabric is made from beveled splints ¼ in. wide, woven together with hard twisted seine twine. Operated by raising cords running through automatic lock pulleys. It's a practical shade that meets the exacting requirements of offices, hospitals, schools, institutions, homes.

Its fine fabric is more attractive and decorative.
It may be finished in stain, aluminum or any color enamel.
It provides more light and air.
It keeps rooms cooler.
It eliminates the need for expensive outside awnings.
It collects less dust, is more easily cleaned.
It is rugged enough to stand hard use without high upkeep or replacement.
It's the most economical shade you can buy.

Heavy Duty Shades for Factories

Processes, workers and machines are being protected in almost every industry by Aerolux Heavy Duty Shades. They are supplied in types for every kind of window including horizontally pivoted, and are made in widths up to 20 feet.

Trained representatives are located in principal cities. Their names or additional information on request.

ATHEY COMPANY

Perennial Window Shades and Disappearing Skylight Shades

6035-6045 West 65th Street, CHICAGO, ILL.

BRANCHES AND DISTRIBUTORS

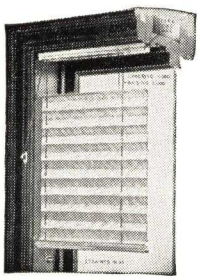
BOSTON, H. E. Holbrook Company, 49 Federal Street
BUFFALO, Howard T. Cary, 293 Voorhees Avenue
CHICAGO, Wilson & Scott, 1923 Calumet Avenue
CLEVELAND, Consolidated Screen & Weatherstrip Company, 202 Columbia Building
DAYTON, Glawe Mfg. Co., 515 E. Herman Avenue
DETROIT, LeSage & Company, 1720 12th Street
HARTFORD, Hartford Wire Works, 90 Allyn Street
LOS ANGELES, CALIF., Jack Drew, 127 So. Normandie Avenue
LOUISVILLE, V. C. Glass Carpet Co., 1004 W. Main Street
MEMPHIS, Chears Building Specialty Co., 884 Adams Avenue
MILWAUKEE, Willer Screen & Weather Strip Co., 1459 No. 40th Street
NEW YORK, Franklin H. Keese, 7 E. 42nd Street
PHILADELPHIA, W. D. Reading, Inc., 2202 Chestnut Street
ST. LOUIS, A. A. Klutho Co., 915 Syndicate Trust Building
ST. PAUL, Metal Weatherstrip Co., 503 Minn. Mutual Life Bldg.
SAN DIEGO, A. N. Baird, 1760 Kettner Boulevard
SPRINGFIELD, ILL., A. N. Krebs Co., 2201 So. 8th Street
TORONTO, Cresswell Pomeroy, Ltd., 989 Bay Street

CANADIAN OFFICE AND FACTORY: Cresswell Pomeroy, Ltd., 604 De Courcelles Street, MONTREAL

For our page on Weatherstrips, see File Index

ATHEY PERENNIAL WINDOW SHADES

The Athey Accordion Pleated Window Shade has been on the market for over 17 years, the manufacture of same having been taken over by this company in 1920. Since then many important improvements have been made so that the present shade is a perfected article in both materials and mechanism.

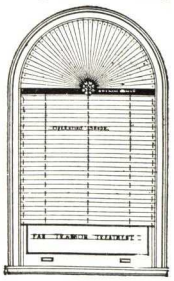


The cloth used is a herringbone weave coutil cloth, manufactured especially for Athey Shades, the thread count is 124x76 or 200 threads to the square inch, weight 1.98 lbs. to the yard. It is calendered to a smooth, dirt resisting finish; the lasting quality of Athey Shades is obtained from the cloth itself and not from artificial filling materials.

Athey Shades are furnished in the following colors: tan ecru, orange ecru, light green, dark green, taupe, black, and white, all colors being of sunfast dye.

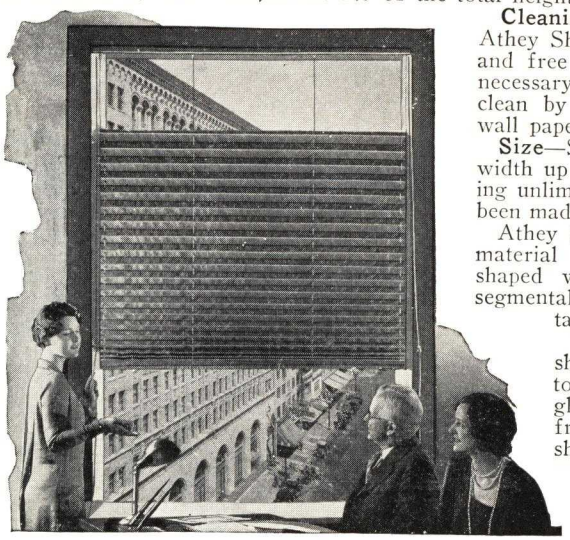
The cloth is pleated in 1⅝ in. folds, stitched along the edges of each fold thereby assuring the proper collapsing of the pleats when the shade is operated. When collapsed, very little space is occupied by the shade, about 3% of the total height.

Athey Shades are decorative, enduring and practical and are the intelligent solution of light control and ventilation as they can be lowered from the top as well as raised from the bottom, thereby permitting the shading of any part of the window as desired.



Construction and Operation—The mechanism consists of a steel cord case 1⅛x1$\frac{3}{16}$ in. at the head, painted in duco to match the color of the cloth. In this cord case are the brass rollers over which the cords operate and the brass adjusting sleeves for tightening the guide wires. The shade is gravity operated, weight bars being used at the top and bottom of the shade. These bars are invisible, being covered by the hem of the shade. The cord used is a hollow braided cord, all attachments made to the bars by the use of screws in the ends of the cord, no knots being used in the assembly. Guide wires, sill plates and cordhooks are all of polished brass.

Special finishes for residence work, lacquered in gold, silver, copper or any metallic colors, also chintz faced shades of cloth as may be selected by the purchaser.

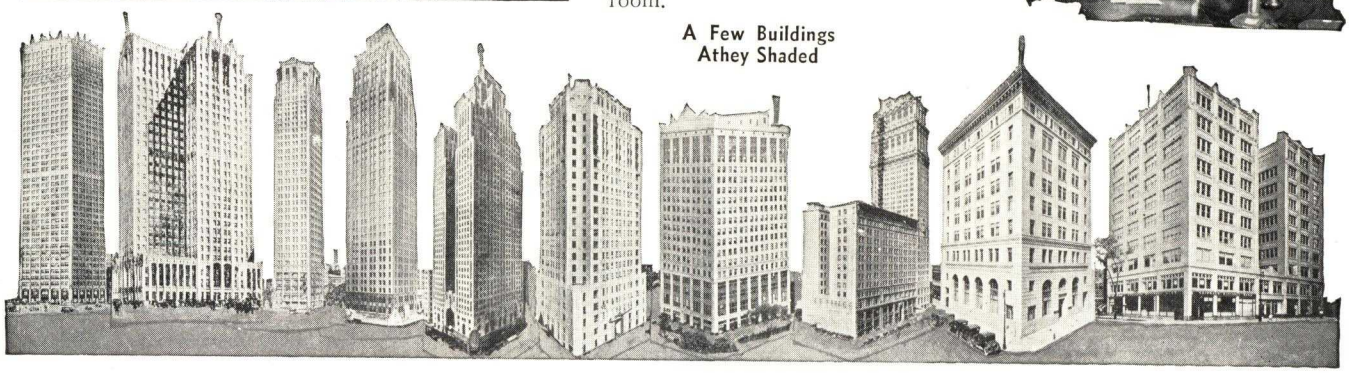


Cleaning—The constant operation of Athey Shades tends to keep them clean and free from dirt. When cleaning is necessary, brush off surface, dust and clean by same method as in cleaning wall paper.

Size—Shades can be made in any width up to 17 ft. wide, the height being unlimited, in many instances having been made as high as 20 ft.

Athey Sunburst Shades of the same material can be made for irregular shaped window heads and transoms; segmental, elliptical, gothic or rectangular.

Natural Ventilator—The shade acts as a natural ventilator when the sun is on the glass. By lowering the window from the top and raising the shade from the bottom, the intermediate air becomes superheated causing an upward current which ventilates the room.



A Few Buildings Athey Shaded

ATHEY DISAPPEARING SKYLIGHT SHADES

The Athey Skylight Shade is used to shade skylight openings, greenhouses, natatoriums or any other type of ceiling opening where a shade might be required. With the variety of non-fading colors available, it is possible to secure this shade in a light color fabric to eliminate glare and diffuse light or in an opaque fabric for purposes of darkening auditoriums or laboratories for projection work.

All materials used in this type of shade are the same high quality as those used in the regular Athey shade shown on preceding page. The Athey Skylight shade, however, operates in a horizontal position and instead of the cords and wires running through the cloth, the pleats are suspended below the taut brass wires by means of bronze clips and the cords operate above the shade. When the shade is extended across the opening, all cords and wires are invisible from below. When the shade is collapsed it occupies about 3% of the length of the well affording practically full use of light coming through skylight opening on dark days.

The cost of skylight shades varies with the installation conditions. The most simple and economical installation is to have the shade operated from a point directly below the well—the operating cord loop dropping down from one corner of the well to about 6 ft. from the floor where it may either hang free or be fastened to any convenient wall or pillar.

When the operating cords below the well are objectionable, they can be diverted from the well to the nearest wall or column on a direct line, providing the distance is not more than 10 ft. When necessary to operate the shade from a greater distance, cables are used and operation effected by the use of a geared winch which naturally is more expensive to install.

In making preparations for Athey Skylight Shades, when laying out the building plans, we ask that architects consider where the shade is to be located and to keep this space clear of radiators and piping and eliminating hanging rods, if possible. If piping for skylight radiation or sprinkling systems is necessary, locate it as close to the wall as possible and preferably at the narrow end of the well. All skylight shades are made to the narrowest width of the well and operate the long way. Where operating cords are to hang free, we suggest the shade be located in the lower 6 ins. of the well. Where cords are to be diverted to any great distance, we suggest the shade be located so cords can run in a direct line to a point where they are to be diverted downward.

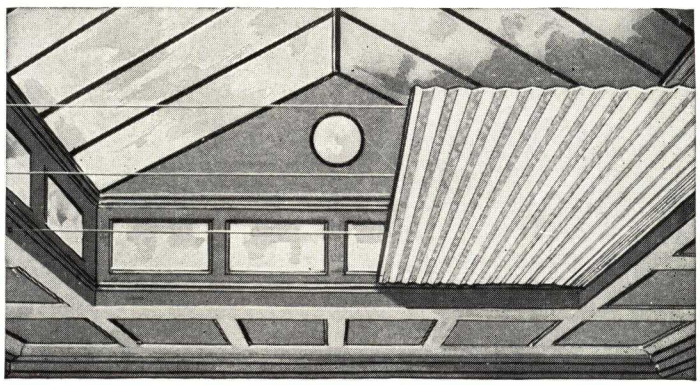
Offices of Bowman Dairy Co., Chicago, Ill.

If skylight wells are of concrete we suggest the insertion of 4 in. wood grounds at each end to provide anchorage for the shade as this will simplify installation considerably.

In shading greenhouses, natatoriums or other glass roofed buildings, the same type of shade is used; however, if the pitch of the roof is as great as 45 degrees, the installation can be simplified as the shades will lower of their own weight, thus dispensing with one set of draw cords.

Owing to the excessive number of cords that would be necessary to operate the shade from both ends of the well towards the middle, the shade operates from one end only, the other end anchored to the well. Send your plans direct to Chicago for estimate or confer with our nearest representative.

The E. H. Allen Private Natatorium, Chicago



Skylight Shade

ANDEL & COMPANY, INC.

Manufacturers of Andelco Lightproof Curtains, Also Air-Conditioning and Ventilating Equipment

5218-5220 North Kedzie Avenue, CHICAGO, ILL.

BRANCH OFFICES OR REPRESENTATIVES IN PRINCIPAL CITIES

ANDEL & COMPANY, INC., were the first to originate and create a line of high grade standardized light excluding curtain equipment—founded this industry—and Andelco have maintained continually their leadership.

Types

Electrically Operated Types.
Manually Operated—Crank Gear Control Type.
Spring Roller Type—Operated by Chain or Pull Cord.

Construction

Andelco Lightproof Curtains are quality high grade, rugged and durable curtains, made of heavy doubly treated and filled special Andelette artificial leather. The boxes and channels are of steel, not lighter than 16-gauge.

Guarantee

All Andelco lightproof equipment is guaranteed unreservedly. Any necessary replacement, repairs or adjustment to make Andelco installations wholly and fully satisfactory will be made in a period of three years after completion of installation, free of any expense to the buyer.

Service

Call our representative, or send pertinent sketches, plans, elevations and sections and we will be pleased to promptly furnish details illustrating our recommended equipment and its application for the particular job, prepare specifications and submit a proposal therewith.

This service is without charge or obligation.

Andelco Bulletin, A.I.A. File No. 35-D-55, will be supplied for architects files, from our Chicago office or by any representative.

Andelco Curtain Manual of comprehensive details and data is available (loaned) to architects or engineers to assist them in the detailing of this equipment where it is built in and correlated with the building construction.

For Use Wherever Absolute Darkness During Daylight Hours Is Desired

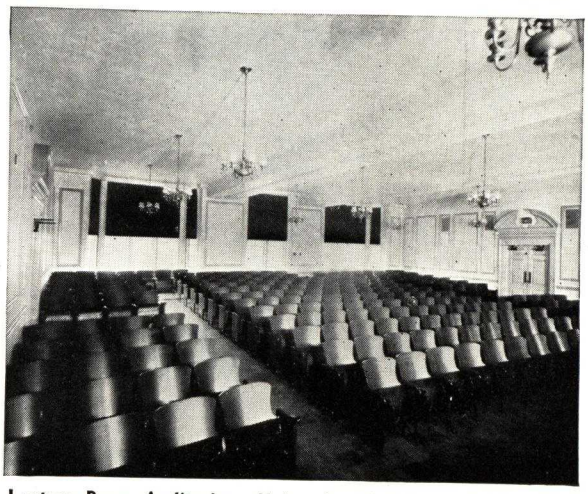
Andelco Lightproof Curtain Equipment is scientifically designed for the absolute exclusion of light and for photographically safe rooms.

Specify for Use in: School Auditoriums, Lecture and Classrooms, Laboratories, X-Ray and Dark Rooms, Operating Rooms, Autopsy Amphitheatres, Clinics, Fluoroscopic Rooms, etc., and wherever absolute darkness during daylight hours is desired.

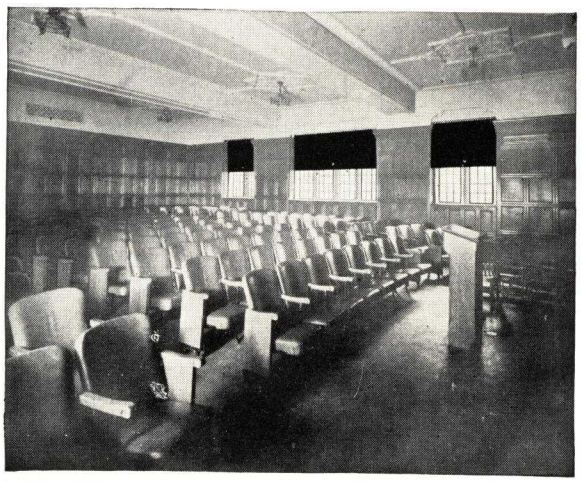
Andelco Curtain Equipment Used by Leading Institutions

Over 2100 installations: Following is a list of a few typical representative installations:

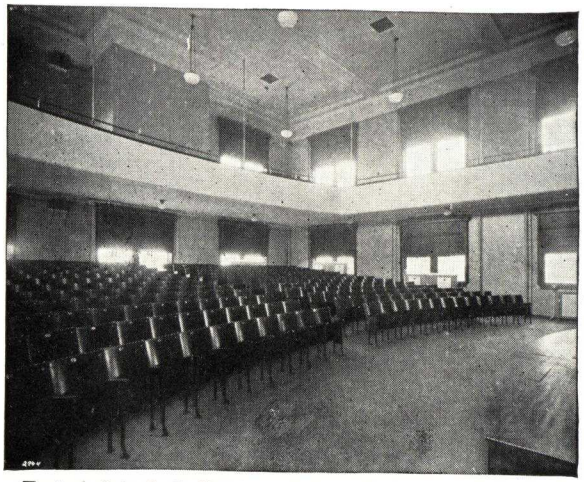
BUILDING	LOCATION
University of Chicago, all buildings	Chicago, Ill.
Purdue University, all newest buildings	Lafayette, Ind.
University of Texas, all newest buildings	Austin, Tex.
University of Arkansas, all newest buildings	Fayetteville, Ark.
Indiana University Schools of Medicine and Hospitals	Indianapolis, Ind.
University of Indiana	Bloomington, Ind.
Indianapolis City Hospital	Indianapolis, Ind.
Princeton University	Princeton, N. J.
National Geographic Building	Washington, D. C.
Radcliffe College	Cambridge, Mass.
University of Cincinnati	Cincinnati, Ohio
Illinois University, Medical and Dental Schools	Chicago, Ill.
U. S. Army Hospital	Fort Sill, Okla.
U. S. Army Hospital	Fort Humphrey, Va.
U. S. Narcotic Farm Hospital	Lexington, Ky.
Iowa University	Iowa City, Iowa
U. S. Hospital	Fort Yuma, Ariz.
U. S. Army Aerial Photographic Depot	Maxwellfield, Ala.
Baltimore Art Museum	Baltimore, Md.
Western Teachers College	Macomb, Ill.
U. S. Marine Hospital	Seattle, Wash.
West Allis Main High School	West Allis, Wis.
West Suburban Hospital	Oak Park, Ill.
New Henrotin Hospital	Chicago, Ill.
Kellogg Schools	Kalamazoo, Mich.
Sherman-Williams Company	Chicago, Ill.
Utah Copper Company	Salt Lake City, Utah
Ball Memorial Hospital	Muncie, Ind.
General Government Hospital of Mexico	Mexico City, Mex.
General and T.B. Hospital	Pontiac, Ill.
Freemans Hospital	Washington, D. C.
U. S. Indian Service Hospitals	Numerous locations
Illinois Diagnostic Hospital	Manteno, Ill.



Lecture Room Auditorium, University of Chicago, Eckhart Hall
CHARLES E. KLAUDER, Architect
"Built-in" type installation, electrically operated



Typical Lecture Room Auditorium, University of Chicago, Social Science Building
C. HODGDON & SON, Architects
"Built-in" type installation, electrically operated



Typical School Auditorium, Indiana University, School of Pathology
R. FROST DAGGETT, Architect
"After-completion" type of installation, electrically operated

JOSEPH BANCROFT & SONS CO.

Manufacturers of Superior Quality Window Shade Cloths

WILMINGTON, DEL.

Bancroft Shade Cloths may be specified with absolute confidence whenever the requirement is for a shade cloth of the finest possible quality, durability, and beauty of appearance. There is no absolute duplicate for these shade cloths because they are made by special patented processes, and every step of their production, from the spinning of the basic cloth to the final finishing, is done in JOSEPH BANCROFT & SONS CO.'s own mills, plants and laboratories.

Bancroft Shade Cloths are absolutely guaranteed against fading by exposure to the sun. They are available in a wide variety of widths and in a complete line of colors, the beauty of which is enhanced by their smooth and lustrous beetled finish.

Both Bancroft's Sun-Fast and Rock-Fast shade cloths pass all Government and State requirements set forth in their specifications.

SUN-FAST

TRADE MARK REG. U.S. PAT. OFF.

Sun-Fast and Venetian Stripe Hollands for Window Shades

Improved Sun-Fast and Venetian Stripe Hollands are weatherproof, insectproof, waterproof, and cleanable with soap and cold or warm water. They may be wiped clean where they hang, with a sponge or wet cloth—scrubbing is unnecessary.

Moreover, these shades will not crack, stretch, dry out, nor become brittle and tender when exposed to the sun and air.

(Pyroxylin Impregnated)

ROCK-FAST

Trade-Mark Reg. U. S. Pat. Off.

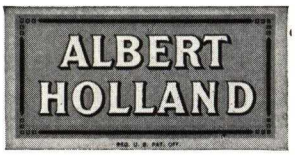
Shade Cloths, Plain, Striped and Duplex, for Window Shades

Full pyroxylin impregnated and finished with a highly lustrous and permanent beetled finish, Rock-Fast Shade Cloths are not only easily cleanable, but also grime-resisting to a high degree, because dirt cannot get into the fabric.

Rock-Fast is waterproof—fast to light—fast to sun and weather—fast to everything a window shade should encounter.

OTHER SHADE CLOTHS

Claysmith Company, Inc., Manufacturers

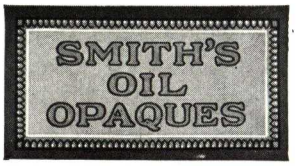


Albert Hollands

Unsurpassed among medium priced fabrics for window shades, because of their durability, superior finish and trueness to color.

London Hollands

An excellent lower priced fabric for window shades, because of their strength, fine finish and superior translucent quality. Both plain and striped.



Smith's Oil Opaques

These oil opaques are particularly desirable for window shades on account of their superior finish, even texture, color, flexibility and durability.

Claysmith Striped Hollands

Where cost must be taken into consideration without sacrifice of good appearance or long wearing quality, this cloth can be recommended for outstanding value.

BECKLEY-CARDY COMPANY

ESTABLISHED 1907

Manufacturers of Sightsaver Window Shades

MAIN OFFICE AND FACTORY

1632 Indiana Avenue, CHICAGO, ILL.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

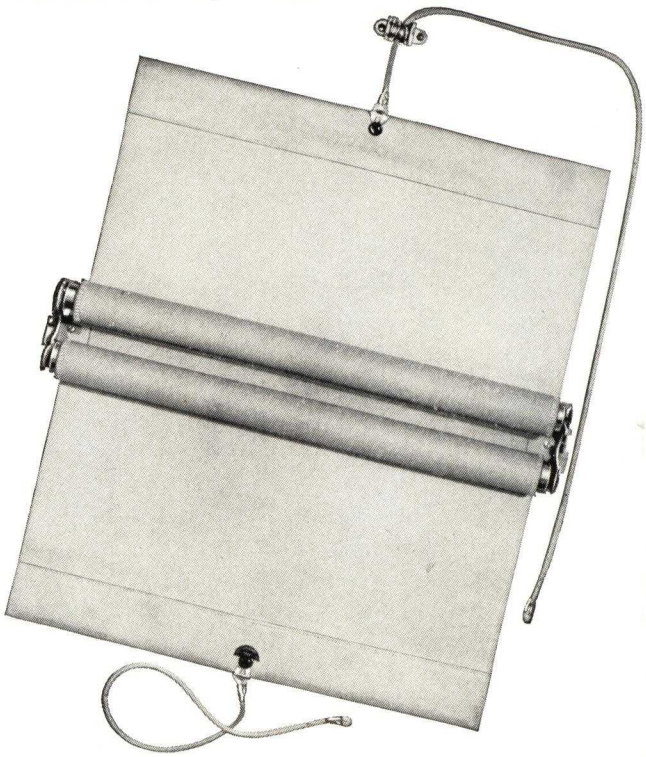
For Blackboards, Bulletin Boards, Map and Bulletin Rails, see File Index

SIGHTSAVER WINDOW SHADES

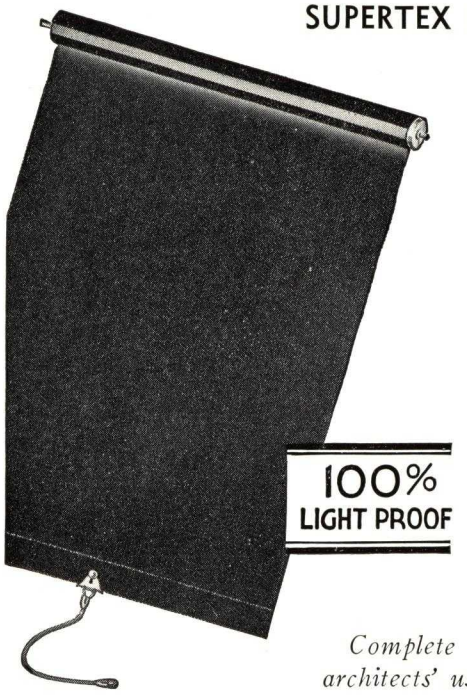
Provide Perfect Light Control and Eliminate Eye Strain

SIGHTSAVER Double Roller Shade Fixtures and SUPERTEX Cotton Duck Fabric effectively solve your shading problem. They permit light to enter the upper third of the window, which is the first requirement in preventing eyestrain. From this source, light rays enter the room at the greatest possible angle, reducing to a minimum harmful glare. They save the school children's eyes and admit fresh air without draft. Prevention of eyestrain is one of the most important reasons for the demand for SIGHTSAVER Fixtures. They are instantly adjustable to shade any part of the windows, whether they are steel or wood sash, casement, or of the tilting type. The shades are held firmly in position so that they do not flap or become torn. Hospitals praise the utility and durability of SIGHTSAVER Fixtures for they adequately regulate light and protect patients from drafts.

SIGHTSAVER fixtures are designed for hard constant use, such as shades receive in schools, halls, hospitals, and other public buildings. No detail in construction, which would increase their utility and durability, has been overlooked. The ease of adjustment, attractiveness, durability, and positive operation, make, we believe, SIGHTSAVER Fixtures and SUPERTEX Fabrics beyond comparison.

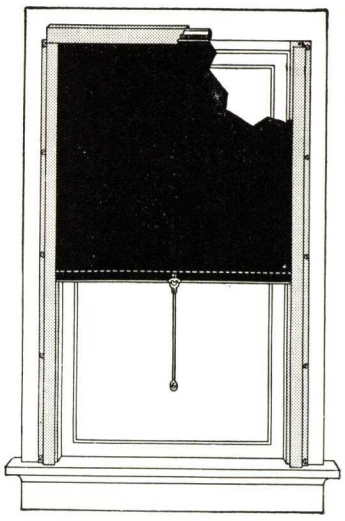


SUPERTEX LIGHTPROOF SHADES AND FIXTURES



Visual education has created a demand for an effective yet inexpensive method of darkening classrooms. By combining SUPERTEX Lightproof Kanvas Shades with PEERLESS Light Arrestors to prevent light from coming in around the edge, we can offer 100% light-tight equipment at a very moderate price. This equipment may be adapted to all types of windows and attached to any kind of wall.

Space here does not permit us to go into details; therefore, if interested, write for complete information. Samples and standard specifications have been prepared for architects' use.



Complete information, standard specifications for architects' use and samples will be mailed on request.

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

Manufacturers of Lightproof Shades and Ventilators

DETROIT, MICH.

Member of The Producers' Council, Inc.

For Catalogs on Weatherstrips and Screens, see File Index. For List of Branch Offices, see Screen Section

CHAMBERLIN *Lite-Seal* SHADES

Cord Operated

Cord-operated *Lite-Seal* Shade operates like a window shade. Roller is high-grade open hearth steel, heavily tin-plated, grooved to accommodate fabric and spline. Finely tempered steel wire spring is adjustable; brass pawl and copper-plated stamped steel parts make roller smooth-running, rustproof.

Fabric is two layers of special artificial leather, thoroughly united and impregnated black both sides. Will not get sticky, remains soft and pliable. Non-inflammable, crack-proof, odorless. No stitching exposed to permit light to enter through needle-holes. Fabric cannot come out of side guides, due to unique construction illustrated below.

Lite-Seal Shades are installed by factory-trained mechanics in the employ of Chamberlin Branches from coast to coast. They may be mounted on the face of the window opening, against the window stops, or concealed within the window construction, in either horizontal or vertical openings.

Lightproof Ventilators

Lightproof Ventilators may be combined with *Lite-Seal* Shades at head or sill, or both. This allows intake of air with shades drawn, and yet light is entirely excluded.

Crank Operation

Two types are available: the single unit, in which each shade is operated by its own crank; and the bank unit, where several shades along the same plane are operated from a single crank. Bank-operated units are often employed even though the shades are of moderate size, to speed up the process of lowering shades where a room is equipped with many units.

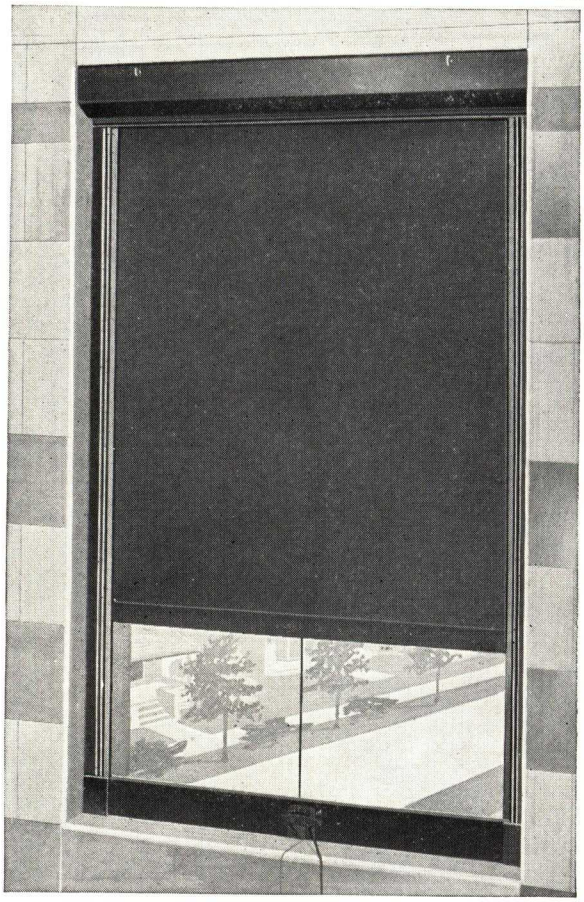
In both types of crank-operated *Lite-Seal* Shades, the crank raises and lowers the shades speedily and with a minimum of effort. Gear boxes are neatly housed and protected from dirt, with thrust bearings to insure quiet operation and long life.

Motor Driven

For remote control of one or more shades, a motor is incorporated in the head housing. Automatic switch stops shade at top and bottom. Contract includes all equipment except wiring between switches and shades.

Like other *Lite-Seal* Shade types, the motor-operated may be installed in new or existing buildings.

Cord Operated



Use of cross braces or reinforcing rods avoided.

(1) Removable Housing Front interlocks with permanent housing, excluding light and dust.

(2) Auxiliary Roller guides fabric into narrow side guides. Fabric is crack-proof, non-inflammable, hemmed all sides with no stitching exposed to prevent light entering through needle-holes.

(3) Drawbar with light-lock flanges engages in sill.

(4) Solid Welded Steel Frame—Entire unit Parkerized steel, dull black enameled finish.

(5) Drawbar "Thimble" holds open seam which slips over vertical floating rods.

(6) Vertical Floating Rods retained in guides by moulded channels. As rods cannot come out of guides, neither can fabric, the rods securing full height of shade.

(7) Slotted Mounting for vertical rods lets them "float."

(8) Cord Cleat and Pulley—a half-turn of cord around spring-mounted cleat, and shade is secured.

Installation Details of *Lite-Seal* Shades available on request

COLUMBUS COATED FABRICS CORPORATION

DEPARTMENT BS-8

COLUMBUS, OHIO

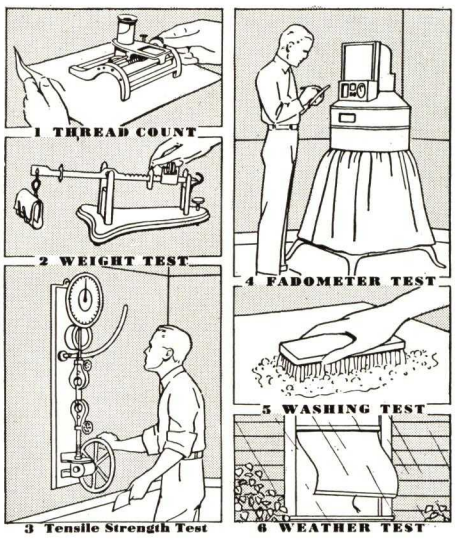
For Wall-Tex, Washable Wall Covering, see File Index

BONTEX

Washable Window Shade Cloth

HIGHEST QUALITY PYROXYLIN SHADE CLOTH, CONFORMING TO GOVERNMENT SPECIFICATIONS

Bontex Shade Cloth has earned the confidence of architects, everywhere, for two important reasons: *First,* this quality shade cloth, in the translucent and semi-opaque types, has proved in buildings of all kinds that it is correctly fabricated to provide better light. *Second,* it has demonstrated its ability to withstand hard use and abuse—sun, wind and rain, careless handling and repeated scrubbings. It is built to keep its attractive appearance through many years of low-cost service.



Convincing Tests That Prove Bontex Quality

(1) Thread Count to check correct weave of Bontex.

(2) Weight Test for uniformity.

(3) Strength Test of both warp and filling.

(4) Fadometer Test to check action of strong sunlight through glass.

(5) Washing Test—more than 10 thorough scrubbings on both sides.

(6) Weather Test—to observe effects of open exposure.

Better Light, Cheerful Rooms

Better daylight is fully as important as improved night lighting of rooms. Even when Bontex shades are drawn, light enters the room through the translucent and semi-opaque shades—soft, diffused, non-glaring light. Restful, cheerful light for hospital patients. Healthful light for school children, resulting in less eye strain, fewer headaches, better school work. Light that is productive of more efficient work in office buildings. Better, more cheerful light for people in homes, apartments, all buildings.

Bontex conforms to rules suggested by the Eyesight Conservation Council for equipping windows with proper shades that diffuse light and prevent glare.

Strong, Durable, Scrubbable, Sanitary

Bontex is shade cloth of the highest quality, pyroxylin impregnated. That is why it has never been known to pinhole, fray or crack. It can be scrubbed clean with soap and water and kept fresh and beautiful for years. Hard scrubbing does not impair the quality or dull the original fine finish and coloring of Bontex. Washing with disinfectant does not harm it. Bontex can be kept sanitary, an important point in recommending shades to hospitals.

Proof of Quality

Bontex Shade Cloth is scientifically manufactured and carefully tested. The Delineator and Lux Laboratories have tested Bontex by vigorously scrubbing the material ten times on both sides with hot water, soap and a scrubbing brush. The South Florida Test Service proved Bontex to be absolutely colorfast. All these impartial testing authorities pronounced Bontex an excellent shade cloth material.

Bontex Shade Cloth conforms to Government Specifications CCC-C-521 and DDD-S-251 and its quality is guaranteed by the Government Label.

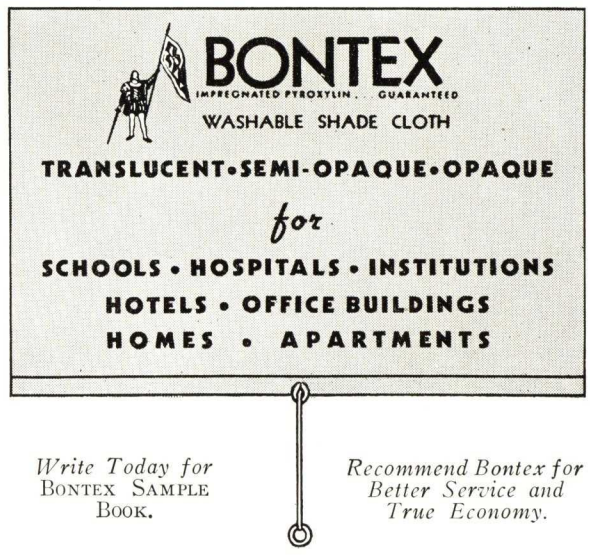
Long Service, Real Economy

The ability of Bontex to outwear other shade cloth makes it, unquestionably, a money-saving investment. When you recommend shade cloth, remember this: The cost of making up every type of window shade is about the same—including measuring, cutting, installing and accessories, such as rollers, slats and cord. Because of this *fixed cost,* it is true economy to use Bontex, which eliminates frequent expensive replacements.

Bontex for Every Purpose

Bontex Shade Cloth—translucent, semi-opaque and opaque—is available in 12 plain colors, 5 beautiful corded designs, 5 duplex colors, and 5 modern printed patterns. Also made in black, absolutely opaque, for rooms where complete darkness is desired.

Bontex has proved its quality and satisfaction in many of the Nation's finest schools, hospitals, public buildings, offices, apartments and homes.



Write Today for BONTEX SAMPLE BOOK.

Recommend Bontex for Better Service and True Economy.

E. I. DU PONT DE NEMOURS & CO., INC.

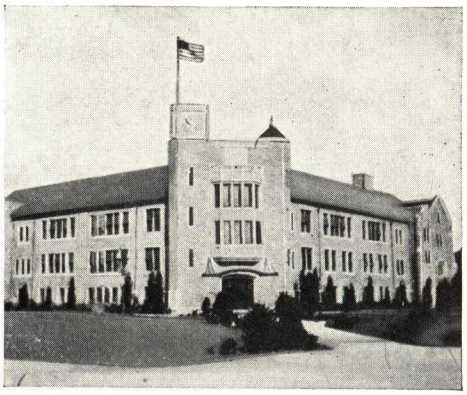
NEWBURGH, N. Y.

Du Pont "Tontine" Washable Shade Cloth

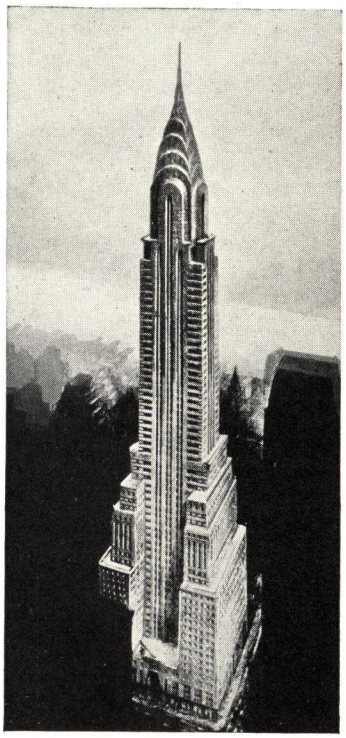
THE IMPORTANCE OF THE PROPER SELECTION OF SHADES TO THE ARCHITECT AND BUILDING OWNER

Architects have always realized the importance of the proper selection of window shades, as the color of the shade should be harmonious with the inside as well as the outside color scheme of a building.

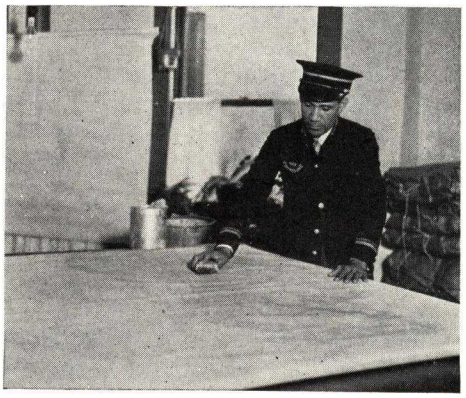
Du Pont "Tontine" owes a lot to American architects, for they were the first to be impressed with the fact story behind du Pont "Tontine" and specify it for buildings built in the boom period between 1923 and 1930. Women have followed the lead of this preference by the architectural profession.



High school at Pelham Manor, N. Y., has proved the architects made a wise choice when they specified "Tontine."

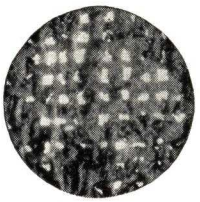


The Chrysler Building, New York City, washes its du Pont "Tontine" shades on a regular schedule.



The Hotel Commodore, New York, washes its "Tontine" shades regularly.

Unretouched photomicrograph showing du Pont "Tontine" after being scrubbed with a brush, soap and hot water. Note that the surface is unharmed by this rigorous washing test.



A high-grade non-pyroxylin shade cloth washed exactly the same way as the "Tontine" cloth (unretouched photomicrograph). Filler has dropped out, exposing the basic fabric.

Some of the Advantages of "Tontine"

(1) Washable—Du Pont "Tontine" is truly washable; washable with a brush, soap and warm water.

(2) Durable—Du Pont "Tontine" is rugged and durable, built to stand fraying wind pressure in high buildings or in the home.

(3) Color-fast—Du Pont "Tontine" is a beautiful piece of shade cloth, and color-fast. Replacements do not jar the eye with off-color blocks of new shading.

(4) Translucent or Opaque—Du Pont "Tontine" is translucent. While it bars glare, it admits toned sunlight. "Tontine" also may be opaque.

(5) Wide Range of Colors—Du Pont "Tontine" is available in a wide range of translucent and opaque colors, and in the duplex type, giving the architect wide latitude for his choice.

(6) Economical—Du Pont "Tontine" is only a few pennies higher than ordinary shade cloth, but its cost, figured against its long life and enduring good looks, makes it truly economical.

A listing of du Pont "Tontine" installations would read like a Blue Book of America's fine buildings. It is on performance in these buildings that du Pont "Tontine" rests its case.

Architects not familiar with du Pont "Tontine" or its performance story will be referred to architectural firms and building managers who have closely observed du Pont "Tontine" during 13 years.

For samples and full information write to E. I. du Pont de Nemours & Co., Inc.

Department S. C. DU PONT Newburgh, N. Y.

HIGGIN PRODUCTS, INC.

Lightproof Shades

NEWPORT, KENTUCKY

AGENCIES IN PRINCIPAL CITIES

For Metal Frame, Wood Frame and Rolling Screens, Venetian Blinds, Access Panels and Weatherstripping, see our pages in File Index

Light Tight Shades for All Dark Room Requirements

Three types are available—Spring Roller, Crank Operated and Motor Driven.

All three types are photographically lightproof, with light locked sides, top and sill.

Shades may be detailed and built into window construction or employed in openings already constructed in new buildings or old.

Best quality materials throughout.

Lightproof cloth made in two thicknesses of fabric thoroughly united and coated both sides. Crackproof and fadeproof. Long wearing. Standard color neutral green.

Guides and assembly boxes of .0375-in. thickness steel, enameled inside and out. Insides of guides and assembly box finished dark light absorbing gray. Exterior parts standard brown or color as selected.

Disappearing brace feature permits use of small assembly boxes as only lightproof cloth enters boxes.

Openings up to 65 in. wide, 92 in. high take 2½-in. square boxes for spring roller shades. Other sizes require 3, 3½, 4, and a few 5-in. sizes. Minimum for crank operated 3 in.

All shades are custom built.

Spring roller shades may be controlled with cord loop. Spring roller shades have automatic locking spring latch with ring grip.

Spring roller shades have special music wire springs with external tension adjusting features.

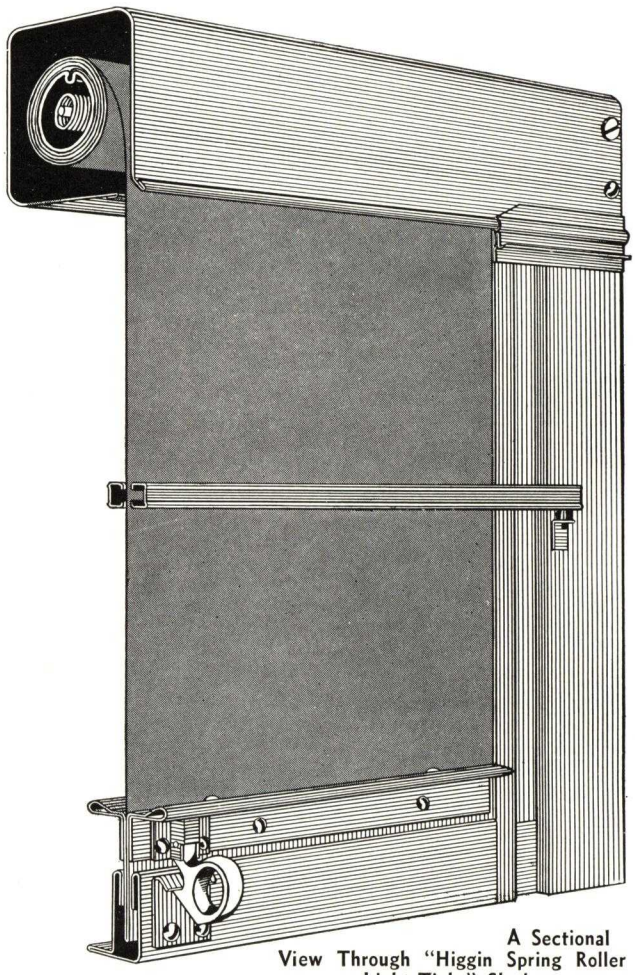
Crank operated shades accurately adjustable to stop top and bottom. These shades spring suspended. Shades cannot drop.

Electrically controlled shades operated by individual motors, reducers, limiting devices, etc. No shafting connecting shades. All parts of shades accessible. Shades may be controlled from several points by momentary contact switches. Wiring between shades should be done by electrical contractor. Wiring in shades is done at factory. Write for details and specifications.

HIGGIN
LIGHT-TIGHT
SHADES

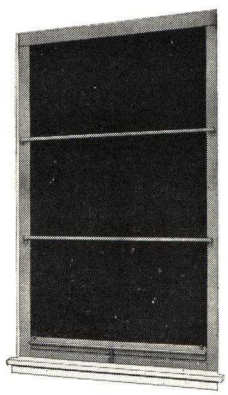
Patents

Higgins products are covered by patents which fully protect important features.



A Sectional View Through "Higgin Spring Roller Light-Tight" Shade

Shades Open—Braces Are Carried to Head of Opening



Shades Closed—Braces Both Sides in Position

Some Higgin Light-Tight Shade Installations

Glen Park School, Los Angeles, Calif.
U. S. Bureau of Motion Pictures, Washington, D. C.
City Hospital, Louisville, Ky.
St. Luke's Hospital, Chicago, Ill.
University of Missouri, Columbia, Mo.
Board of Education, St. Louis, Mo.
University of Texas, Austin, Tex.
Mt. Sinai Hospital, New York, N. Y.
Eastman Kodak Co., Rochester, N. Y.
General Hospital, Cincinnati, Ohio
U. S. Reformatory, Chillicothe, Ohio
U. S. Marine Hospital, Cleveland, Ohio
Veterans Administration Home, Virginia
Jefferson Hospital, Philadelphia, Pa.
U. S. Coast Guard Academy, New London, Conn.
Health Department Clinic, Washington, D. C.
Penn Mutual Life Insurance Co., Philadelphia, Pa.
Norfolk State Hospital, Norfolk, Mass.
University of Michigan Hospital, Ann Arbor, Mich.
Worcester Art Museum, Worcester, Mass
Naval Hospital, Philadelphia, Pa.
University of Maryland, College Park, Md.
Howard University, Washington, D. C.

Guide for the

SELECTION AND APPLICATION

OF WINDOW SHADES AND THEIR ROLLERS

STEWART HARTSHORN COMPANY

The Standard of Quality

Hartshorn

Established 1860

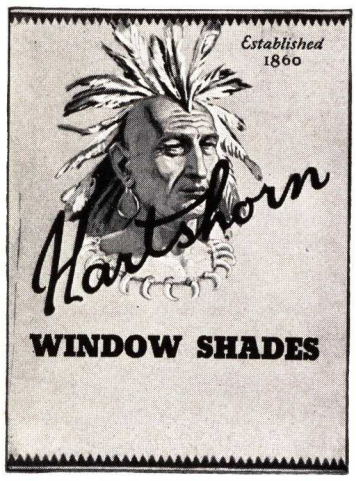
WINDOW SHADE ROLLERS AND WINDOW SHADE CLOTHS

HARTSHORN

WINDOW SHADE ROLLERS

WINDOW SHADE CLOTHS

SPRING AWNING ROLLERS



Specializing in Shade Cloth and Rollers. Stewart Hartshorn Company specializes in the manufacture of automatic spring rollers and shade cloth for use in window shades. All of their efforts and inventive genius are directed to the improvement of the quality and mechanical parts which go into making an efficient window shade.

Hartshorn Shade Rollers Since 1860. The Hartshorn Company manufactured the first automatic spring shade roller ever made in 1860. For over three-quarters of a century, they have been improving on the original design and have been solving problems in this field given to them by architects and engineers.

Hartshorn Window Shade Cloth. Nearly twenty-five years ago, Stewart Hartshorn Company purchased the Oswego Shade Cloth Company which had at that time been manufacturing high quality shade cloths for over thirty years.

Hartshorn Spring Awning Rollers. In addition to manufacturing window shade rollers for residences and other types of buildings, the Hartshorn Company make a variety of automatic spring rollers for automobiles, railway cars, insect screens, etc. One of the most important of these special rollers is their awning spring roller which permits the quick rolling up of an awning and works on the same principle on which the window shade roller is used.

STEWART HARTSHORN COMPANY
Established 1860
250 Fifth Avenue, NEW YORK, N. Y.

SUBSIDIARIES

OSWEGO SHADE CLOTH COMPANY
OSWEGO, N. Y.

CALIFORNIA SHADE CLOTH COMPANY
SAN FRANCISCO, CALIFORNIA

AMERICAN SHADE CLOTH COMPANY
CHICAGO, ILL., DETROIT, MICH., AND COLUMBUS, OHIO

WINDOW SHADES

Their Importance to the Occupants and the Building

CONTROL OF LIGHT BY PROPER SHADING

Hartshorn shade cloths are made in a variety of grades and colors. Among the grades listed on Page 4 of this booklet, you will find shade cloths to control any lighting problem. We make translucent, semi-opaque, opaque and lightproof shade cloths.

The colors used in each of the grades also vary in opacity. Light translucent colors let in a maximum of light but keep out the glare. Medium and dark opaque colors and duplex combinations keep out the glare and darken the room.

HARTSHORN WINDOW SHADES CAN KEEP OUT GLARE OR KEEP OUT LIGHT

Joanna Cambric, Oswego Tint Cloth, Washable Diana Cloth and Hartshorn Satin Finish cloth are translucent in the lighter colors, semi-translucent in the medium colors and opaque in the dark colors and duplex combinations. Chouaguen Hand Made Opaque and Oswego Opaque Cambric are semi-opaque in the light colors and opaque in the medium and dark colors and the duplex combinations. Vulcan Shadowless Triplex is absolutely opaque and lightproof in all colors and duplex combinations.

SHADES CAN KEEP OUT HEAT IN SUMMER AND COLD IN WINTER

Depending on the type of shade cloth used, rooms with window shades can be kept from 10 to 30 degrees warmer in winter and cooler in summer. It has long been common practice to pull window shades down completely during cold winter nights and the hot summer days. By doing this an air pocket is formed between the window and the shade keeping the warm air of the room from contact with the cold windows in the winter and keeping the hot rays of the sun from entering the room in the summer.

RELATION OF SHADES TO AIR-CONDITIONING

Research in conjunction with general air-conditioning manufacturers, has produced a special type of shade which adds to the efficiency of air-conditioning units.

IMPORTANCE IN COLOR SCHEME OF A BUILDING

There is nothing more attractive than a building or residence where the window shades have been chosen so that their color and texture harmonizes with the building. Some tenants like to install innovations in color and design which may be attractive when seen from the interior of the tenants' rooms but which detract from the outside appearance of the building. For a situation such as this, two sets of shades may be installed—one color to match the building exterior and the other to match the interior color scheme.

PREFERENCE AS TO COLOR

The architect should pay as much attention to the color selection of shades in a residence as he does to the exterior color of the house or the color of the blinds or trim. Bedrooms should have two sets of shades—one dark opaque or semi-opaque color to be drawn in the night time and early morning and one light cheerful neutral color for the day time. In Living Rooms, Dining Rooms, etc., the trend is to light cheerful colors that let in the light but keep out the glare. In sun rooms, kitchens and pantries, vivid bright colors are most popular. Stewart Hartshorn Company manufactures two types of shade colors in their better grade cloths: solid color shade cloth with the same color on both sides; Duplex (2) color shade cloth with one color on one side of the cloth and another color on the other side.

TYPES OF SHADES AND ROLLERS FOR VARIOUS TYPES OF BUILDINGS

Type of Use	Hartshorn Rollers		Hartshorn Shade Cloths						
	Wood	Metal	Joanna Cambric	Oswego Tint Cloth	Oswego Opaque Cambric	Washable Diana Cloth	Vulcan Shadowless Triplex	Satin Fin. Shade Cloth	Chouaguen Hand Made Opaque
RESIDENCES — BETTER GRADE									
General Use Translucent Shades	√		Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			
Bedrooms Semi-Opaque or Opaque Shades	√		Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Light, Dark or Duplex Colors		
RESIDENCES — INEXPENSIVE									
General Use Translucent Shades	√							Light Solid Colors	Light Solid Colors
Bedrooms Semi-Opaque or Opaque Shades	√							Dark, Solid Colors or Duplex	Dark Solid Colors or Duplex
APARTMENTS — HIGH GRADE									
General Use Translucent Shades		√	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			
Bedrooms Semi-Opaque or Opaque Shades		√	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Light, Dark or Duplex Colors		
APARTMENTS — LOW RENTAL									
General Use Translucent Shades	√					Light Solid Colors		Light Solid Colors	Light Solid Colors
Bedrooms Semi-Opaque or Opaque Shades	√					Dark or Duplex Colors		Dark or Duplex Colors	Dark or Duplex Colors
SCHOOLS (double hung shades)									
Offices and Classrooms		√	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors			
Auditoriums Laboratories Dark Rooms		√					Light, Dark or Duplex Colors		
HOTELS									
General Use		√	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			
Bedrooms		√	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Light, Dark or Duplex Colors		
HOSPITALS (double hung shades)									
Bedrooms Laboratories X-Ray Rooms		√					Light, Dark or Duplex Colors		
OFFICES — PUBLIC BUILDINGS — LIBRARIES									
General Use		√	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			

HARTSHORN SHADE CLOTHS

WHAT DETERMINES QUALITY IN SHADE CLOTHS

1. The better grade shade cloths are manufactured on a closely woven cotton fabric containing 124 to 152 threads to the square inch and have no filling material in them.

2. In this country where the extremes of temperature and climate are great, it has been found that unfilled, hand painted and pyroxylin impregnated cloths are most efficient in many ways.

THE DIFFERENCE BETWEEN HAND PAINTED AND PYROXYLIN IMPREGNATED SHADE CLOTHS

Hand painted shade cloths are literally painted by hand with linseed oil paints. They can be manufactured in an endless variety of solid colors and two color combinations to match any color scheme required.

Pyroxylin impregnated shade cloths are processed on a machine which forces colored pyroxylin, a cellulose material, into the fibres of the cotton fabric. Pyroxylin shade cloth is made in a limited number of colors and two color combinations and stripes.

HAND PAINTED SHADE CLOTHS MOST SATISFACTORY

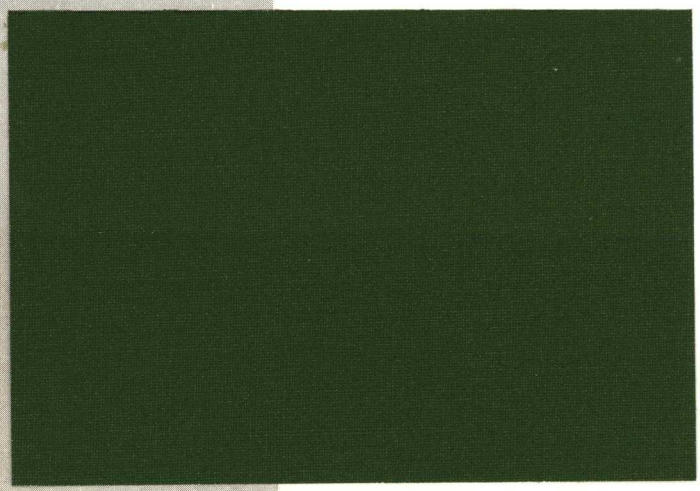
Hand painted unfilled shade cloths have long been recognized in the industry as the most durable of all shade cloths. The pure linseed oil which is used in the paint preserves the fabric, protects it from the heat rays of the sun and tends to keep the shade cloth pliable and flexible for years. Their colors are sunproof and the cloth will not crack or curl. These shades can be brushed clean or cleaned with standard dirt removers.

Pyroxylin impregnated shade cloths can be scrubbed and washed with soap and water. They do not, however, have the wearing qualities present in the hand painted unfilled shade cloths due to the absence of the linseed oil preservative.

Many less expensive shade cloths than those listed in this booklet are manufactured in this country. In order to cut the cost of manufacture, these cloths are made on loosely woven cotton fabric and to make up for the lack of high thread count, are filled with various fillers and binders which give them weight and body. It is easy to spot a filled shade cloth. Simply rub the samples together in your hand—the filling will drop out exposing a loosely woven cotton fabric foundation. It is possible to rub the paint off an unfilled piece of shade cloth but the fabric left will be closely woven and strong.

TYPES OF SHADE CLOTH MANUFACTURED BY HARTSHORN

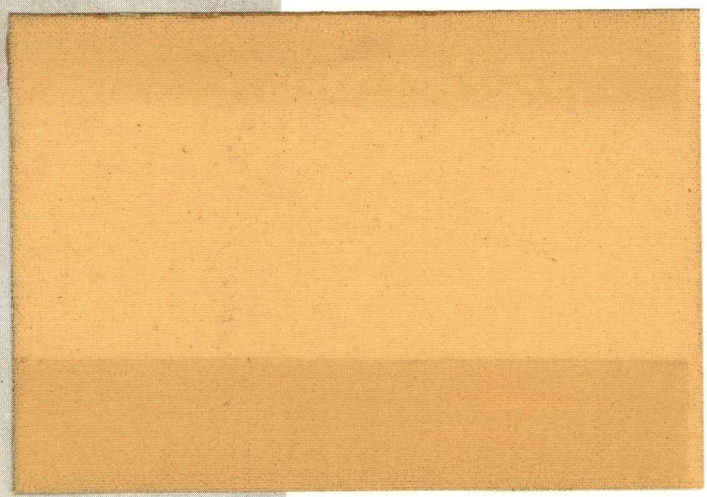
Stewart Hartshorn Company manufactures in their own factories hand painted unfilled shade cloth, pyroxylin impregnated shade cloth, triplex lightproof shade cloth, satin finish shade cloth, filled machine painted shade cloth, filled Holland shade cloth, filled water color shade cloth as well as variations of all the above types.



OSWEGO TINT CLOTH
SOLID COLOR 522

HARTSHORN
OSWEGO
TINT CLOTH

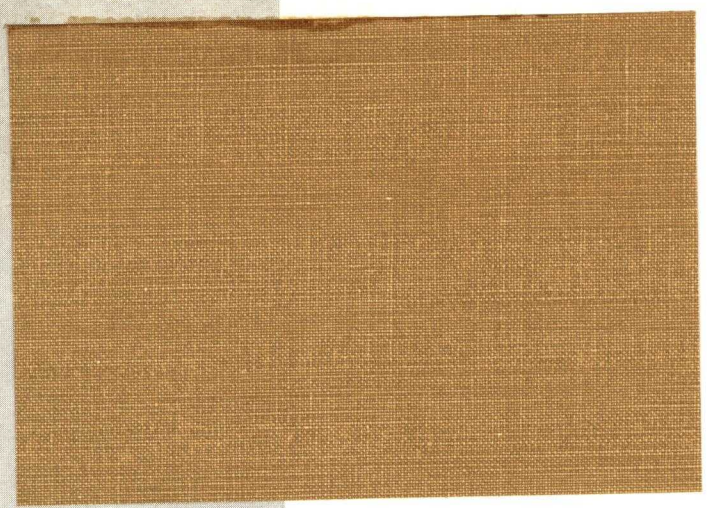
Finest quality. Use—suitable for all types of buildings, residences, schools, public buildings, offices and factories. Similar in quality to Joanna Cambric but has no waterproofed glossy finish. Hand painted—unfilled—sunproof and moisture proof—wide variety of colors, solid and duplex—translucent and semi-opaque colors. 144 to 152 threads to the square inch. Conforms to Federal Specification CCC-C-521.



OSWEGO OPAQUE CAMBRIC
DUPLEX COLOR—Light Ecru one side, and Dark Green, other side.

HARTSHORN
OSWEGO
OPAQUE CAMBRIC

Finest quality. Use—suitable for hotels, schools and other public buildings where subject to hard usage. Same in quality as Tint Cloth but due to heavier coating of paint is more opaque. Hand painted—unfilled—cleanable—sunproof and moisture proof—wide variety of colors, solid and duplex—semi-opaque and opaque colors—144 to 152 threads to the square inch. Conforms to Federal Specification CCC-C-521.



WASHABLE DIANA CLOTH
SOLID COLOR MAUVE

HARTSHORN
DIANA CLOTH
WASHABLE

Pyroxylin impregnated—finest quality. Use—suitable for all types of buildings, residences, schools, public buildings, offices and factories. Washable with soap, water and scrubbing brush. Complete line of attractive colors, solid, duplex and striped—translucent and semi-opaque colors. 144 to 152 threads to the square inch. Conforms to Federal Specification CCC-C-521.

NOTE:
"SOLID COLOR" means the same color on both sides.
"DUPLEX COLOR" means one color on one side and another color on other side.

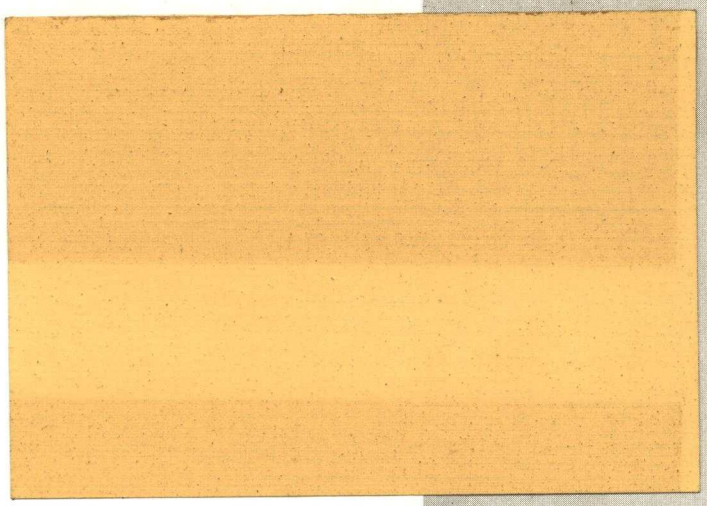
HARTSHORN WINDOW SHADES

HARTSHORN
JOANNA
CAMBRIC (Not shown here)

Finest quality. Use—suitable for all types of buildings—residences, schools, public buildings, offices and factories. Hand painted — unfilled — cleanable — satin finish — translucent and semi-opaque colors—sunproof and waterproofed—wide variety of colors, solid and duplex—144 to 152 threads to the square inch. Conforms to Federal Specification CCC-C-521.

HARTSHORN
VULCAN
SHADOWLESS TRIPLEX

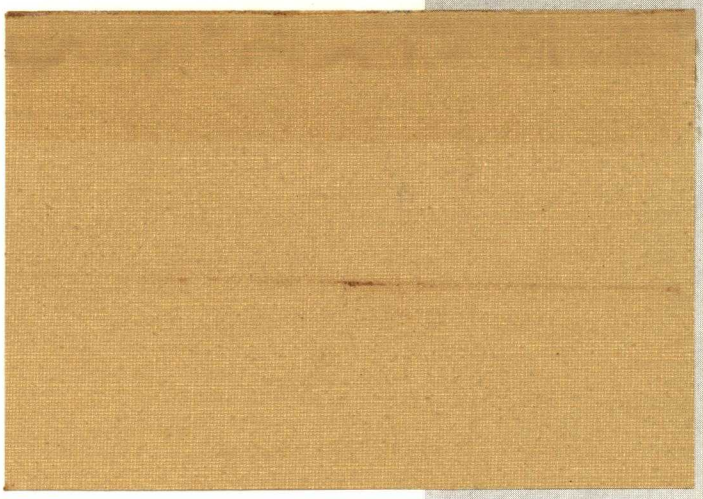
Finest quality. This grade of goods is made especially for school auditoriums, dark rooms, X-ray laboratories, etc., where all light must be excluded. Suitable also for hotel and residential bed rooms and in places where opaque durable window shades are required. Hand painted — unfilled — cleanable — sunproof and moisture proof—wide variety of colors, solid and duplex—absolutely opaque. Shadow boxes are usually installed for this type of shade. We are glad to give the architect the benefit of our long experience in solving problems of this kind. 144 to 152 threads to the square inch. Conforms to Federal Specification CCC-C-521.



VULCAN SHADOWLESS TRIPLEX
SOLID COLOR ECRU

HARTSHORN
SATIN FINISH
SHADE CLOTH (Not shown here)

Good quality. Use—suitable for medium priced residences; not recommended for schools, public buildings, offices or factories. Hand painted—satin finish—unfilled—sunproof and waterproofed — cleanable — wide variety of colors, solid and duplex—translucent and semi-opaque colors. 124 threads to the square inch.

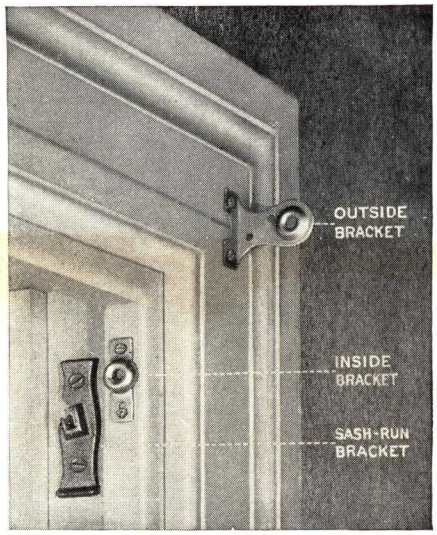


CHOUAGUEN HAND MADE OPAQUE
SOLID COLOR 48

HARTSHORN
CHOUAGUEN
HAND MADE OPAQUE

Good quality. Use—suitable for medium priced residences, not recommended for schools, public buildings, offices or factories. Hand painted—unfilled—sunproof—cleanable—wide variety of colors, solid and duplex—semi-opaque and opaque colors. Similar in quality to Satin Finish shade cloth but has no waterproofed glossy finish. 124 threads to the square inch.

RELATION OF SHADE TO THE WINDOW OPENING



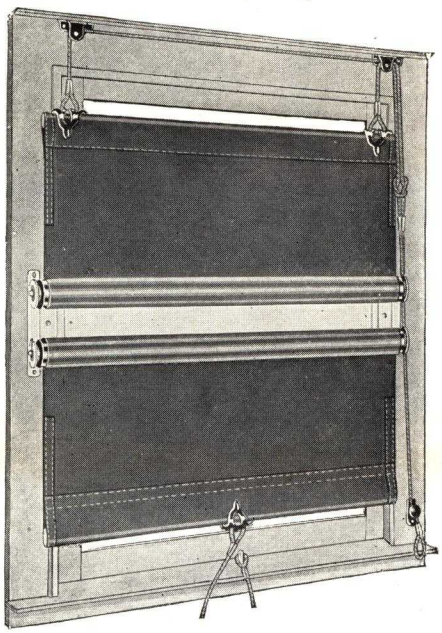
Shades to Lap Over Opening or Jamb Reveal to be Efficient

To definitely control the entrance of light into the room, window shades should be mounted on the face of the casing. Width of cloth should be at least 3 inches more than opening, leaving a minimum of 1½ inches lap on each side of casing. Use outside brackets.

If construction of window or drapery arrangement does not allow above type of installation, shades should be mounted on stop or bead of window. Cloth should be cut and mounted within ⅛ of an inch of end of roller barrel so as to prevent as much light as possible from coming around edges of shade. Use inside brackets.

If construction of window does not permit shade to be mounted on casing or bead, shade should be mounted on sash run of the window and Hartshorn Special Sash Run #374 brackets should be used. Cloth should be cut and mounted ⅛ of an inch from end of roller barrel.

All shades installed on casing should be cut 12 inches longer than window openings. Shades installed on bead or sash run should be cut 9 inches longer than window openings.



Relation to Screens

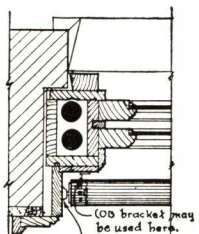
Where possible metal insect screens should be installed outside of the window sash. On some special type of windows it is necessary to allow for installation of screens inside of sash between the sash and the window shades.

Window Shades for Schools, Offices, Hospitals and Public Buildings

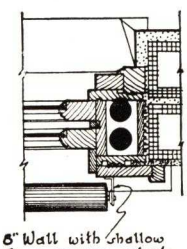
Where complete control of light and ventilation is necessary and where decorative values are not quite so important, double hung window shades equipped with Hartshorn light shields (see illustration at left) are found to be most satisfactory. Both shades and light shield in this Hartshorn equipment can be removed and replaced easily when windows are being cleaned.

Finish in Edges of Shades

High grade shade cloths even when the shades are mounted on the bead or sash run of the window do not fray at the edges unless badly abused. It is practical, however, and sometimes quite attractive to have side hems used on even the best grade of shade cloth. Reinforcing pockets at the bottom and sides of shades prevent tearing of shades edge above the bottom hem containing the wood slat. This is especially recommended for schools, office buildings, public buildings, etc. See reinforcing pockets on double hung shades at side of page.



13" Brick wall with Shade Bracket on Jamb Lining.



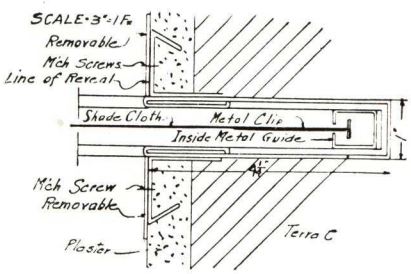
8" Wall with shallow frame, requiring outside Shade Bracket.

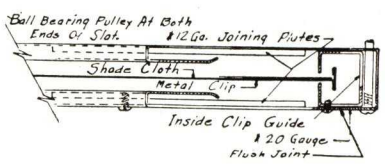
Shades for Light Proof Requirements in Laboratories, Auditoriums, X-ray Rooms, etc.

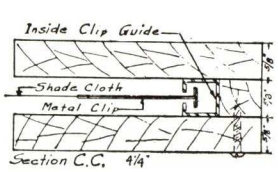
Information regarding such installations together with approved types of shadow boxes to keep light from coming in around the edges of the shades will be supplied on request.

Shades for Special Conditions — Sky Lights, etc.

Practical information on special installations is available at all times at the General Office of Stewart Hartshorn Company, 250 Fifth Avenue, New York, New York.

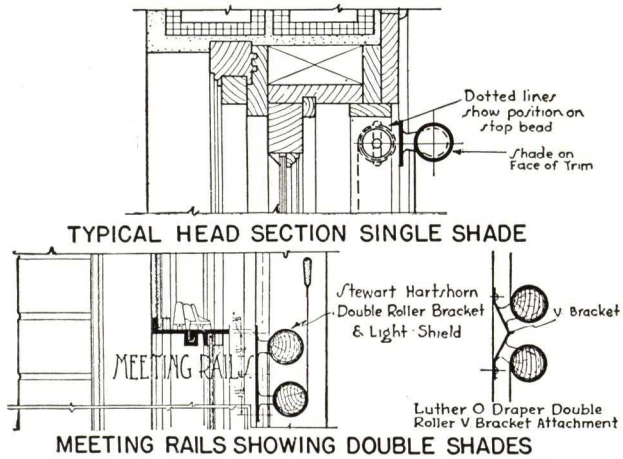






Three Types of Jamb Installations of Shadow Boxes. *(Details Courtesy of National Window Shade Co.)*

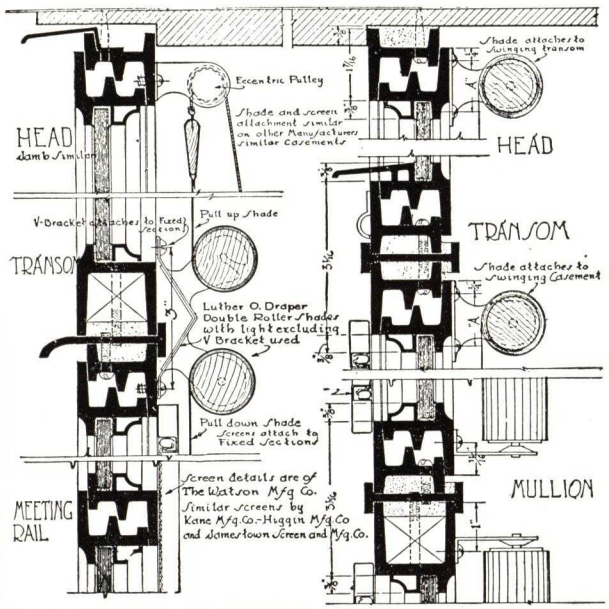
DETAILS OF VARIOUS METHODS OF INSTALLING SHADES



TYPICAL HEAD SECTION SINGLE SHADE

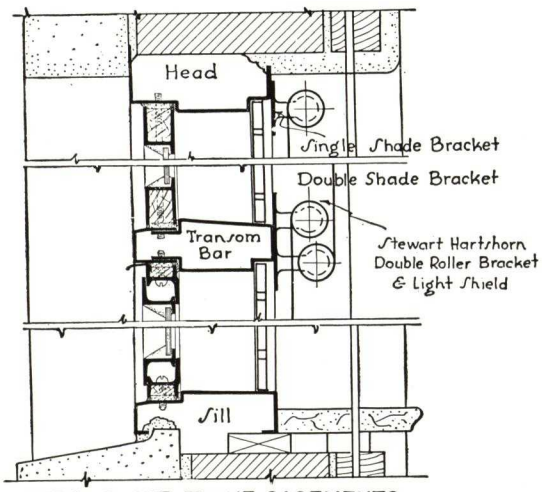
MEETING RAILS SHOWING DOUBLE SHADES

SHADING DOUBLE HUNG WINDOWS

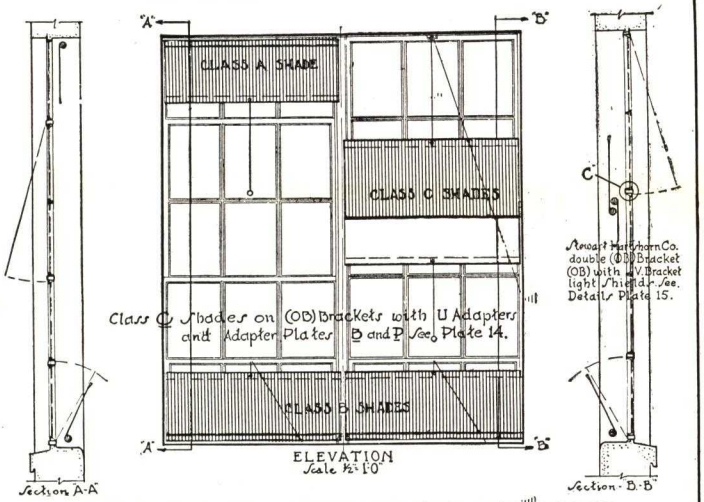


OUT SWINGING CASEMENT IN SWINGING CASEMENT

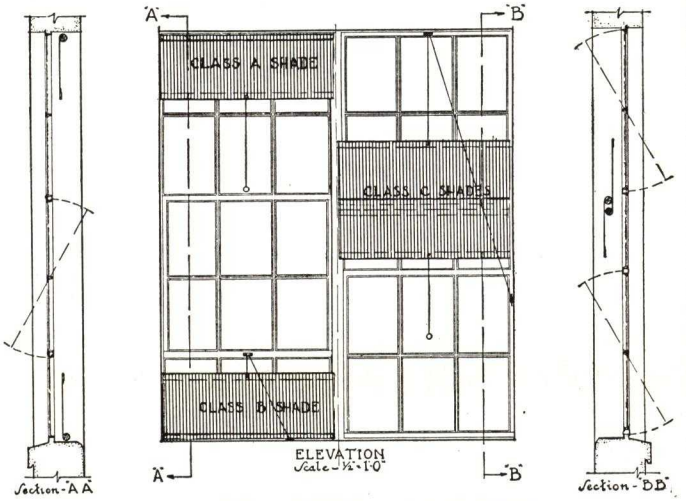
SHADING CASEMENTS



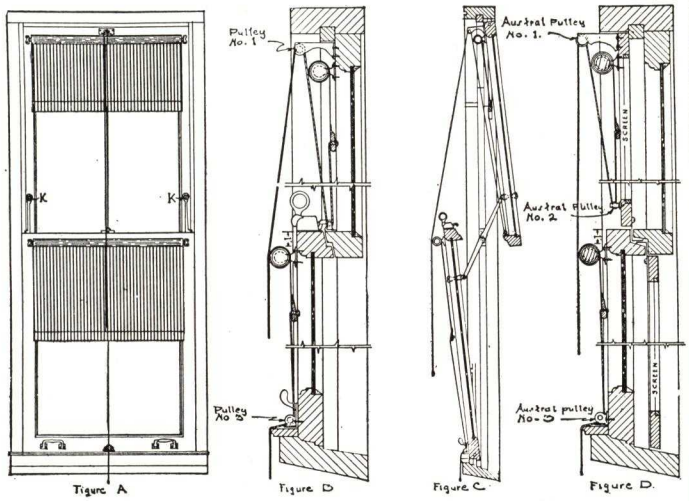
STEEL PLATE FRAME CASEMENTS WITH SCREENS AND SHADES



COMMERCIAL PROJECTED WINDOWS



PIVOTED STEEL WINDOWS



AUSTRAL WINDOWS

HARTSHORN SPRING SHADE ROLLERS

The Standard Roller of Architects, Decorators and Owners

SINCE 1860

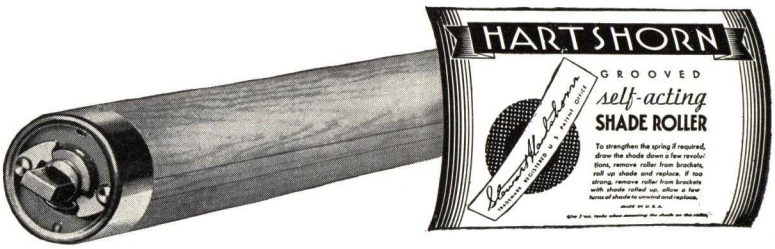
Stewart Hartshorn Company have been manufacturing high grade automatic spring shade rollers since 1860. During that time Hartshorn Rollers have been recognized by architects and builders as standard equipment for all types of buildings. Steel wire tempered to high specification in Hartshorn's own wire mill and wound into more durable springs than are found in ordinary rollers have made Hartshorn Rollers the standard of comparison.

HARTSHORN SPRINGS

The springs, which are a most vital part of a shade roller, are produced from wire manufactured by Hartshorn in its own wire mill. A very carefully selected High Carbon rod to Hartshorn Specification is procured from the steel mills. All cold drawing, intermediate heat-treatment, cold rolling and tempering operations are conducted in Hartshorn's own mill. The furnaces employed in all heat-treating operations are fired by gas of Hartshorn's own manufacture. All temperatures are automatically controlled, which results in a very uniformly tempered steel wire approximating 300,000 pounds per square inch ultimate tensile strength. Controlling the manufacture of our own wire, accounts for the fact that Hartshorn springs do not break down. Springs made for Hartshorn metal rollers are of larger wire than those for use in Hartshorn wood rollers since the metal rollers are expected to give longer service and to handle heavier loads. The most important factor in a shade roller is the life of the spring.

HARTSHORN AUTOMATIC SPRING WOOD SHADE ROLLERS

Have barrels made from well seasoned kiln dried white pine; finely tempered steel wire springs, produced in Hartshorn's own wire mill; moving parts which consist of brass pawls and rivets mounted on a copper plated steel cup that revolves on a brass bearing, will not rust or stick and insure smooth, silent action; aluminum shells which will not rust or tarnish enclose the mechanism at one end of the roller. Aluminum pin ends protect the solid end.



HARTSHORN ADJUSTABLE METAL ROLLERS

For Most Satisfactory Service

Made of high grade open hearth steel, heavily tin plated. Powerful springs made of finely tempered steel wire produced in Hartshorn's own wire mill; brass pawls and copper plated stamped steel parts make this roller smooth running and rust proof. Extension plugs in the ends permit the lengthening of these rollers in proportion with the diameter of the roller.

THE TYPE OF ROLLER TO SELECT

On most residential types of buildings where light weight translucent or semi-opaque shades are used and where the window sizes are fairly small, the Hartshorn wood barrel shade rollers have sufficient spring power to handle the shades satisfactorily. However, where the window widths are over four feet and the height is over ten feet or where the shade cloth used is heavy opaque cloth, Hartshorn metal rollers are recommended. Hartshorn metal rollers should be specified on all schools, hotels, offices, factories or other public buildings regardless of size of window and type of shade cloth used. Their sturdy construction and excess spring power added to the fact that they can be used again and again with new sets of shades make them much more economical for these types of installations. Send for our schedule showing diameter and style of roller recommended for use on various sizes of window shades.

HARTSHORN SPRING AWNING ROLLERS

All Metal Rust-Proofed, Adjustable Length

HARTSHORN SPRING AWNING ROLLERS

Hartshorn All-metal Galvanized Spring Awning Rollers are made with patented all-metal extension; are rustproof and easily adjustable. Can be used for several sets of awnings. Made in 1½, 1¾, 2¼, 3 and 4-inch diameters. (The 3 and 4-inch diameters are made only with the regular wood plug extension). All exposed parts are electro-galvanized, making them completely rustproof. The powerful springs of finely tempered steel wire, produced in Hartshorn's own wire mill, can be adjusted to lift the heaviest awning. The awning canvas can be sewed to a strip of strong Holland shade cloth supplied with each roller.

TYPICAL SPECIFICATION FOR WINDOW SHADES

General—These specifications cover the manufacture and correct installation of window shades (including labor, material, and all appliances and accessories) at the given address, so as to provide a complete installation ready for use. Accurate measurements are to be taken at the building and all conditions noted by the contractor. Shades to be made in a thoroughly workmanlike manner, cut square and true and mounted on rollers in the same manner. The materials used in the manufacture of these shades must be commercially perfect and of first quality. All shades to be free from dirt, fingermarks, etc., and subject to final acceptance by the owner.

Charge of Work—Owners shall have the general supervision and direction of work. They shall pass upon materials, workmanship and installation, and may reject such as in their judgment is not in accordance with contract or specification.

Scope of Work—(State here whether shades are to be double hung—that is, two shades mounted in the center of sash so that the top shade rolls down and the lower shade rolls up (school installation)—or whether the shades are to be mounted at top of the sash to roll down, or any other type of installation that may be required. State also windows that will not require shades or any other information bearing on the installation and requirements pertaining to the job.

Cloth—Shades to be made of Hartshorn Joanna Cambric as manufactured by the Stewart Hartshorn Company. This cloth to have a smooth, satin finish and to be sunproof and waterproofed and to be free from filling. (Alternate prices on Washable Diana Cloth, Hartshorn Oswego Tint Cloth, or if lightproof window shades are desired Vulcan Shadowless Triplex, as manufactured by the Stewart Hartshorn Company.)

Length—Cloth for all shades to be *finished* 9 inches longer than actual window openings and of correct width. (Optional)—Shades that are to be installed on face of casings to have the cloth cut 4 inches wider than width of window opening, so as to allow a 2 inch lap on each side.

Color—Color to be specified by architect. (State whether solid or duplex color is required.)

Rollers—All shades to be mounted on genuine Hartshorn Script Label (wood or metal rollers). Metal rollers to be made of the best grade open hearth steel heavily plated with tin and fitted with a groove for attaching shade fabric. Rollers to be of a diameter guaranteed to carry the shade. (State diameter required.)

Slats—⅞, 1¼, 1½, 1¾, 2 or 2½-in. white pine slats to be placed in hems of all shades. Slats to be cut ¼ in. less than width of cloth.

Eyelets—Shades to be equipped with stainless metal eyelets fastened through the center of slat for attaching of shade cord or shade pull.

Cord—All shades to be equipped with No. 2, 3½, or 4 braided cord (ring pull) to match color of shade and to be attached to slat and fastened to the window jamb with suitable length of cord to allow for the operation of the shades.

Hems—Shades shall be equipped with (side hems or plain side or reinforced pocket). Slat hems for all shades shall be securely sewed, back-stitched and tied.

Brackets—If attached to solid metal sash or frame, screw holes to be drilled and tapped and brackets installed with machine screws. If hollow metal sash and frame, screw hole to be drilled, brackets installed with Hartshorn's Expansible Screw Grips or a case hardened self-threading screw. If attached to wood sash or frame, brackets to be installed with regular wood screws. Brackets to be installed in such a manner so as to assure true alignment when rollers are placed therein. (On installations where stop pulleys are required, the same method of attaching them will be used as stated in the installation of brackets.)

Delivery—All shades shall be installed complete by . . . . . or any other date agreed upon in writing by the owner.

HARTSHORN DEALERS

We shall be glad to recommend to you a reliable Hartshorn dealer in your vicinity.

Hartshorn dealers are practical, hard-headed business men who have found that quality pays better than low prices.

Their prices are not exorbitant but will be based on good materials plus reliable workmanship plus a fair profit.

There may be dealers in your City who will quote you lower prices than the Hartshorn dealer but in the end you will find that you get just what you pay for. The saving of a few cents is soon lost when the spring of a roller breaks down or the cloth in the shade becomes wrinkled and broken.

STEWART HARTSHORN COMPANY

250 FIFTH AVENUE, NEW YORK, NEW YORK

Factories

Oswego, N. Y. Muskegon, Michigan Newark, N. J.
San Francisco, Calif. Toronto, Canada

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FOUNDED 1896

E. W. A. ROWLES CO.

CABLE ADDRESS: ROWLES

Manufacturers of Mastermade Window Shades
Double Roller, Single Roller, Folding, Adjustable Roller, Austral and Lite-Tite

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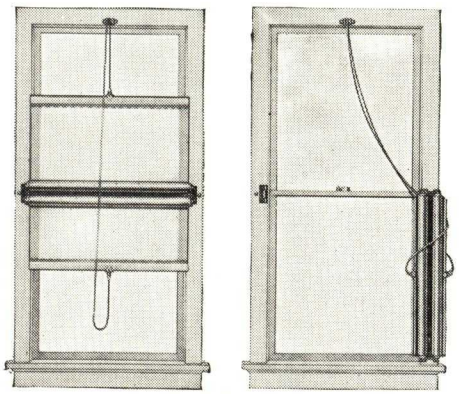
For Rowles Blackboard and Trim, see File Index

MASTERMADE WINDOW SHADES

Rowles Window Shades are available in various materials including Lite-Tite Darkening double filled duck with black finish upon both sides or black on one side and tan on the other. Shades are also manufactured in Tan Duck, washable, also in La Salle cloth, washable in various colors. Shades also in Rolltex Pyroxylin Shade Cloth, in attractive colors, washable, which conform in every way to Specification No. CCC-521, Section IV (Part 5) of Federal Specifications for Shade Cloth, Table 1, Type D. (In connection with Government work, often referred to simply as Type D.) Send your plans direct to Chicago for estimate or confer with one of our representatives.



Double Roller Shades

Styles

Shades are available in ten different styles, namely three styles of double roller shades, two styles of single roller adjustables, two styles of folding shades, two styles of single roller non-adjustable and the austral type. We make up special brackets and fittings to take care of special installations, such as arched windows, steel sashes, and extra wide windows.

Material and Workmanship

The quality of material and the workmanship in Rowles Mastermade Window Shades are the very best that it is possible to produce. No details have been overlooked to improve the utility and increase the life of Mastermade shades. Brackets are of ample size and thickness and are finished to prevent rusting; the cord is heavily braided and is fastened with non-rusting cord fasteners and cord cleats of the latest design. Fully guaranteed rollers are used throughout.

Lite-Tite Shades and Metal Troughs

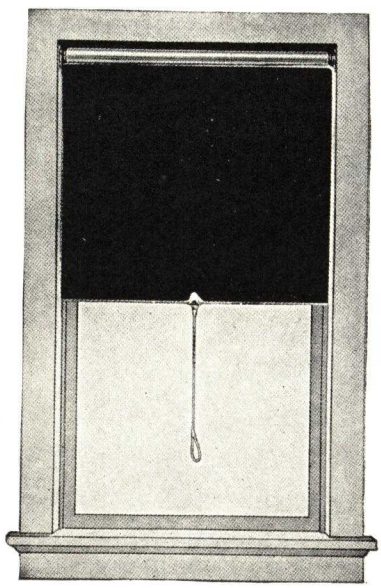
For darkening rooms where picture projectors are used, School Auditoriums, Laboratory and Science Divisions, etc. Send for samples.

Our Lite-Tite Shades, as illustrated below, are made of double filled duck with waterproof and completely opaque black finish. Their sturdy construction guarantees the lowest cost per window per year.

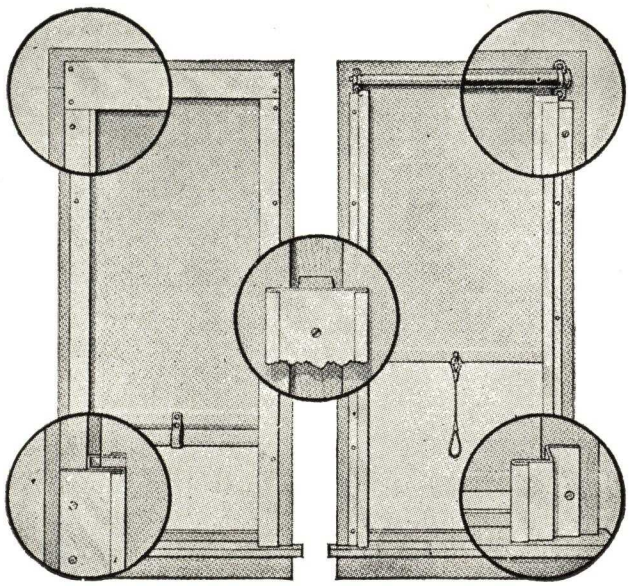
Ordinarily furnished with black finish on both sides completely opaque to strong sunlight, these shades can also be furnished with black finish on one side and tan on the other, when it is necessary to match the color of other shades.

To prevent light at the sides of the shades, our Lite-Tite Metal Troughs (illustrated below) assure the exclusion of all light.

They are made of cold rolled steel finished green.



Lite-Tite Shades



Lite-Tite Metal Troughs
Type I—Inside Mounting—Type O—Outside Mounting

MEMORANDA

MEMORANDA